

HRSD Commission Meeting Agenda – REVISED*
10:00 a.m. – May 24, 2022

In Person for Commissioners and essential staff at
1434 Air Rail Avenue, Virginia Beach, VA 23455

Electronic attendance via Zoom for all others

Public participation and observation of all HRSD Commission and committee meetings is available electronically via Zoom due to space limitations. To receive a link for virtual attendance/observation or to request accommodations to attend the meeting in-person, please send your request to Jennifer Cascio at jcascio@hrsd.com or by phone to 757.460.7003. Requests must be received by noon one business day prior to the meeting.

<u>No.</u>	<u>Topic</u>	<u>Resource</u>
	Call to Order	Elofson
	Roll Call of HRSD Commission	Cascio
1.	Awards and Recognition	Bernas
	a. Promotion Announcement	
	b. Awards	
	c. Commending Resolution	
2.	Consent Agenda	Bernas
	a. Approval of Minutes	
	b. Contract Awards	
	c. Task Orders *REVISED	
	d. HRSD Use of Existing Competitively Awarded Contract Vehicle	
3.	Pilot Program for Underground Utility Locating Services Rejection of all Bids	de Mik
4.	Fiscal Year-2023 (July 1, 2022 – June 30, 2023) Budgets	Bernas
5.	Bank of America Second Amended and Restated Credit Agreement Resolution	Bernas
6.	Expenditure of Tax-Exempt Bond Proceeds Reimbursement Resolution for Fiscal Year (FY) 2023 – 2024	Bernas
7.	Anammox Biofilm – License Agreement Commercialization	Bott

No.	Topic	Resource
8.	<u>Atlantic Treatment Plant Thermal Hydrolysis Process (THP) and Atlantic Treatment Plant Fats, Oils and Grease (FOG) Receiving Station Additional Appropriation</u>	Husselbee
9.	<u>Boat Harbor Transmission Force Main Land Acquisition Initial Appropriation</u>	Husselbee
10.	<u>Bowers Hill Interceptor Force Main Section I Emergency Repair New CIP and Initial Appropriation</u>	de Mik
11.	<u>Chesapeake-Elizabeth Treatment Plant Influent Force Main Modifications Additional Appropriation</u>	de Mik
12.	<u>Eastern Shore Infrastructure Improvements - Interim Plant Improvements (Onancock Treatment Plant Solids Handling Upgrade) New CIP and Initial Appropriation</u>	Husselbee
13.	<u>Hampton Trunk Sewer Extension Divisions I and J Relocation Phase II Agreement – Cost Sharing</u>	Husselbee
14.	<u>James River SWIFT Facility and James River Treatment Plant Advanced Nutrient Reduction Improvements Additional Appropriation and Approval of Stipulated Price</u>	Husselbee
15.	<u>Nansemond Treatment Plant Struvite Recovery Facility Improvements and Nansemond Treatment Plant Digester Capacity Upgrade Additional Appropriation, Contract Award (>200,000), Task Order (>200,000)</u>	Husselbee
16.	<u>Park Avenue Pump Station Replacement Additional Appropriation, Contract Award (>\$200,000) and Task Order (>\$200,000)</u>	Husselbee
17.	<u>West Avenue and 35th Street Interceptor Force Main Replacement Contract Award (>\$200,000) and Task Order (>\$200,000)</u>	Husselbee
18.	<u>Willard Avenue Pump Station Replacement (BH013020) and Hampton Trunk Sewer Extension Division K Gravity Improvements (BH014900) Additional Appropriation, Contract Award (>\$200,000) and Task Order (>200,000)</u>	Husselbee
19.	<u>Wilroy Pressure Reducing Station and Off-line Storage Alternative Project Delivery</u>	Husselbee
20.	<u>Norview Estabrook Division I, 18-Inch Force Main Replacement Phase II, Section 2 Acquisition of Real Property for a Public Purpose 3310 Cromwell Drive, Norfolk, VA</u>	Husselbee

<u>No.</u>	<u>Topic</u>	<u>Resource</u>
21.	COVID-19 Wastewater Surveillance Study Update	Curtis
22.	Operations & Nominations (O&N) Committee Appointment	Bernas
23.	Unfinished Business	Bernas
24.	New Business	Bernas
25.	Commissioner Comments	Elofson
26.	Public Comments – A request to make public comments during the meeting via Zoom or written comments to be read into the minutes should be submitted to Jennifer Cascio by email to jcascio@hrsdc.com or by phone to 757.460.7003 and must be received by noon one business day prior to the meeting.	Cascio
27.	Informational Items	Bernas
	a. Management Reports	
	b. Strategic Planning Metrics Summary	
	c. Emergency Declaration - Bowers Hill Interceptor Force Main Section I Emergency Repair	
28.	Closed Meeting	Bernas
29.	Reconvened Meeting	Bernas

Next Regular Commission Meeting Date: **June 28, 2022 at 1434 Air Rail Avenue, Virginia Beach**

AGENDA ITEM 1. – May 24, 2022

Subject: Awards and Recognition

Recommended Action: No action is required.

Brief:

a. **Promotion Announcement**

- (1) Mr. Bernas will introduce Ryan Radspinner, who was recently promoted to Business Process Engineer. Ryan was hired in 2009 as Hydraulic Analysis Manager. Ryan holds bachelor's and master's degrees in Civil Engineering from Virginia Tech and a Master's in Business Administration from William and Mary. He is a registered Professional Engineer in Virginia. Ryan has served in many volunteer roles with VWEA and was most recently the co-chair of WaterJAM 2021. He is a graduate of WEF Water Leadership Institute.
- (2) Mr. Bernas will introduce Ashley Roberts, who was recently promoted to Lab Manager. Ashley was hired in October 2013 as a part time Lab Technician, then offered a full time Lab Technician position in March 2014. Ashley was quickly promoted to Lab Specialist in August of that same year. In April 2017, Ashley was promoted to Laboratory Supervising Chemist, a position she held for 5 years before her recent promotion to Lab Manager. Ashley holds a Bachelor of Science in Chemistry from Virginia Wesleyan University.

b. **Awards**

- (1) United Way of South Hampton Roads

HRSD's partnership with United Way in helping our community spans over 20 years. Throughout the years HRSD has received numerous awards, and this year, HRSD earned the "*Bronze Trailblazer Award*" for the 12th consecutive year. Shawn Maxfield accepted the award on behalf of the HRSD United Way Committee.

Three awards are presented at the annual event - the Bronze Trailblazer (meets one criterion), the Silver Trailblazer (meets two criteria) and the Gold Trailblazer (meets three criteria). The criteria to receive an award are:

- All must meet a minimum of \$5,000 contribution and 5 pledges
- 60 percent of company pledges
- Per capita gift minimum of \$75 per person or higher
- Average contribution of \$150 or more per person

HRSD had an average of \$565.22 per contribution and received 67 pledges with 13 percent of employees contributing.



- (2) The United Way of the Virginia Peninsula recently honored HRSD with our third “Community Builder” award in recognition of work on the Williamsburg home project. The Community Builder award is given to companies and organizations that increase their workplace campaign not just by a dollar amount, but through participation, and through volunteering their time and employee talents throughout the community.

Several years ago, Elizabeth Hydes, Sr. Director of Development UWVP contacted Mary Strong, HRSD United Way Committee Cochairman regarding a family of six who requested help in home repairs. A disabled grandmother, her son, daughter-in-law and three children - two of whom have special needs.

Several HRSD employees met with the family for a walk through of the home where it became obvious there were a lot of issues including major safety issues. A plan was developed and the Associated General Contractors of Virginia, Inc. Peninsula Chapter (AGCVA) was asked to join in on the project. The United Way maintained all donations, HRSD provided skilled volunteer labor, and AGCVA to provide a network on contractors & subcontractors along with “In Kind Donations.” HRSD employees also donated over \$14,000 towards the project

This project has been over four years in the making, prevailing through several obstacles, including material price increases, COVID 19 restrictions and closures, and loss of subcontractors and is now in the final stages of completion. The home will be ready for occupancy soon and a ribbon cutting ceremony is being planned. Additional details will be provided when they become available.

c. **Commending Resolution**

Upon approval, the Commission Chair will present a commending [resolution](#) to Janice Pickrell Anderson of Kellam, Pickrell, Cox and Anderson, P.C. in recognition of distinguished service.



RESOLUTION

***Commending the Service of Kellam, Pickrell, Cox & Anderson, P.C.,
James M. Pickrell, Jr., and Janice Pickrell Anderson***

WHEREAS, Kellam, Pickrell, Cox & Anderson, (“KPCA”), P.C. the successor to the original law firm “Kellam & Kellam” founded in 1934 by Floyd E. Kellam, has served the HRSD Commission with distinction as counsel since 1946; and

WHEREAS, James ‘Jim’ M. Pickrell, Jr. served the HRSD Commission with indispensable service as General Counsel since 1990, until his passing in 2021; and

WHEREAS, Jim is remembered by a distinguished career in the Richmond and Hampton Roads regions as a member of the law firm and through his participation on various boards, community groups and professional associations; and

WHEREAS, Janice ‘Jan’ Pickrell Anderson continued the family legacy of service to the HRSD Commission since 1994; and

WHEREAS, Jan has enjoyed a career of preeminence in Virginia Beach and Norfolk as a member of the law firm and has served the Hampton Roads region through her participation on various boards, community groups and professional associations; and

WHEREAS, KPCA has provided outstanding legal advice and counsel to 62 Commissioners appointed by 19 Governors, eight General Managers and seven Commission Secretaries; and

WHEREAS, KPCA coordinated numerous amendments to the HRSD Enabling Act and provided skilled legal counsel through the expansion of HRSD into the Middle Peninsula, Surry County and most recently the Eastern Shore; and

WHEREAS, KPCA, Jim and Jan have been unwavering partners in their dedication to the environment, the Hampton Roads Region, and the Commonwealth of Virginia;

NOW, THEREFORE, BE IT RESOLVED, on the twenty-fourth day of May 2022, by the HRSD Commission that it hereby commends Kellam, Pickrell, Cox & Anderson, P.C., Janice Pickrell Anderson and posthumously commends James M. Pickrell, Jr. for their outstanding services to the HRSD Commission and, be it

RESOLVED FURTHER, that the Secretary of the HRSD Commission prepare a copy of this resolution for presentation to Janice Pickrell Anderson as an expression of the Commission’s appreciation, esteem and best wishes.

Frederick N. Elofson, CPA
HRSD Commission Chair

AGENDA ITEM 2. – May 24, 2022 (REVISED*)

Subject: Consent Agenda**Recommended Action:** Approve the Consent Agenda.**Brief:** The items listed below are presented on the following pages for Commission action.

a. Approval of Minutes

The draft minutes of the previous Commission Meeting were distributed electronically prior to the meeting.

b. Contract Awards

1.	Aquifer Compaction Monitor and Groundwater Level Monitoring USGS Extensometer Station at HRSD Nansemond SWIFT Facility Contract Award – Multi-Year Project		\$233,660
2.	Fleet Management (FY22)		\$232,998
3.	James River Recharge Wells (Off Site)	Contract Award	\$42,998,200
		Task Order	\$4,051,276
4.	Panoptra™ Visualization Platform		\$474,362
5.	VIP Service Area I/I Reduction Phase I - Portsmouth and VIP Service Area I/I Reduction Phase III – Portsmouth		\$3,474,335
6.	Water Information Management Solution (WIMS) Software and Support		\$430,794

c. Task Orders

1.	Atlantic Treatment Plant Digester No. 4 Coating Restoration	\$484,643
2.	Central Trunk Interceptor Force Main SF-119 Condition Assessment	\$355,100
3.	Inflow Reduction Program – Phase I* (added 05/19/2022)	\$204,130

d. HRSD Use of Existing Competitively Awarded Contract Vehicle and Contract Award

1.	Ivanti® Windows 10	\$204,891
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CONSENT AGENDA ITEM 2.b.1. – May 24, 2022

Subject: Aquifer Compaction Monitor and Groundwater Level Monitoring
USGS Extensometer Station at HRSD Nansemond SWIFT Facility
Contract Award – Multi-Year Project

Recommended Action: Award a contract to United States Department of the Interior, U.S. Geological Survey (USGS) for the operation of Aquifer Compaction Monitor and Groundwater Level Monitoring Sites for HRSD in the estimated amount of \$42,860 for year one with four annual renewal options and an estimated cumulative value in the amount of \$233,660.

Project Description: The USGS Nansemond Extensometer Station was installed in 2018 in a partnership between HRSD and USGS. The station includes instrumentation for the monitoring of aquifer compaction as well as five groundwater level monitoring wells. Funding for the installation of the station was provided by the Commonwealth of Virginia but did not include funding for the ongoing maintenance and operation of the station. Collection of this data is critical for demonstrating the impact of the SWIFT program on land subsidence. The multi-year [agreement](#) is for USGS to maintain and operate a real-time, data collection technology for the station. Tasks pertaining to the operation of the sites will include the monitoring of aquifer compaction, air pressure, air temperature, Global Position System near-surface benchmarks, and groundwater levels. All of the data will be made available in near-real time through the internet.

This work is in accordance with the Procurement Commission Adopted Policy.



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
VA/WV Water Science Center
1730 E. Parham Rd.
Richmond, VA 23228

April 28, 2022

Ms. Amy Murphy
Chief of Procurement
Hampton Roads Sanitation District
1434 Air Rail Ave
Virginia Beach, Virginia 23455

Dear Ms. Murphy

Enclosed is our standard joint-funding agreement for extensometer and groundwater well-monitoring at the HRSD SWIFT facility, during the period July 1, 2022 through June 30, 2027 in the amount of **\$233,660.00** from your agency. Please sign and return one fully-executed original to Paige Keaton at pkeaton@usgs.gov.

Federal law requires that we have a signed agreement before we start or continue work. Please return the signed agreement by **July 1, 2022**. If, for any reason, the agreement cannot be signed and returned by the date shown above, please contact Shaun Wicklein by phone number (804) 261-2605 or email smwickle@usgs.gov to make alternative arrangements.

This is a fixed cost agreement to be billed quarterly via Down Payment Request (automated Form DI-1040). Please allow 30-days from the end of the billing period for issuance of the bill. If you experience any problems with your invoice(s), please contact Paige Keaton at phone number (304) 347-5130 or email at pkeaton@usgs.gov.

The results of all work performed under this agreement will be available for publication by the U.S. Geological Survey. We look forward to continuing this and future cooperative efforts in these mutually beneficial water resources studies.

Sincerely,

Shaun M. Wicklein
Acting Director

Enclosure
22LMJFAVA000126

Fixed Cost Agreement YES[X] NO[]

THIS AGREEMENT is entered into as of the July 1, 2022, by the U.S. GEOLOGICAL SURVEY, VAWW Water Science Center, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the Hampton Roads Sanitation District party of the second part.

1. The parties hereto agree that subject to the availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation Water Resource Investigations (per attachment), herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50, and 43 USC 50b.

2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) include In-Kind-Services in the amount of \$0.00

- (a) by the party of the first part during the period
July 1, 2022 to June 30, 2027
- (b) \$233,660 by the party of the second part during the period
July 1, 2022 to June 30, 2027
- (c) Contributions are provided by the party of the first part through other USGS regional or national programs, in the amount of:

Description of the USGS regional/national program:
- (d) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.
- (e) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.

3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.

4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.

5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.

6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.

7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.

8. The maps, records or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program, and if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at cost, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records or reports published by either party shall contain a statement of the cooperative relations between the parties. The Parties acknowledge that scientific information and data developed as a result of the Scope of Work (SOW) are subject to applicable USGS review, approval, and release requirements, which are available on the USGS Fundamental Science Practices website (<https://www.usgs.gov/about/organization/science-support/science-quality-and-integrity/fundamental-science-practices>).

U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement
FOR

Customer #: 6000003196
Agreement #: 22LMJFAVA000126
Project #: LM009QC
TIN #: 54-6001749

Water Resource Investigations

9. Billing for this agreement will be rendered quarterly. Invoices not paid within 60 days from the billing date will bear Interest, Penalties, and Administrative cost at the annual rate pursuant the Debt Collection Act of 1982, (codified at 31 U.S.C. § 3717) established by the U.S. Treasury.

USGS Technical Point of Contact

Name: Shaun Wicklein
Supervisory Hydrologist
Address: 1730 East Parham Road
Richmond, VA 23228
Telephone: (804) 261-2605
Fax: (804) 261-2657
Email: smwickle@usgs.gov

Customer Technical Point of Contact

Name: Jamie Heisig-Mitchell
Chief of Technical Services
Address: 1434 Air Rail Ave
Virginia Beach, Virginia 23455
Telephone: (757) 460-4220
Fax:
Email: jmitchell@hrsd.com

USGS Billing Point of Contact

Name: Paige Keaton
Budget Analyst
Address: 11 Dunbar Street
Charleston, WV 25301
Telephone: (304) 347-5130
Fax: (304) 347-5133
Email: pkeaton@usgs.gov

Customer Billing Point of Contact


Name: Jamie Heisig-Mitchell
Chief of Technical Services
Address: 1434 Air Rail Ave
Virginia Beach, Virginia 23455
Telephone: (757) 460-4220
Fax:
Email: jmitchell@hrsd.com

U.S. Geological Survey
United States
Department of Interior

Hampton Roads Sanitation District

Signature

Signatures

By  Date: 04/28/2022
Name: Shaun M. Wicklein
Title: Acting Director

By _____ Date: _____
Name:
Title:

By _____ Date: _____
Name:
Title:

By _____ Date: _____
Name:
Title:



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Virginia Water Science Center
1730 E Parham
Richmond, VA 23228

April 6, 2022

Work Plan for Operation an Aquifer Compaction Monitor and Groundwater Level Monitoring Sites for Hampton Roads Sanitation District, Virginia

The U.S. Geological Survey (USGS) drilled and installed an aquifer compaction monitoring site and five groundwater level monitoring wells in partnership with Hampton Roads Sanitation District (HRSD) in 2018. The monitoring sites are located at the HRSD SWIFT Research site adjacent to the HRSD Nansemond Wastewater Recover Facility.

Funding for monitoring site operation will be provided by HRSD. U.S. Geological Survey (USGS) monitoring operation costs are for 5-years and given in table 1. All sites will be operated according to USGS standards using near-real time data collection technology. Tasks pertaining to the operation of the sites will include collection of aquifer compaction, air pressure, air temperature, Global Position System near-surface benchmark monitoring, groundwater levels, and making the data available in near-real time through the internet. Sites are visited by USGS staff at appropriate intervals to verify data accuracy, inspect site equipment, and maintain infrastructure. Data will be processed, stored, and displayed through the USGS National Water Dashboard (<https://dashboard.waterdata.usgs.gov/app/nwd/?region=lower48&aoi=default>) or local project web page. Current and historical data also will be available through web page delivery at <http://waterdata.usgs.gov/va/nwis/nwis>.

Following execution of the agreement, quarterly invoices for those services provided by the USGS will be issued for the continued monitoring. If there are any questions, please contact Shaun Wicklein, Hydrologic Network Operations Chief, at 804-399-9929, smwickle@usgs.gov.

Table 1. Installation and operation cost July 1, 2022 to June 30, 2027 for monitoring of sites at the Hampton Roads Sanitation District SWIFT Facility Suffolk, Virginia.

[AC, aquifer compaction in millimeters; AP, air pressure in millibars; AT, air temperature in degrees Celsius; GPS, annual Global Position System near-surface benchmark monitoring; and GW, groundwater level in feet below land surface]

Site Name	Data Collection Type	Years				
		1	2	3	4	5
59D 39	AC, AT, AP, GPS	\$24,990	\$26,260	\$27,590	\$28,300	\$29,020
59D 34	GW	\$5,510	\$5,790	\$6,080	\$6,240	\$6,400
59D 35	GW*	\$3,090	\$3,250	\$3,420	\$3,510	\$3,600
59D 36	GW*	\$3,090	\$3,250	\$3,420	\$3,510	\$3,600
59D 37	GW*	\$3,090	\$3,250	\$3,420	\$3,510	\$3,600
59D 40	GW*	\$3,090	\$3,250	\$3,420	\$3,510	\$3,600

* Monitoring of secondary (nested) groundwater well.

Hampton Roads Sanitation District

U.S. Geological Survey

Extensometer and Groundwater Well Monitoring

Fiscal Year	Cooperator Costs
2023	\$42,860
2024	\$45,050
2025	\$47,350
2026	\$48,580
2027	\$49,820
Total	\$233,660

Multi-year agreement starting July 2022

CONSENT AGENDA ITEM 2.b.2. – May 24, 2022

Subject: Fleet Management (FY22)
Contract Award (>\$200,000)

Recommended Action: Award a contract to Norfolk Truck Center, Inc. in the amount of \$232,998.

CIP Project: GN018100

Budget	\$3,600,000
Previous Expenditures and Encumbrances	\$3,218,118
Available Balance	\$381,882

Type of Procurement: Competitive Bid

In accordance with HRSD's competitive sealed bidding procedures, the Procurement Department advertised and solicited bids directly from potential bidders. The project was advertised on April 12, 2022, and one bid was received on April 27, 2022. The bid received is listed below:

Bidder	Bid Amount
Norfolk Truck Center, Inc.	\$232,998

HRSD Estimate: \$250,000

Contract Description: This contract is for the purchase of an International MV607 Crew Cab with Air Ride Cabin. This vehicle is used by the South Shore Interceptors as a systems service truck.

Project Description: This project will provide for replacement of aging fleet vehicles and purchase of additional vehicles to meet the needs of the organization. An itemized list of vehicles to be replaced or added is maintained by the Support Systems Division.

Project Justification: Replacement of aging vehicles will result in lower repair costs and the purchase of additional vehicles will provide for increased staff efficiency.

Analysis of Cost: Multiple manufacturer brands were requested in the competitive solicitation. After inquiring why no other bids were provided, the main response received was that some manufacturers are behind on production due to imposed limits and available build slots per supplier. These slots are very limited because of the need to fulfill orders already presented in 2021. In addition, the suppliers felt they could not be competitive due to the increase in manufacturing costs.

This work is in accordance with the Procurement Commission Adopted Policy.

CONSENT AGENDA ITEM 2.b.3. – May 24, 2022

Subject: James River Recharge Wells (Off Site)
Contract Award (>\$200,000) and Task Order (>\$200,000)

Recommended Actions:

- a. Award a contract to A.C. Schultes of Maryland Inc. in the amount of \$42,998,200.
- b. Approve a task order with Earth Data Incorporated in the amount of \$4,051,276.

CIP Project: GN016362**Regulatory Requirement:** Integrated Plan – SWIFT

Budget	\$47,334,000
Previous Expenditures and Encumbrances	(\$29,952)
Available Balance	\$47,304,048

Type of Procurement: Competitive Bid

In accordance with HRSD's competitive sealed bidding procedures, the Engineering Department advertised and solicited bids directly from potential bidders. The project was advertised on February 7, 2022, and one bid was received on April 19, 2022. The bid received is listed below:

Bidder	Bid Amount
A.C. Schultes of Maryland, Inc.	\$42,998,200

Engineer Estimate: \$52,812,848

The design engineer, Earth Data Incorporated, evaluated the bid based upon the requirements in the invitation for bid and recommends award to the lowest responsive and responsible bidder A.C. Schultes of Maryland Inc. (Schultes), in the amount of \$42,998,200.

The original engineer's opinion of probable construction cost (EOPCC) submitted at the time of advertising was \$42,686,028 (0.7 percent less than the bid price received). Impacts of Russia's invasion of Ukraine (February 24, 2022) began compounding the on-going impacts of the COVID-19 pandemic on the global supply chain and material costs and prompted a revision of the EOPCC to reflect stainless-steel market volatility observed in March 2022. The EOPCC was updated just prior to bid opening to reflect concerns over the availability of nickel and significant increases in the price of stainless steel. Schultes bid price reflects a strategy to mitigate their potential risk to future stainless steel price increases.

Contract Status:	Amount
Original Contract with Earth Data, Inc.	\$29,952
Total Value of Previous Task Orders	\$0
Requested Task Order	\$4,051,276
Total Value of All Task Orders	\$4,051,276
Revised Contract Value	\$4,081,228
Engineering Services as % of Construction	9%

Project Description: James River Recharge Wells (Off Site) will provide for the construction of seven managed aquifer recharge (MAR) wells and eight monitoring wells located within the James River Treatment Plant (JRTP) property and the City of Newport News's Riverview Farm Park and City Farm properties; services for the site preparation, borehole drilling and well installation, development, logging, testing, and conditioning of aquifer associated with SWIFT at the JRTP.

The attached [map](#) depicts the project location.

Project Justification: A total of 10 (MAR) wells and eight monitoring wells are required to recharge the aquifer with SWIFT Water from the James River SWIFT Facility. All MAR and monitoring wells were designed under the initial James River Recharge Wells (On Site) project (GN016361). The first three JR SWIFT MAR wells are being constructed within the treatment plant boundary under the GN016361 project, as approved during the October 2021 Commission meeting. This project includes construction of the remaining seven MAR wells and eight monitoring wells located outside of the JRTP property within easements and property recently acquired from the City of Newport News.

Contract Description and Analysis of Cost: This contract is an agreement for the installation and testing of seven MAR wells and eight monitoring wells located within the JRTP property, Riverview Farm Park, and City Farm in Newport News. Only one bid was received for the project in the amount of \$42,998,200, which is 22 percent lower than the Class 1 EOPCC of \$52,812,848. A significant amount of outreach was performed to promote the SWIFT program and this project prior to the bid advertisement and the project team received a favorable and interested response from the drilling community. The following factors may have influenced potential bidders:

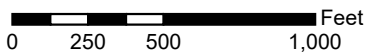
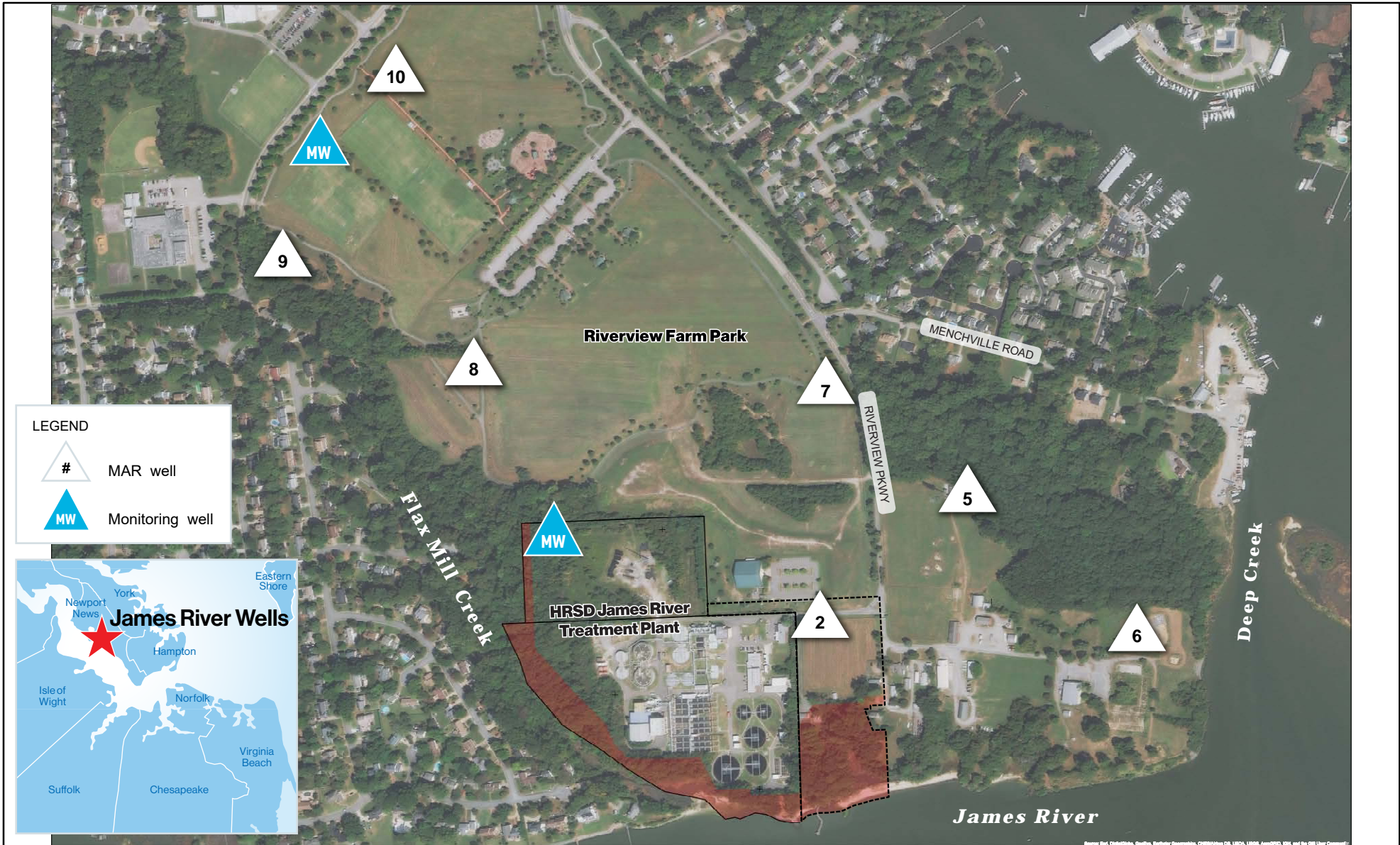
- Overall volatile market conditions – Impacts of the COVID-19 pandemic as well as Russia's invasion of Ukraine on the global supply chain, material costs, and work force are well documented and future costs of diesel fuel and stainless-steel casing and screen were of concern. This market volatility presents a cost risk over the three-year project duration.
- Lack of Mid-Atlantic region drilling contractors –Schultes is the only bidder in the Mid-Atlantic region capable of installing deep, large diameter, high-capacity wells. Other drillers capable of installing these wells must mobilize from different regions in the country (Florida, Texas, Utah, etc.).
- Active drilling projects in Texas, Florida, and other regions – Three other drilling companies attended both the pre-bid meeting and site visit and demonstrated interest in the project. However, these major out-of-state drillers continue to report robust activity in their home states, with backlogs well over 12 months, making mobilizing to Virginia less attractive. With so much work they expressed concerns over their ability to staff and manage the project.

Task Order Description and Analysis of Cost: This task order will provide construction administration and construction inspection services for the project Also included are engineering services specific to recharge well installation, such as geophysical logging conducted on the open boreholes, flow logging and camera surveys conducted on completed wells, interpreting the geology and geophysical properties of the boreholes, finalizing well design, monitoring the development (i.e., removing drilling fluids and preparing the well for service), hydraulic withdrawal testing and evaluation of the completed wells, and inspecting the aquifer conditioning process and testing for each well. The cost for this task order is based on a detailed estimate of labor hours and direct costs required to execute the negotiated scope of work. The total hours budgeted are appropriate for the services described. The fee for this scope is 9 percent of the cost to construct (bid price). This task order will be issued as an Amendment to the Professional Services Agreement with Earth Data Incorporated for

the SWIFT Recharge and Monitoring Well Services Program. The rates and proposed subconsultant fees are consistent with the rate structure within the Agreement, as approved for FY-2022.

This work is in accordance with Procurement Policy Commission Adopted Policy.

<u>Schedule:</u>	Construction	July 2022
	Project Completion	March 2025



James River Recharge Wells (Off Site) – GN016362

May 2022



CONSENT AGENDA ITEM 2.b.4. – May 24, 2022

Subject: Panoptra™ Visualization Platform
Contract Award (>\$200,000)

Recommended Action: Award a contract to Enstoa Inc. in the amount of \$87,580 for year one with four annual renewal options and an estimated cumulative value of \$493,336.

Type of Procurement: Sole Source

All parts and services were previously approved as a sole source with Enstoa Inc. in April, 2017.

HRSD Estimate: \$87,580

Contract Description: This contract is an agreement for Panoptra™ visualization platform and Adapters license and support for the Primavera Unifier Project Management System. The product includes a data historian application to show data trends in Primavera Unifier. This software extracts data to create a highly efficient reporting database that displays interactive dashboards that can be refreshed in real time.

This work is in accordance with the Procurement Commission Adopted Policy.

CONSENT AGENDA ITEM 2.b.5. – May 24, 2022

Subject: VIP Service Area I/I Reduction Phase I - Portsmouth and
VIP Service Area I/I Reduction Phase III - Portsmouth
Contract Award (>\$200,000)

Recommended Action: Award a contract to Brown and Caldwell in the amount of \$3,474,335.

CIP Project: VP018301

Regulatory Requirement: Integrated Plan - HPP1 (2030 Completion)

Budget	\$15,582,800
Previous Expenditures and Encumbrances	(\$47,507)
Available Balance	\$15,535,293

CIP Project: VP018303

Regulatory Requirement: Integrated Plan - HPP1 (2030 Completion)

Budget	\$11,205,600
Previous Expenditures and Encumbrances	(\$56,507)
Available Balance	\$11,149,093

Type of Procurement: Competitive Negotiation

A Public Notice was issued on March 7, 2022. Four firms submitted Statements of Qualifications on March 24, 2022, and all firms were determined to be responsive and deemed fully qualified, responsible, and suitable to the Professional Services Selection Committee (Committee) and to the requirements in the Request for Qualifications. Two firms were short-listed, submitted Technical Proposals, were interviewed, and technically ranked as listed below:

Proposers	Technical Points	Recommended Selection Ranking
Brown and Caldwell	87.6	Highest technical ranking
Johnson Mirmiran and Thompson, Inc.	77.3	

The Committee recommends award to Brown and Caldwell, whose professional qualifications and proposed services best serve the interest of HRSD.

Project Description: The project is to develop a program to reduce sanitary sewer overflows through the cost-effective reduction of infiltration and inflow (I/I) on assets belonging to the City of Portsmouth.

The attached [maps](#) depict the project locations.

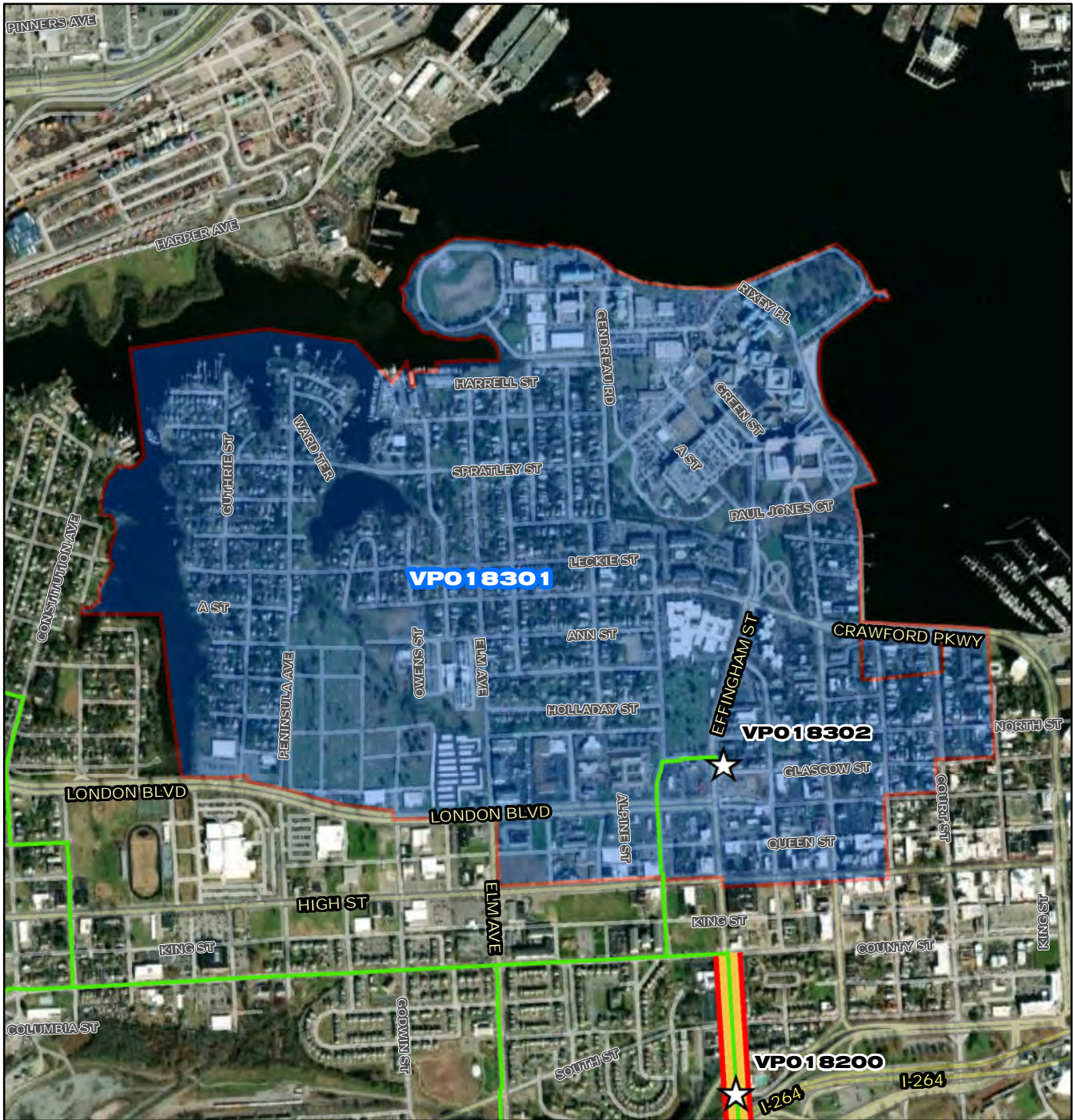
Project Justification: This project is an EPA High Priority Project which was approved in the Fifth Amendment to the Federal Consent Decree with a due date no later than December 31, 2030.

Contract Description: This contract is an agreement for professional engineering services related to the reduction of I/I in the gravity sewer and manholes in four service areas in the City of Portsmouth.

The initial scope includes location and analysis of the sources of I/I and a Preliminary Engineering Report (PER) recommending design of improvements.

Analysis of Cost: The cost for this contract is based on negotiated rates and an estimate of time the consultant will need to perform the investigation and analysis and complete the PER. Final design and construction phase services will be negotiated after the PER is complete.

<u>Schedule:</u>	PER	June 2022
	Design	January 2024
	Construction	February 2025
	Project Completion	January 2027



VPO 18301

- 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

0 400 800 1,600 2,400 3,200 Feet

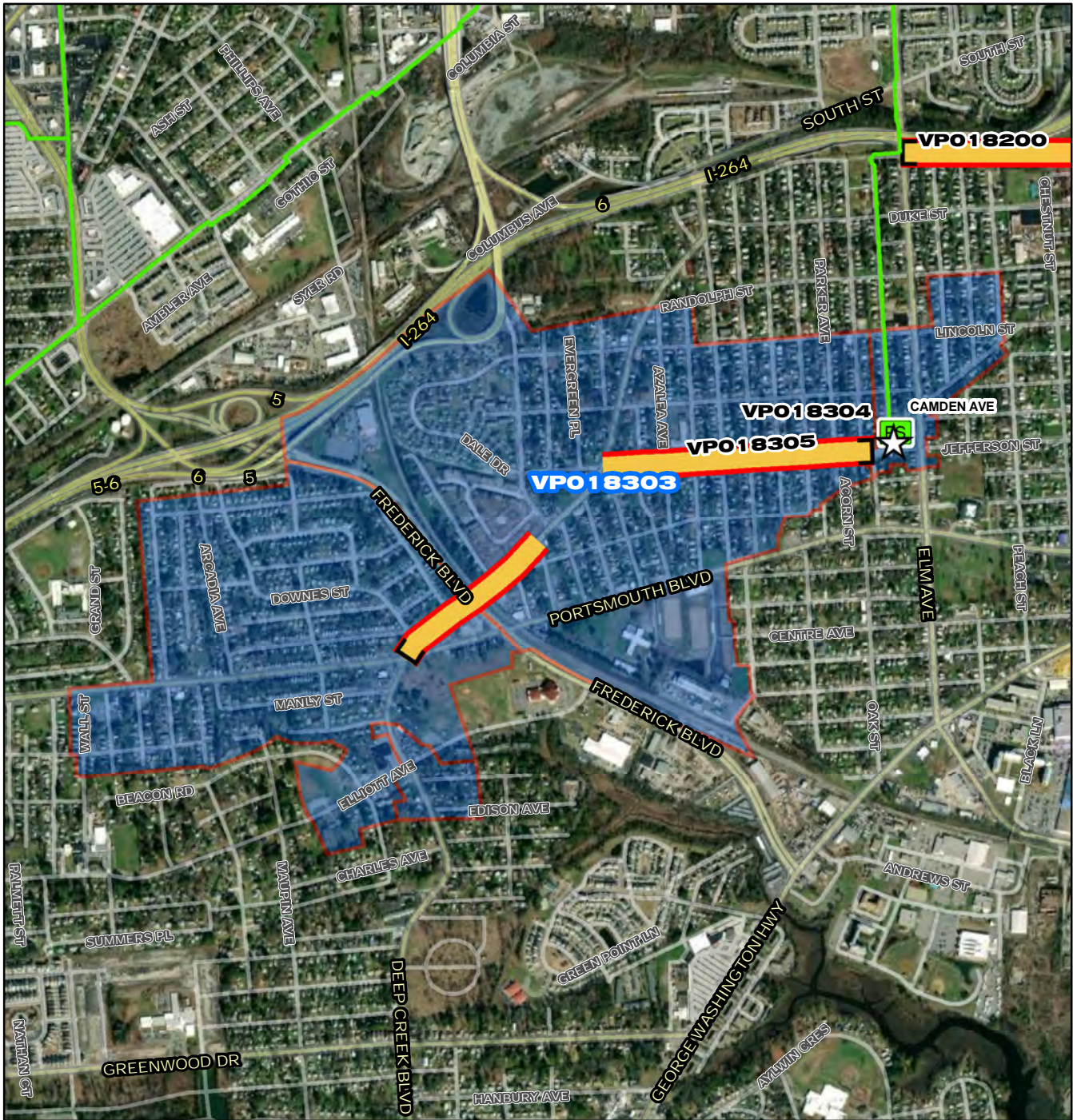
VPO 18301

VIP Service Area I-I Reduction Phase I (PORTS)

N
W E
S

CIP Location

Portsmouth

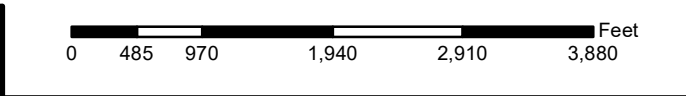


VPO 18303

- 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



VPO 18303

**VIP Service Area I-I Reduction
Phase III (PORTS)**

N
W E
S

CIP Location

Portsmouth

CONSENT AGENDA ITEM 2.b.6. – May 24, 2022

Subject: Water Information Management Solution (WIMS) Software and Support Contract Award (>\$200,000)

Recommended Action: Award a contract for WIMS software, maintenance, and support to Hach Company in the estimated amount of \$336,690 for year one with four annual renewal options and an estimated cumulative value in the amount of \$430,794.

Regulatory Requirement: None

Type of Procurement: Competitive Negotiation

A Public Notice was issued on January 11, 2022. Two firms submitted proposals on February 4, 2022, only one firm was determined to be responsive and deemed fully qualified, responsible, and suitable to the Selection Committee (Committee) and to the requirements in the Request for Proposals. The firm was interviewed, and technically ranked as listed below:

Proposers	Technical Points	Recommended Selection Ranking
Hach Company	87	1

*DOMO Inc. was deemed non-responsive due to multiple required items missing from their submittal.

The Committee recommends award to Hach Company whose professional qualifications and proposed services best serve the interest of HRSD.

HRSD Estimate: \$400,000

Contract Description: This contract is an agreement to replace HRSD's current custom web portal portion of the Daily Plant Operations Report (DPOR) with a commercial off the shelf solution that is designed for treatment plant data management and will be used at all HRSD's treatment facilities. This system provides a platform for manual data entry by the treatment plant operator, calculates new values based on operator input and/or imported instrument data, and displays the complete data set in an organized manner. Data from a subset of DPOR parameters is used to generate daily values that become the official plant record for regulatory reporting. At HRSD, the continuous operational log created by DPOR values is separate and distinct from the Laboratory Information Management System (LIMS) used for the regulatory reporting.

This contract will include the software configuration for 11-13 plants (the large plants and the majority of the smaller plants). Initially, DPOR entry forms and report will be developed at three plants and training for continued DPOR configuration by HRSD personnel at the remaining plants. The initial scope of this project is to replace the existing web interface portal, but HRSD reserves the right to implement other changes and improvements to the solution including but not limited to workflow and other functionality which will be in accordance with the pre-negotiated rates under this contract.

Analysis of Cost: The cost for the implementation, licenses, and on-going support fees were determined to be fair and reasonable compared to similar type services.

This work is in accordance with Procurement Policy Commission Adopted Policy.

CONSENT AGENDA ITEM 2.c.1. – May 24, 2022

Subject: Atlantic Treatment Plant Digester No. 4 Coating Restoration
Task Order (>\$200,000)

Recommended Action: Approve a task order with Commonwealth Epoxy Coatings, Inc. in the amount of \$484,643.

Contract Status:	Amount
Original Contract with Commonwealth Epoxy Coatings, Inc.	\$0
Total Value of Previous Task Orders	\$7,406,510
Requested Task Order	\$484,643
Total Value of All Task Orders	\$7,891,153
Revised Contract Value	\$7,891,153

Task Order Description: This task order will provide services for interior steel restoration of digester #4 at the Atlantic Treatment Plant. Services also include preservation of immersion surface steel ceiling, support structure and piping.

Analysis of Cost: The cost for this task order is based on the pre-negotiated rates under the Annual Coating Services Agreement.

This work is in accordance with Asset Management and Procurement Commission Adopted Policies.

CONSENT AGENDA ITEM 2.c.2. – May 24, 2022

Subject: Central Trunk Interceptor Force Main SF-119 Condition Assessment
Task Order (>\$200,000)

Recommended Action: Approve a task order with Bridgeman Civil, Inc. in the amount of \$355,100.

Regulatory Requirement: None

Contract Status:	Amount
Original Contract with Name of Engineer/Contractor	\$0
Total Value of Previous Task Orders	\$946,127
Requested Task Order	\$355,100
Total Value of All Task Orders	\$1,301,227
Revised Contract Value	\$1,301,227

Task Order Description: This task order will provide all traffic control, labor and equipment to perform exploratory excavation and pipeline inspections at eight total sites along the Central Trunk Interceptor Force Main (SF-119). This 63-year-old 36-inch Reinforced Concrete Force Main has been identified as a high risk line with a high likelihood of failure and a high consequences failure, due to its age and known unvented high spots. During the inspection Pipe Penetrating Radar (PPR) will be used to determine the pipes wall thickness, and the contractor will replace any corroded hardware found and install air release valves at verified unvented high spots. This effort provides critical information needed to determine the remaining useful life of this pipeline.

Analysis of Cost: The cost for this task order is based on the Sewer Repair and Condition Assessment contract with Bridgeman Civil, Inc. and is in agreement with other similar efforts from firms.

This work is in accordance with Asset Management and Procurement Commission Adopted Policies.

CONSENT AGENDA ITEM 2.c.3. – May 24, 2022

Subject: Inflow Reduction Program – Phase I
Task Order (>\$200,000)

Recommended Action: Approve a task order with Tidewater Utility Construction Inc. in the amount of \$204,130.

CIP Project: GN018000

Regulatory Requirement: None

Budget	\$2,000,000
Previous Expenditures and Encumbrances	(\$871,808)
Available Balance	\$1,128,192

Contract Status:	Amount
Original Contract with Tidewater Utility Construction Inc.	\$106,018
Total Value of Previous Task Orders	\$129,504
Requested Task Order	\$204,130
Total Value of All Task Orders	\$333,634
Revised Contract Value	\$439,652

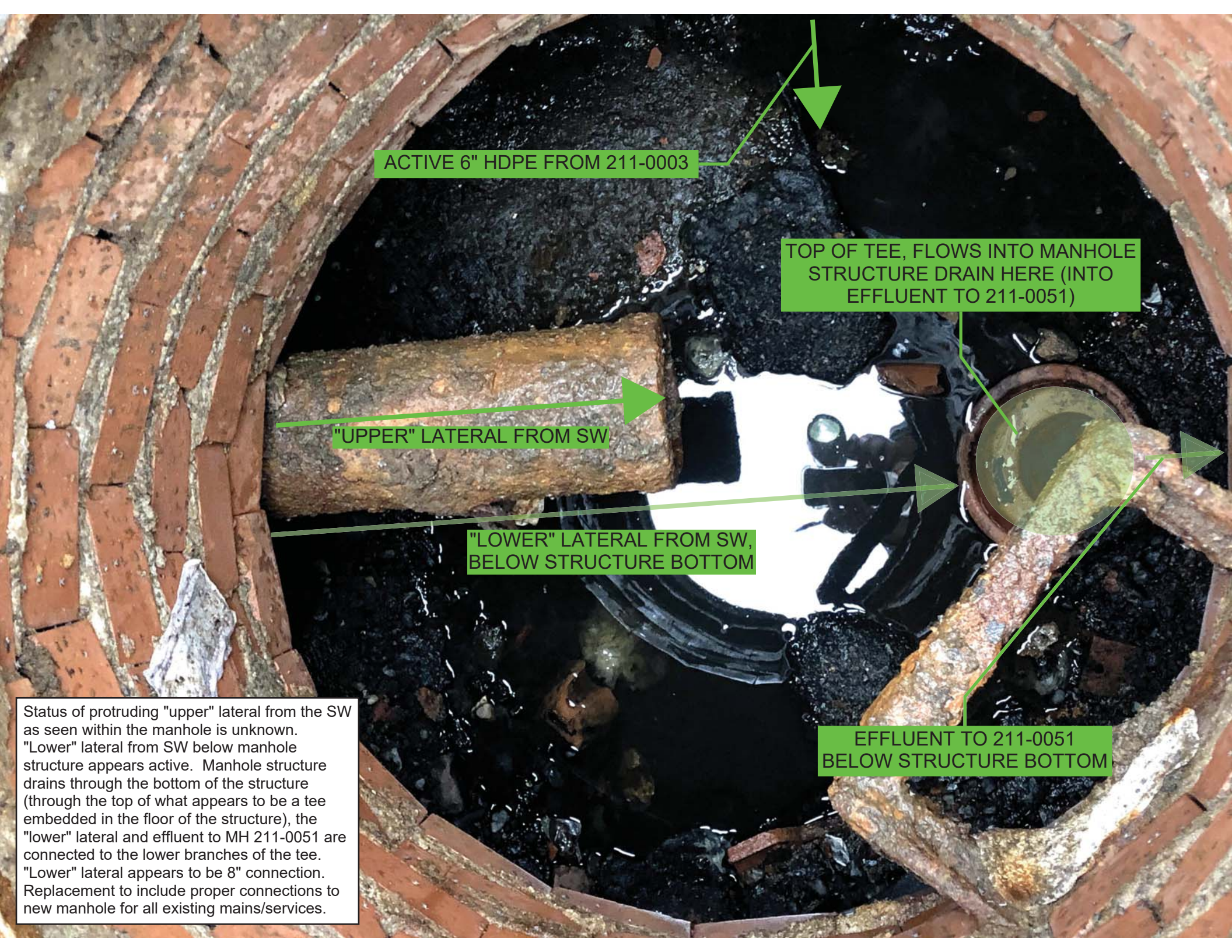
Project Description: This project includes the identification and reduction of points of inflow into private, locality, and HRSD owned sanitary sewer systems. Identification may include data analysis, smoke testing, flow and conductivity monitoring and other field investigations. Inflow reduction strategies may include sealing of manholes, elimination of direct connections; as well as sealing and replacement of laterals and cleanouts. Areas to implement inflow reduction strategies will be targeted based on susceptibility to saltwater inflow and through further data analysis of the basins identified in the Regional Wet Weather Management Plan (RWWMP). HRSD will coordinate identification and reduction of inflow with locality partners and private property owners.

Project Justification: Hydrographs, flow monitoring, and conductivity monitoring indicate that rapid increases in flow occur during wet weather and high tide events. The rapid inflow of water into the system increases the risk of locality overflows due to limited hydraulic capacity and increases the risk of force main failures due to increased force main operating pressures. In addition, the inflow of saltwater during high tide events creates settling problems at the treatment plants and poses a threat to efficient SWIFT implementation due to the bromide in the saltwater being converted to bromate during ozonation. Sea Level Rise projections and predictions of more frequent high intensity rain events point to a future of increased inflow and inflow events. This project will develop and test inflow reduction techniques and inform HRSD's inflow reduction program into the future.

Task Order Description: This task order will provide all labor and materials to rehabilitate gravity sewer assets identified on the Hampton University campus as being [significant contributors](#) of tidal inflow. The construction work schedule is limited to the summer session of the academic calendar. The attached [map](#) depicts the specific task order location.

Analysis of Cost: This cost is in agreement with the existing Sewer Repair and Condition Assessment contract and other similar projects.

Schedule:	Construction	May 2022
	Project Completion	December 2022



ACTIVE 6" HDPE FROM 211-0003

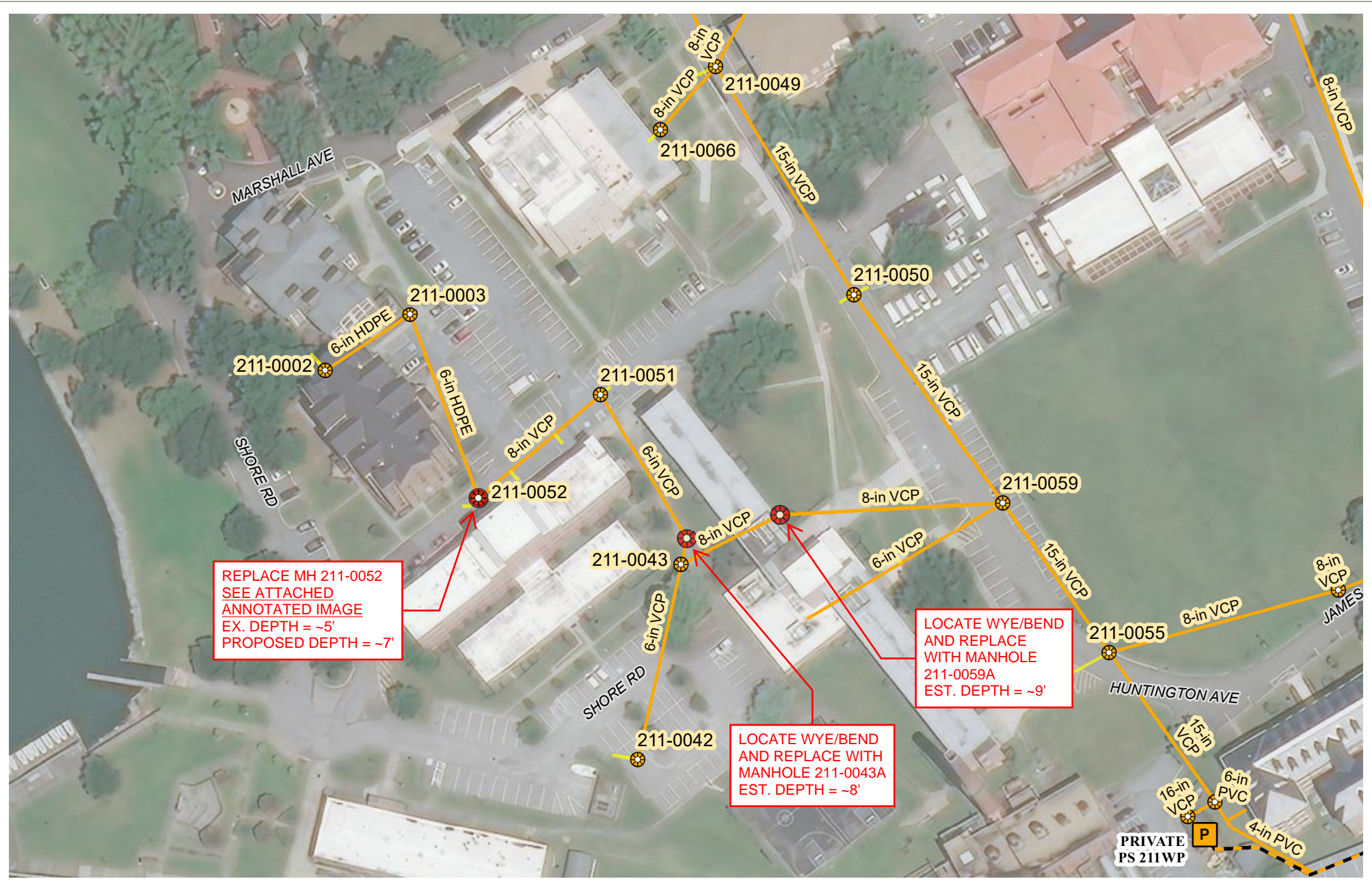
TOP OF TEE, FLOWS INTO MANHOLE
STRUCTURE DRAIN HERE (INTO
EFFLUENT TO 211-0051)





"UPPER" LATERAL FROM SW

"LOWER" LATERAL FROM SW,
BELOW STRUCTURE BOTTOM

EFFLUENT TO 211-0051
BELOW STRUCTURE BOTTOM

Status of protruding "upper" lateral from the SW as seen within the manhole is unknown. "Lower" lateral from SW below manhole structure appears active. Manhole structure drains through the bottom of the structure (through the top of what appears to be a tee embedded in the floor of the structure), the "lower" lateral and effluent to MH 211-0051 are connected to the lower branches of the tee. "Lower" lateral appears to be 8" connection. Replacement to include proper connections to new manhole for all existing mains/services.



-  HU Manholes
-  Install New or Replace HU Manhole
-  HU Gravity Sewer
-  HU Lateral

AREA 1
HU Sewer Rehabilitation - Summer 2022

REVISED 5/12/2022

RAMBOLL AMERICAS
 ENGINEERING SOLUTIONS, INC.
 A RAMBOLL COMPANY



CONSENT AGENDA ITEM 2.d.1. – May 24, 2022

Subject: Ivanti® Windows 10
HRSD Use of Existing Competitively Awarded Contract Vehicle and Contract Award
(>\$200,000)

Recommended Actions:

- a. Approve the use of the Fairfax County Co-op 4400006325 for IVANTI® Windows 10.
- b. Award a contract for product or service to CDW LLC dba CDW Government LLC in the estimated amount of \$38,721 for year two with three years annual renewal options and an estimated cumulative value in the amount of \$204,891.

HRSD Estimate: \$38,721

Contract Description: This contract is for Ivanti® Windows 10 licenses and migration engagement services and support services & global academy annual subscription. Ivanti® is used for creating and deploying images to devices, mobile security and device management, and remote control and problem resolution.

Analysis of Cost: By utilizing the cooperative contract through Fairfax County Co-op 4400006325, HRSD is receiving five percent cost savings.

This work is in accordance with the Procurement Commission Adopted Policy.

AGENDA ITEM 3. – May 24, 2022

Subject: Pilot Program for Underground Utility Locating Services
Rejection of all Bids

Recommended Actions: Approve rejection of all bids submitted for the Pilot Program for Underground Utility Locating Services.

Type of Procurement: Competitive Bid

In accordance with HRSD's competitive sealed bidding procedures, the Procurement Department advertised and solicited bids directly from potential bidders. The project was advertised on April 1, 2022 and one bid was received on April 22, 2022 as listed below:

Bidder	Bid Amount
McKim and Creed Inc	\$646,000

HRSD/Engineer Estimate: \$200,000

Brief: Staff recommends the rejection of the bid and the advertisement of a new solicitation based on receiving one bid above the budget for this program. The South Shore Interceptors will review the scope of work and length of time offered for this project for the new solicitation.

AGENDA ITEM 4. – May 24, 2022

Subject: Fiscal Year-2023 (July 1, 2022 – June 30, 2023) Budgets

Recommended Actions:

- a. Approve the [FY-2023 to FY-2042 Financial Forecast](#)
- b. Approve the [Operating Budget for FY-2023](#), which includes the Operating, Debt Service and Transfer Appropriations, and authorize distribution of the Budget in accordance with the Trust Agreement.
- c. Approve the [Capital Budget](#) for FY-2023
- d. Approve the Capital Improvement Program for FY-2023 to FY-2032 ([Summary Capital Improvement Program](#))
- e. Approve the [Rate Schedule](#) to be effective July 1, 2022 subject to the requirements of the Enabling Act.

Attachment: [FY-2023 Annual Budget](#)

Brief: The annual budgeting process includes updating the 20-year Financial Forecast and preparing the Operating Budget (which includes the operating, debt service and transfer appropriations), the Capital Budget and the Capital Improvement Program (CIP) as well as the corresponding Rate Schedule to support these budgets. The Commission is required to approve an annual budget in sufficient time to ensure the proposed rates, fees and charges are published in a newspaper of general circulation within the District for four consecutive weeks.

A budget preview was held at the February 22 Commission meeting to discuss the impacts of historic inflation on the upcoming budget and to confirm the proposed FY-2023 rate increase. There was a work session to review components of the budget after the regular Commission meeting on March 22. The Finance Committee (comprised of Commissioners Rodriguez and Lynch) and several other commissioners participated in the March 1 CIP review meeting and detailed budget presentation on April 14. The Finance Committee reported to the Commission at the April 26 meeting.

The FY-2023 Capital Budget is \$411 million and represents the first year of the \$3.1 billion ten-year CIP. Projects in the CIP are individually presented to the Commission for full project funding authorization specific to each project at the time the first dollar is spent. Changes to the CIP, which may be required by changing conditions, are presented to the Commission as amendments. The CIP will be available on the HRSD website upon Commission approval.

The Financial Forecast model was updated to project major expense drivers, such as construction costs, inflation, operating cost increases, and borrowing costs and the revenue requirements needed to ensure financial sustainability.

The Rate Schedule contains the rates necessary to generate sufficient revenue to cover expenses and reserve requirements for the next fiscal year. HRSD's Rate Model (the Model) uses a cost accounting process to allocate all operating costs to volume and each of four specific pollutants: Biochemical Oxygen Demand (BOD), total suspended solids, phosphorus and nitrogen. The Model designates each line item cost as fixed or variable and uses engineering criteria to allocate the

variable costs to each of the four pollutants. Once the operating costs have been allocated, the Model derives rates for volume (\$/CCF) and high strength surcharges (\$/pound); the latter equate to HRSD's marginal or incremental cost attributable to treating each pollutant in excess of the amount present in typical domestic wastewater. The result is that the Model calculates rates sufficient to recover expenses. To meet the requirements of the Financial Forecast, the FY-2023 wastewater charge will increase 9.1% to \$6.97 per 100 cubic feet. The current average residential customer (as measured by a 5/8-inch meter) uses approximately 5.6 CCF of water per month, resulting in an average monthly increase of \$3.25 (approximately \$0.11 per day increase). Our charges for wastewater treatment remain reasonable, with the average residential customer paying about \$1.28 per day to ensure future generations will inherit clean waterways and be able to keep them clean.

With the increased chemical and polymer costs to treat Fats, Oils and Grease (FOG) that come from restaurant grease control devices, HRSD's FOG rate increased to \$0.3339 per gallon. The Hauled Waste rate (septic tanks and portable toilets) will increase to \$0.1812 per gallon.

Rates to provide wastewater services to the Small Communities include both the cost of the treatment and the collection systems. Small Community residents pay the HRSD regional treatment rate, the weighted average sewer collection system rate for the metro area, plus the capital costs (Capital Recovery Rate) of the collection systems, which is only required in King William. The capital cost component includes the amortized cost incurred by HRSD when the systems were acquired.



Annual Budget
Fiscal Year 2023
(July 1, 2022 - June 30, 2023)

HRSD Annual Budget For
Fiscal Year 2023
(July 1, 2022 – June 30, 2023)

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Introduction



General Manager's Introduction

The voters of Virginia took the bold step in 1940 to address pollution in the Hampton Roads by approving a referendum creating the Hampton Roads Sanitation District (HRSD). That public approval capped a 15-year grassroots campaign that began when the shell-fishing beds in the Hampton Roads were closed by the Virginia Department of Health. At the time, over 30 million gallons of untreated sewage was being dumped into the waters of the Hampton Roads each day. It would take the United States Congress another 32 years to tackle the issue of water pollution on a national scale, finally passing the Clean Water Act in 1972.

Over the past 81 years, HRSD has developed into one of the premier wastewater treatment organizations in the nation. With 16 treatment facilities capable of treating 225 million gallons of wastewater each day from twenty cities and counties, HRSD has eliminated the discharge of untreated sewage into the waters of Coastal Virginia from the homes and businesses within our region. However, there is more work to be done to further improve water quality as well as preserve our 81-year investment in wastewater infrastructure.

The Governor-appointed, eight-member HRSD Commission approved this Fiscal Year 2023 budget at its regular meeting on May 24, 2022. The Commission and the HRSD staff worked diligently to balance our focus on stewardship of our ratepayers' hard earned dollars with our mission of stewardship of the waters of the Hampton Roads. The cost of wastewater treatment continues to rise as historic inflation is impacting every sector of the economy. However, wastewater treatment is still a bargain in Hampton Roads, with the typical household paying about \$1.28 per day for this essential service, protecting public health and our treasured local waterways.

HRSD's Approved Integrated Plan

The regional sewer system, although never designed to handle storm water, fills with rainwater runoff, groundwater and tidal water during larger storms. At times, the regional system fills beyond capacity and overflows onto local streets. While these occasional sanitary sewer overflows have minimal impact on water quality, the U.S. Environmental Protection Agency (EPA) has made minimizing these types of events a national priority. More recently, the EPA has shifted to a more prioritized "one water" approach through integrated planning. In December 2018, Congress passed the bipartisan [H.R. 7279](#) which was signed by the President in January 2019. This bill amended the Federal Water Pollution Control Act "***to provide for an integrated planning process, to promote green infrastructure, and for other purposes.***" This new law codifies the integrated planning process HRSD has already been using to prioritize our investments in clean water mandates. HRSD remains committed to eliminating system overflows; however, the impact of those transient events on local water quality is minimal and the benefits nearly unperceivable. With the various water-related challenges facing Hampton Roads and the Commonwealth, it appears there could be significant benefit from HRSD investing in additional treatment processes to treat water to meet drinking water standards as soon as possible, even before that becomes a regulatory requirement. HRSD's SWIFT program will treat water to meet drinking water standards and use it to recharge the groundwater aquifer, providing a sustainable source of groundwater, slowing the rate of land subsidence due to over withdrawal of the groundwater, blocking salt water intrusion with a pressurized fresh water barrier and practically eliminating HRSD nutrient discharges to the York, James and Elizabeth Rivers.

With SWIFT's significant environmental benefits, HRSD proposed prioritizing SWIFT and implementing two phases of high priority wet weather projects in our Integrated Plan. EPA agreed and approved our plan on February 8, 2022. The key components include:

- \$250 million Rehabilitation Action Plan by 2025
- \$200 million on High Priority Wet Weather Projects from 2020 to 2030 to remove 47% of modeled SSO volume

- \$200 million on additional High Priority Wet Weather Projects from 2031 to 2040 to remove an additional 22% of modeled SSO volume for a total of 69% reduction
- SWIFT through 2032
- \$20 million in microbial source tracking through 2040

Chesapeake Bay Restoration

The Federally mandated requirement to reduce the amount of nutrients that HRSD's treatment plants discharge into the Chesapeake Bay has also required a significant investment in infrastructure and process improvements. The investments by HRSD along with all of Virginia's wastewater treatment plants in the Bay watershed have resulted in Virginia meeting the 2025 goal for nutrient reductions from wastewater treatment plants a full seven years ahead of the 2025 target date ([Chesapeake Bay Foundation's 2017 Virginia Midpoint Assessment](#)). Unfortunately, that is not enough, and the Commonwealth has focused efforts on removing more nutrients from the HRSD wastewater facilities to meet statewide commitments required in the upper portions of the Bay, particularly in the Potomac River watershed, and to offset delays in meeting nutrient reduction goals largely in unregulated sectors such as agriculture. As a result, the General Assembly passed legislation creating the Enhanced Nutrient Removal Certainty Program during the 2021 Special Session. This legislative mandate commits HRSD to invest nearly \$2 billion in nutrient removal and related treatment upgrades, with a major portion by 2026 and additional amounts by 2032. These projects, many of which HRSD planned to accomplish, are now critically needed over a more compressed timeline, reducing HRSD's flexibility in implementing the most cost-effective strategies for compliance with its James River aggregate nutrient wasteload allocations and potentially increasing the overall costs to meet the compressed compliance schedule. As a result of this combination of state-controlled factors, HRSD ratepayers will be carrying a disproportionately high percentage of the cost for the entire Commonwealth to accomplish its nutrient reduction goals by the 2026 target date under US EPA oversight.

Pursuing Innovative Solutions to Reduce Costs and Protect Water Quality

HRSD continues to lead international research efforts to reduce the cost of removing nutrients from wastewater and to intensify treatment processes. HRSD's research work is leveraged through partnerships with leading universities and other innovative wastewater utilities throughout the world. Putting the knowledge gained into practice has already yielded a significant return on our investment by reducing operational costs for nutrient removal as well as minimizing the capital investment required to construct new systems. A recent estimate of the value of this research found that implementation of these practices has kept energy and chemical costs from rising nearly \$40 million over the past 10 years.

Throughout HRSD's history, changing regulations have required development and implementation of innovative solutions to meet new standards in order to protect and restore the quality of the waters of Hampton Roads. Treatment processes have progressed from primary, to secondary, to our current advanced nutrient removal processes. Each regulatory change has required significant investment in new treatment processes. Under current regulations, the treated water HRSD discharges to area waterways is nearly clean enough to drink and substantially cleaner than the waterways themselves. With the addition of a few more treatment processes, HRSD can produce water that exceeds drinking water standards, likely to be the ultimate regulatory mandate at some point in the future.

HRSD development and demonstration of mainstream partial denitrification-anammox (PdNA) has been quite promising. This group of technologies has the potential to provide very significant operational and capital cost savings. Our research goes back to the 2012 timeframe with pilot testing at the Chesapeake-Elizabeth Treatment Plant Biological Nutrient Removal Pilot Facility. Since 2019, this technology has been operating within the full-scale York River Treatment Plant denitrification filters, arguably the first plant in the world (and even now probably one of only two plants in the world) to be removing a significant portion of the influent ammonia load through the anammox pathway. In March 2022, the first demonstration tank for PdNA in a Moving media Integrated Fixed film Activated Sludge (MIFAS) configuration was placed in service at the James River Treatment Plant (JRTP). Methanol addition

should begin in May following a few weeks of biofilm carrier wetting and troubleshooting construction and startup issues. Based on encouraging pilot testing results, we expect to observe evidence of anammox establishment on the biofilm carriers within 3-4 months and then continued increases in anammox activity over the subsequent year. Additional steps related to PdNA at JRTP include upgrading one tank with fixed media IFAS and the remaining seven tanks with MIFAS, all of which should be completed by the end of summer 2022. The full-scale SWIFT upgrade at JRTP includes a moving bed biofilm reactor (MBBR) that will be configured to do polishing PdNA. This is now in detailed design and part of the larger design-build project. Other planning for PdNA at HRSD includes evaluation of the upgrade and expansion of Nansemond Treatment plant using the MIFAS approach, and this would represent both capital and operational cost savings compared to the currently scoped project.

Financing a Sustainable Water Future

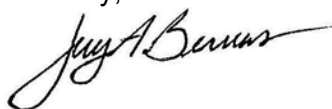
With 71% of HRSD's \$3.1 billion ten-year CIP regulatory required, HRSD must continue to raise rates and seek the lowest cost of capital to finance this required infrastructure. HRSD is the largest borrower in the Commonwealth of Virginia Clean Water Revolving Loan Funds (VCWRLF) issued by the Department of Environmental Quality (DEQ) and the Virginia Resources Authority (VRA). VCWRLF is a federally subsidized program that offers up to at 1.5% subsidy for 20-year loans. Since HRSD cannot be larger than 30% of VRA's debt portfolio and HRSD's financing needs are larger than what they can provide, HRSD also secured a \$1.05 billion in Water Infrastructure Finance and Innovation Act (WIFIA) programmatic loans for SWIFT. Two out of three tranches totaling about \$700 million are locked in at a weighted average rate of 1.78% for 34 years. Compared to current market rates, VCWRLF and WIFIA will save our ratepayers over \$600 million in interest compared to market rates. HRSD is also applying for Water Quality Improvement Fund (WQIF) grants for our nutrient reduction projects, which now include conveyance projects. The WQIF reimburses for a portion of the design and construction costs, but this is subject to funding availability. To ensure HRSD remains financially sustainable into the future, we developed a sophisticated twenty-year financial forecast and publish it annually. This forecast uses projected rate increases, capital spending, debt service, inflation assumptions and other financial variables to ensure our debt service coverage ratio is in-line with similarly rated, strong AA peers.

The Community's Role

Our ratepayers can help control their costs by helping us control ours. Ensuring storm water runoff from downspouts, area drains, and sump pumps is not directed to the sanitary sewer system, and ensuring privately owned service piping is well maintained and leak free will reduce the amount of water entering the sewer system. This ultimately lowers our costs to pump and treat the region's wastewater. Collecting fats, oils and grease in a container for disposal in the trash, as opposed to pouring them down the drain, reduces wastewater system maintenance and operating costs. Proper disposal of unused medications (and other substances) prevents them from reaching our treatment plants, which are not designed for removal of such substances. Our ratepayers can make a difference by not flushing unused medications down the sink or the toilet. Every flush counts.

As we reflect on nearly 81 years of protecting public health and the waters of Hampton Roads, we remember the mandate so boldly declared by those environmentally concerned Virginians in 1940. It was their foresight that allows us to enjoy the waters of Hampton Roads today. It will take our continued innovation, investment and foresight to ensure future generations will inherit clean waterways and be able to keep them clean.

Sincerely,



Jay A. Bernas, MBA, PE
General Manager

Principal Officials

May 24, 2022

COMMISSIONERS

Frederick N. Elofson, CPA, Chair

Stephen C. Rodriguez, Vice-Chair

Michael E. Glenn

Vishnu K. Lakdawala, PhD

Willie Levenston, Jr.

Nancy J. Stern

Elizabeth A. Taraski, PhD

Ann W. Templeman

COMMISSION SECRETARY

Jennifer L. Cascio

SENIOR STAFF

Jay A. Bernas, MBA, PE
General Manager

(Vacant)
Director of Finance/CFO
and Treasurer

Charles B. Bott, PhD, PE,
BCEE
Director of Water Technology
And Research

Donald C. Corrado
Director of Information Technology

Steven G. de Mik, MBA, CPA
Director of Operations

Dorissa Pitts-Paige, PHR,
IPMA-SCP, SHRM-SCP
Director of Talent Management

Bruce W. Husselbee, PhD, PE, DBIA
Director of Engineering

Paula A. Hogg
Director of Water Quality

Leila Rice, APR
Director of Communications

COUNSEL

Sands Anderson, PC
General Counsel

AquaLaw, PLC
Special Counsel

Norton Rose Fulbright US, LLP
Bond Counsel

Key Facts

Service Area and Operations

Date Established	November 5, 1940
Communities Served	20 communities encompassing 4,998 square miles HRSD is a political subdivision of the Commonwealth of Virginia, created for the specific purpose of water pollution abatement in Hampton Roads by providing a system of interceptor mains and wastewater treatment plants.
Population Served	About 1.9 million, nearly one-fifth of Virginia's population, reside in HRSD's service area.

Operation and Facilities

No. of Positions (FY-2023)	878
Miles of Interceptor Systems	540 Miles
Wastewater Treated	154 million gallons per day average
Wastewater Capacity	225 million gallons per day average

Financial Information

Bond Ratings

Ratings Agency	Senior Debt	Subordinate Long-term	Subordinate Short-term
Standard & Poor's	AA+	AA+	A-1+
Fitch Ratings	AA+	AA	F1+
Moody's Investors Service	Aa1	Aa1	n/a

Operating Budget (FY-2023)	\$387,849,000
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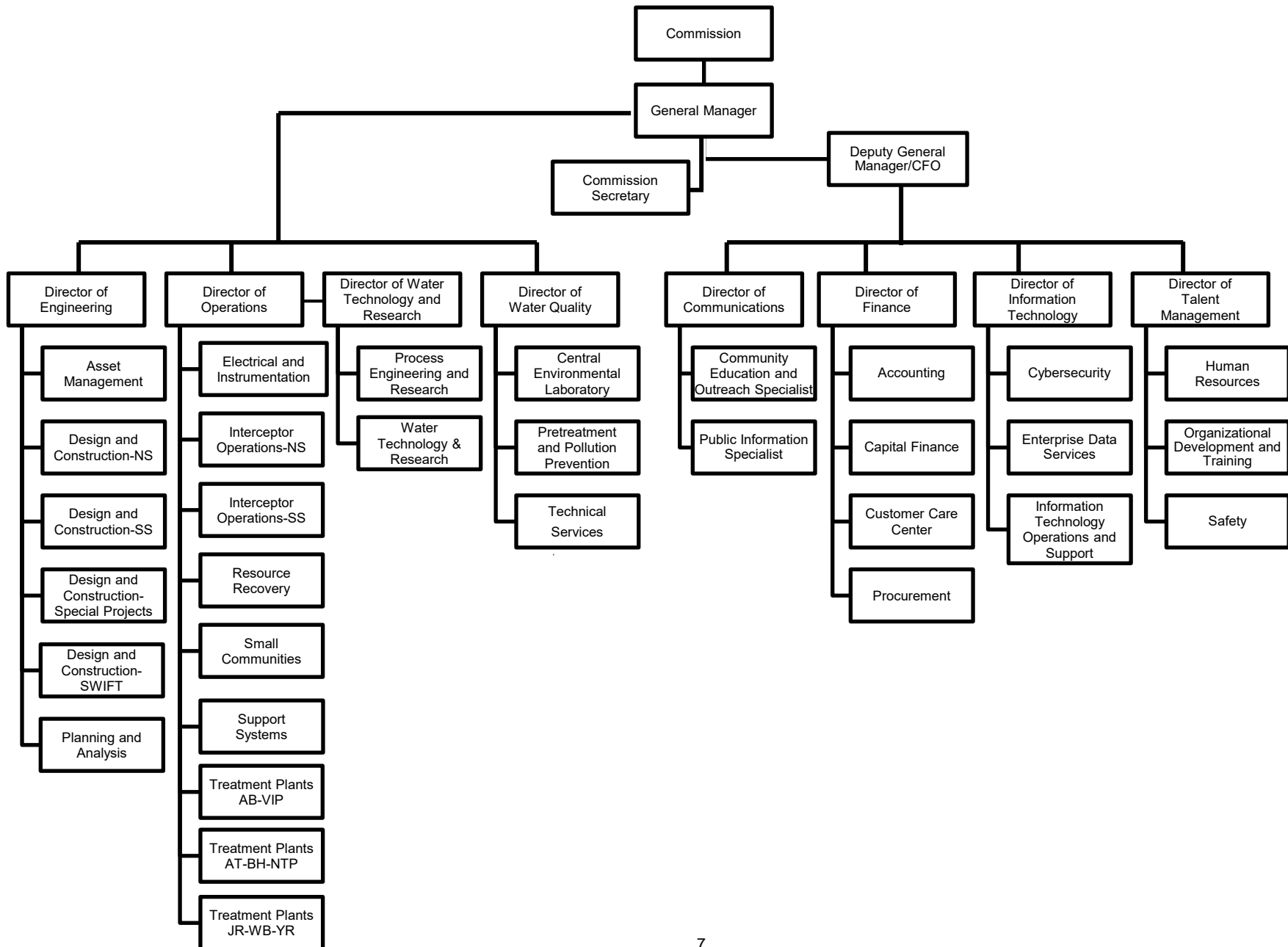
HRSD Service Area



10/2020

HRSD Organization Chart

July 1, 2022



History of HRSD

HRSD can trace its beginnings to 1925 when the Virginia Department of Health condemned a large oyster producing area in Hampton Roads. The closure resulted in the Virginia General Assembly creating in 1927 a "Commission to Investigate and Survey the Seafood Industry of Virginia." Other studies recommended a public body to construct and operate a sewage system in the area. HRSD was named after Hampton Roads, a ship anchorage used for five centuries located near the convergence of the James, Elizabeth and Nansemond Rivers, before they flow into the Chesapeake Bay in southeastern Virginia.

In 1934, the Virginia General Assembly created the Hampton Roads Sanitation Disposal Commission with instructions to plan the elimination of pollution in Hampton Roads. Recommendations were made to the General Assembly, which resulted in the Sanitary Districts Law of 1938, along with "an Act to provide for and create the Hampton Roads Sanitation District." This Act required the qualified voters within HRSD to decide in a general election on November 8, 1938, if they favored creation of such a District. This referendum failed to gain a majority by about 500 votes out of nearly 20,000 votes cast. This led to a revision of the Act and another referendum was held on November 5, 1940, which resulted in a majority vote for the creation of the Hampton Roads Sanitation District.

The Enabling Act provides for HRSD to operate as a political subdivision of the Commonwealth of Virginia for the specific purpose of water pollution abatement in Hampton Roads by providing a system of interceptor mains and wastewater treatment plants. Its affairs are controlled by a Commission of eight members appointed by the Governor for four-year terms. Administration is under the direction of a General Manager, supported by department directors and their staffs.

HRSD began operations on July 1, 1946, using facilities acquired from the United States Government. The Warwick County Trunk Sewer, HRSD's first construction project, began on June 26, 1946, and was funded by HRSD's \$6.5 million Primary Pledge Sewer Revenue Bonds, dated March 1, 1946. The first treatment plant, the Army Base Plant, began operation on October 14, 1947. Since that time, the facilities of HRSD have grown to provide sanitary sewer service to all major population centers in southeastern Virginia. The population served has increased from nearly 288,000 in 1940 to about 1.7 million in 2020.

Throughout its rich history HRSD has earned many of its industry's most prestigious awards. This tradition continued as the National Association of Clean Water Agencies (NACWA) presented Peak Performance Awards for outstanding compliance with National Pollutant Discharge Elimination System (NPDES) permits to the following HRSD treatment plants during the year ended June 30, 2021: Atlantic—Platinum Award (6 consecutive years of compliance), Boat Harbor—Platinum (19 consecutive years), James River—Platinum 7 consecutive years), Nansemond—Platinum (19 consecutive years), Virginia Initiative Plant—Platinum (25 consecutive years), Williamsburg—Platinum (26 consecutive years) and York River—Platinum (13 consecutive years).

Additional awards and honors received during the year ended June 30, 2021 include the Water Research Foundation (WRF) Outstanding Subscriber Award for Applied Science; The American Council of Engineering Companies (ACEC) National Grand Award for the nutrient reduction improvements project at the Virginia Initiative Plant) and the Elizabeth River Project's Sustained Distinguished Performance Award.

Rate Schedules

WASTEWATER TREATMENT RATE SCHEDULE

<u>Service</u>	<u>FY-2023</u>		<u>FY-2022</u>	
Flow (monthly basis)				
Per CCF *	\$	6.97	\$	6.39
Minimum charge (per day)		0.30		0.30
Surcharge, per milligrams/liter per CCF	<u>In Excess of</u>		<u>In Excess of</u>	
Biochemical Oxygen Demand (BOD)	297 mg/L	\$ 0.000185	297 mg/L	\$ 0.000176
Total Suspended Solids (TSS)	282 mg/L	0.000611	282 mg/L	0.000584
Total Phosphorus (TP)	7 mg/L	0.009531	7 mg/L	0.010050
Total Kjeldahl Nitrogen (TKN)	57 mg/L	0.002705	57 mg/L	0.002660
Surcharge, per 100 pounds				
BOD	297 mg/L	\$ 2.97	297 mg/L	\$ 2.83
TSS	282 mg/L	9.79	282 mg/L	9.34
TP	7 mg/L	152.67	7 mg/L	160.99
TKN	57 mg/L	43.33	57 mg/L	42.61
Other Approved Hauled Wastes (per gallon)	\$	0.1812	\$	0.1717
Fats, Oils and Grease (FOG) (per gallon)	\$	0.3339	\$	0.2737
Town Wholesale Treatment (per 1000 gallons)	\$	3.55	\$	3.55
Residential flat rate (per day)	\$	1.93	\$	1.74

* CCF = 100 Cubic Feet (approximately 748 gallons)

VOLUME BASED FACILITY RATE SCHEDULE

<u>Meter Size</u>	<u>FY-2023</u>	<u>FY-2022</u>
5/8 Inch	\$ 2,285	\$ 2,055
3/4 Inch	4,210	4,210
1 Inch	7,410	7,410
1 ½ Inch	17,590	16,645
2 Inch	34,415	31,465
3 Inch	88,570	80,405
4 Inch	173,245	156,530
6 Inch	445,910	400,625
8 Inch	872,130	780,840
10 Inch	1,467,435	1,310,665
12 Inch	2,244,900	2,001,460
14 Inch	3,215,910	2,863,155
16 Inch	4,390,660	3,904,635

SMALL COMMUNITIES RATE SCHEDULE

<u>Flow (monthly basis per 1,000 gallons)</u>	<u>FY-2023</u>	<u>FY-2022</u>
Accomack	\$ 15.13	\$ 14.28
King William	15.37	14.54
Mathews	15.13	14.28
Middlesex/Urbanna	15.13	14.28
Surry	15.13	14.28
West Point	15.13	14.28
Residential flat rate (per day)		
Accomack	\$ 2.02	\$ 1.90
King William	2.05	1.94
Mathews	2.02	1.90
Surry	2.02	1.90
Urbanna	2.02	1.90
West Point	2.02	1.90
Minimum charge - metered accounts (per day)	\$ 0.30	\$ 0.30

FEES

	<u>FY-2023</u>	<u>FY-2022</u>
Damaged meter/antenna (plus cost of meter/antenna)	\$ 250	\$ 250
Damaged lock	100	100
Service restoration	100	100
Meter reading (customer-owned meter)	75	75
Inaccessible meter	50	50
Access card replacement	25	25
Returned payments	25	25
Delinquency service trip	15	15
Account documentation	10	10
Deduction meter	2	2

Reader's Guide to the Annual Budget

PURPOSE

The Annual Budget is an instrument that sets HRSD's budgetary policy and authorization to raise revenues and spend funds each fiscal year. The development of the Annual Budget is guided by HRSD's mission and vision statements:

- HRSD's mission is to protect public health and the waters of Hampton Roads by treating wastewater effectively.
- HRSD's vision is future generations will inherit clean waterways and be able to keep them clean.

ANNUAL BUDGET OVERVIEW

HRSD's Annual Budget contains the following sections:

Financial Forecast

This section provides a high level, 20-year forecast of projected wastewater treatment rate increases, operating revenues and expenses, capital improvements and related funding sources, amounts contributed to and fiscal year-end balances of cash and investment reserves, and selected financial ratios that help to measure the financial health of HRSD.

The forecast is an inflationary based model where trends from past fiscal years and proposed operating budgets are used to forecast future operating needs. Transfers to reserves and to the Capital budget are forecast to be in amounts that are not less than parameters established within HRSD's Financial Policy. Debt service is based on different sources of future funding: Virginia Clean Water Revolving Fund, Water Infrastructure Finance and Innovation Act (WIFIA), interim financing and revenue bonds. Interest rates are based on known rates or historical averages.

Operating Budget

The Operating Budget represents the authorization by the HRSD Commission to spend funds directly related to operating and maintaining HRSD's programs and assets during the fiscal year. This section includes each department's annual operating budgets. Those expenses that are not attributable to a specific department are assigned to "General Expenses." Transfers represent authorization to transfer revenues raised from operations to either the Capital Budget or to various reserves established in HRSD's Financial Policy. The Operating Budget Summary provides the budget by department and major object code classification. Department Budgets and General Expenses, Debt Service and Transfers detail budget expenditures by major object code classification. The number of full-time positions authorized for the fiscal year is provided by department.

Capital Budget

The Capital Budget represents a plan of specific, major capital improvements over a period of ten fiscal years. The Capital Budget is not an approval or appropriation of funds for individual projects. There is no authorization or funding for individual projects until the Commission acts on the specific project. The Commission formally authorizes spending for individual projects throughout a fiscal year and generally upon project initiation.

The Summary Schedule details the funding sources for capital improvements as well as planned expenditures.

A formal, detailed, Capital Improvement Program with more specific project information is available at <https://www.hrsd.com/cip>

HRSD's budget authorizations, capital improvement plans, user rate setting practices and other significant financial practices are guided by HRSD's Financial Policy and Revenue Policy. The Financial Policy and Revenue Policy are available at <http://www.hrsd.com/finance>

HRSD's Rate Schedule is available at <http://www.hrsd.com/finance>

BUDGETARY PROCESS

HRSD prepares its Annual Budget under the provisions of its enabling legislation and its Trust Agreement, dated March 1, 2008. In accordance with those provisions, the following process is used to adopt the Annual Budget:

The process begins in late December with the issuance of the Annual Budget Instructions by the General Manager. Each department completes its Operating Budget by March 1 for the General Manager's review.

The HRSD Commission appoints a Finance Committee which typically consists of two Commissioners. The committee meets in early April to review the budgets. The Commission reviews these budgets during its April meeting.

The final Annual Budget, which incorporates the Operating and Capital Budgets, is presented at the May Commission meeting for adoption. The Commission simultaneously adopts the budget and any resulting wastewater rate schedule changes. All rate adjustments must be publically advertised four consecutive weeks before they can take effect.

The HRSD Commission approves any budget amendments during the fiscal year.

BUDGETARY ACCOUNTING AND CONTROL

HRSD operates in accordance with annual operating and capital budgets prepared on a basis of accounting that is different from generally accepted accounting principles.

The Operating Budget is adopted by department, with budgetary controls exercised administratively by management at the department level. The General Manager is authorized to transfer funds among departments without further approval by the Commission. Appropriations

lapse at the end of the fiscal year. Valid, outstanding encumbrances (those for which performance under a contract is expected in the next year) are re-appropriated without further approval by the Commission and become part of the subsequent year's budget.

The Capital Budget represents a ten-year plan. Funds for the Capital Budget are adopted throughout a fiscal year on a project basis. Transfers among projects require approval by the Commission. Appropriations for these budgets continue until the purpose of the appropriation has been fulfilled.

Glossary of Financial Terms

Adjusted Days Cash on Hand: Days Cash on Hand that excludes accrued debt service, the Risk Reserve, the Renewal and Replacement Reserve, and cash budgeted for the CIP in the next fiscal year.

Appropriation: An authorization granted by the Commission to incur obligations for specific purposes. Appropriations are usually limited to amount, purpose and time.

Basis of Accounting: HRSD's financial statements report the financial position and results of operations of HRSD in accordance with generally accepted accounting principles in the United States of America (GAAP).

Bond Ratings: A grade given to bonds that represents a measure of their credit quality. Private independent rating services such as Standard & Poor's, Moody's and Fitch provide these evaluations of a bond issuer's financial strength, or its the ability to pay a bond's principal and interest in a timely fashion.

Capital Improvement Program (CIP): Ten-year plan for major non-recurring facility, infrastructure, or acquisition expenditures that expand or improve HRSD and/or locality assets. Projects included in the CIP include physical descriptions, implementation schedules, year of expenditure cost and funding source estimates, and an indication of HRSD Commission priorities and community benefits

Centum Cubic Feet (CCF): Typical unit in which industrial-consumption of natural gas or water is measured; each CCF being 100 cubic-feet.

CIP Percent Cash Funded: Percent of each year's capital improvement plan funded with cash through transfers from operations. HRSD's Financial Policy requires that at least 15 percent of each year's planned capital improvements be funded with cash. This ratio indicates the amount of capital improvements that are not leveraged.

Days Cash on Hand: Measured by current and non-current unrestricted cash and investments, plus any restricted cash and investments, if available for general system purposes, divided by Operating Expenses, divided by 365.

Debt Service: Amount of money necessary to pay principal and interest on bonds outstanding.

Debt Service as a Percent of Revenues: Total revenues divided by total debt service. This ratio measures the debt service burden compared to total revenues.

Risk Management Reserve: HRSD maintains a self-insurance program for some of its risk exposures. HRSD'S Financial Policy requires HRSD to maintain a Risk Management Reserve as of the end of the fiscal year of not less than 25 percent of projected annual self-insured claims costs for known, retained risks.

Senior Debt Service Coverage: Current-year revenues available for debt service divided by current-year senior lien debt service. This ratio indicates the financial margin to meet current

senior lien debt service with current revenues available. HRSD's Financial Policy requires that Senior Debt Service Coverage will not be less than 1.5 times senior lien debt service. When calculating compliance with this coverage requirement, HRSD may make reasonable adjustments to the net revenues as presented on a basis consistent with generally accepted accounting principles. HRSD's Senior Trust Agreement requires Senior Debt Service Coverage, which is determined by dividing the Income Available for Debt Service by the Maximum Annual Debt Service, will not be less than 1.2 times.

Total Debt Service (Adjusted): Calculated in accordance with HRSD's Subordinate Trust Agreement, the ratio determined by dividing the Net Revenues by annual debt service. In such calculation, funds spent on Locality Assets may be excluded from the calculation of Net Revenues under the circumstances described within the definitions of Net Revenues and Operating Expenses. Annual debt service will be based on actual principal and interest payments during the year (i.e., not accrual based).

Total Debt Service Coverage Ratio (GAAP): Calculated in accordance with HRSD's Senior Trust Agreement, the ratio determined by dividing the Net Revenues by annual debt service. In such calculation, funds spent on Locality Assets are considered an expense. Annual debt service will be based on actual principal and interest payments during the year (i.e., not accrual based).

Trust Agreement: The formal agreement between bond holders, acting through a trustee, and HRSD.

Unrestricted Cash: Unrestricted cash and investments at fiscal year-end that are not earmarked for another purpose.

Financial Forecast



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Operating Budget



Operating Budget

	FY-2023	Adopted FY-2022	Increase/ (Decrease)	Percent Change
Operating Revenues				
Wastewater Treatment Charges	\$ 374,842,000	\$ 344,370,000	\$ 30,472,000	9%
Miscellaneous	1,284,000	1,190,000	94,000	8%
Total-Operating Revenue	376,126,000	345,560,000	30,566,000	9%
Non-Operating Revenues				
Wastewater Facility Charges	7,150,000	7,320,000	(170,000)	(2%)
Investment Earnings	1,570,000	1,210,000	360,000	30%
Build America Bond Subsidy	2,026,000	2,095,000	(69,000)	(3%)
Other	977,000	1,310,000	(333,000)	(25%)
Total Non-Operating Revenues	11,723,000	11,935,000	(212,000)	(2%)
Total Revenues and Transfers	\$ 387,849,000	\$ 357,495,000	\$ 30,354,000	8%
Operating Appropriations				
General Management	\$ 456,457	\$ 465,516	\$ (9,059)	(2%)
Communications	640,511	456,003	184,508	40%
Finance	15,845,731	15,303,085	542,646	4%
Information Services	17,783,194	16,711,258	1,071,935	6%
Talent Management	2,614,742	2,532,647	82,095	3%
Operations	117,539,113	111,349,610	6,189,503	6%
Engineering	8,116,929	7,108,883	1,008,046	14%
Water Quality	16,577,131	15,896,141	680,990	4%
General Expenses	9,069,227	8,639,727	429,500	5%
Total-Operating Appropriations	188,643,034	178,462,870	10,180,164	6%
Appropriations for Debt Service and Transfers				
Debt Service	69,533,000	64,308,209	5,224,791	8%
Transfer to CIP	129,412,966	114,463,921	14,949,046	13%
Transfer to Risk Management Reserve	260,000	260,000	-	0%
Total Appropriations for Debt Service and Transfers	199,205,966	179,032,130	20,173,837	11%
Total Appropriations	\$ 387,849,000	\$ 357,495,000	\$ 30,354,001	8%

Operating Budget Summary

	General		Finance	Information	Talent	Operations	Engineering	Water	General
	Management	Communications		Technology	Management			Quality	Expenses
Personal Services	\$ 304,693	\$ 360,261	\$ 6,545,190	\$ 5,463,613	\$ 1,713,691	\$ 36,510,683	\$ 5,109,944	\$ 8,740,032	\$ (1,459,809)
Fringe Benefits	79,264	122,250	2,573,254	1,778,021	585,149	15,007,975	1,782,671	3,448,350	1,136,636
Materials & Supplies	10,000	45,000	104,205	1,458,100	68,000	8,805,130	25,050	1,768,500	26,000
Transportation	12,000	8,500	7,650	38,700	22,600	1,658,041	15,420	27,700	-
Utilities	-	-	312,000	1,300,000	-	12,809,119	-	2,700	525,000
Chemical Purchases	-	-	-	-	-	12,472,034	-	-	-
Contractual Services	20,000	95,000	6,047,609	6,124,260	22,000	21,662,969	998,200	1,889,500	8,031,950
Major Repairs	-	-	-	1,247,000	-	7,174,970	-	76,000	-
Capital Assets	-	-	-	-	-	447,684	-	-	-
Miscellaneous Expense	30,500	9,500	255,823	373,500	203,302	990,508	185,643	624,350	809,450
Operating Appropriations	\$ 456,457	\$ 640,511	\$ 15,845,731	\$ 17,783,194	\$ 2,614,742	\$ 117,539,113	\$ 8,116,929	\$ 16,577,131	\$ 9,069,227

Full-time Positions:

Current	2	3	102	51	17	533	45	119
Changes	0	1	1	3	1	(9)	8	1
Budgeted	2	4	103	54	18	524	53	120

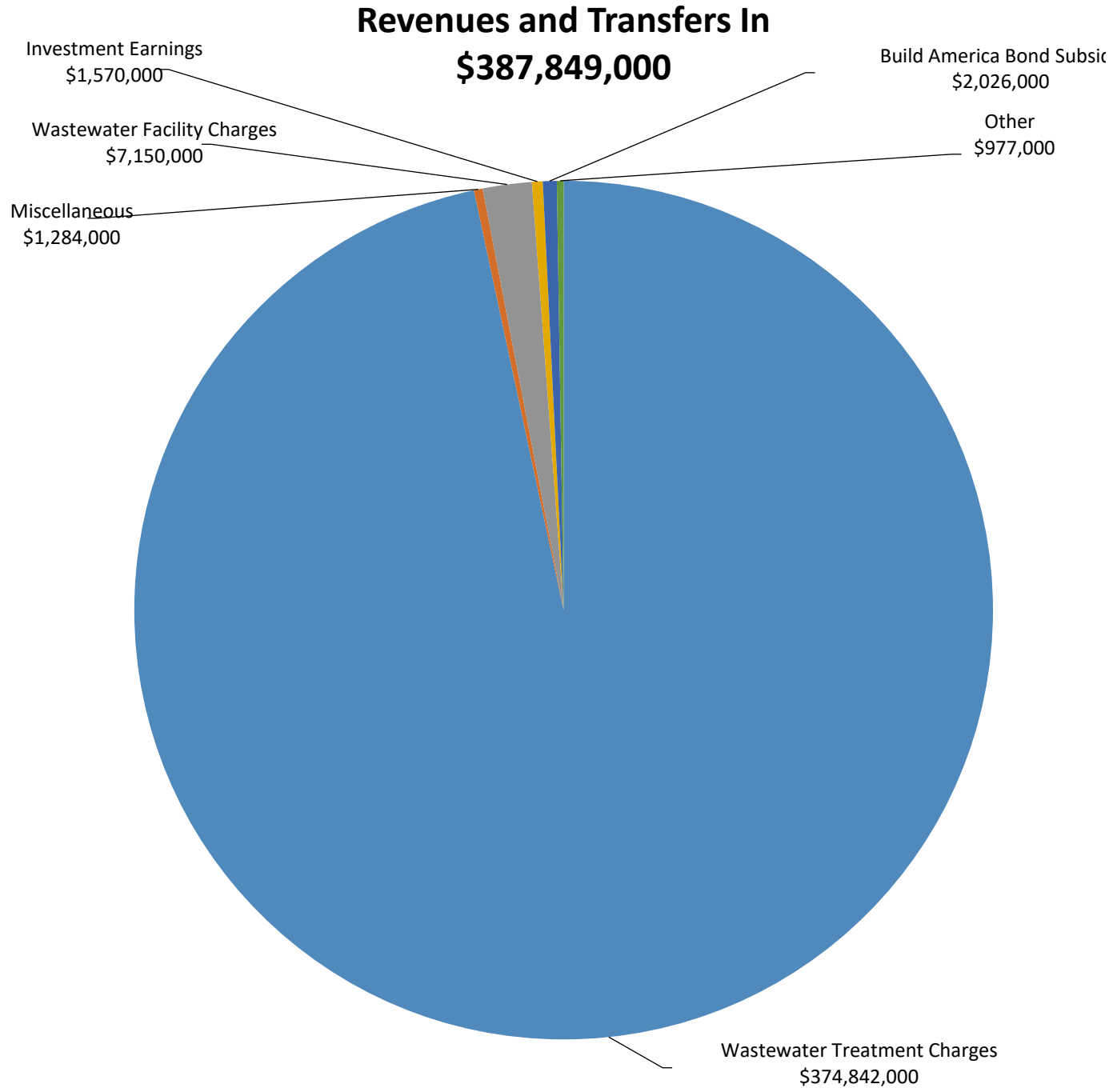
Operating Budget Summary

	FY-2023	Percent of Budget	FY-2022 Budget	Increase/ Decrease	Percent Inc/(Dec)
Personal Services	\$ 63,288,297	16.3%	\$ 62,776,055	\$ 512,242	1%
Fringe Benefits	\$ 26,513,570	6.8%	25,156,746	1,356,824	5%
Materials & Supplies	\$ 12,309,985	3.2%	8,756,428	3,553,557	41%
Transportation	\$ 1,790,611	0.5%	1,498,806	291,805	19%
Utilities	\$ 14,948,819	3.9%	12,289,261	2,659,558	22%
Chemical Purchases	\$ 12,472,034	3.2%	8,651,935	3,820,099	44%
Contractual Services	\$ 44,891,488	11.6%	44,475,594	415,894	1%
Major Repairs	\$ 8,497,970	2.2%	11,349,820	(2,851,850)	(25%)
Capital Assets	\$ 447,684	0.1%	470,000	(22,316)	(5%)
Miscellaneous Expense	\$ 3,482,576	0.9%	3,038,225	444,351	15%
Operating Appropriations	<u>\$ 188,643,034</u>	48.6%	<u>\$ 178,462,870</u>	<u>\$ 10,180,163</u>	6%
Debt Service Costs	\$ 69,533,000	17.9%	64,308,209	5,224,791	8%
Transfer to CIP	\$ 129,412,966	33.4%	114,463,921	14,949,046	13%
Transfer to Risk Management	\$ 260,000	0.1%	260,000	-	0%
Appropriations for Debt Service and Transfers	<u>\$ 199,205,966</u>	51.4%	<u>\$ 179,032,130</u>	<u>\$ 20,173,837</u>	11%
	<u>\$ 387,849,000</u>	100.0%	<u>\$ 357,495,000</u>	<u>\$ 30,354,000</u>	8%

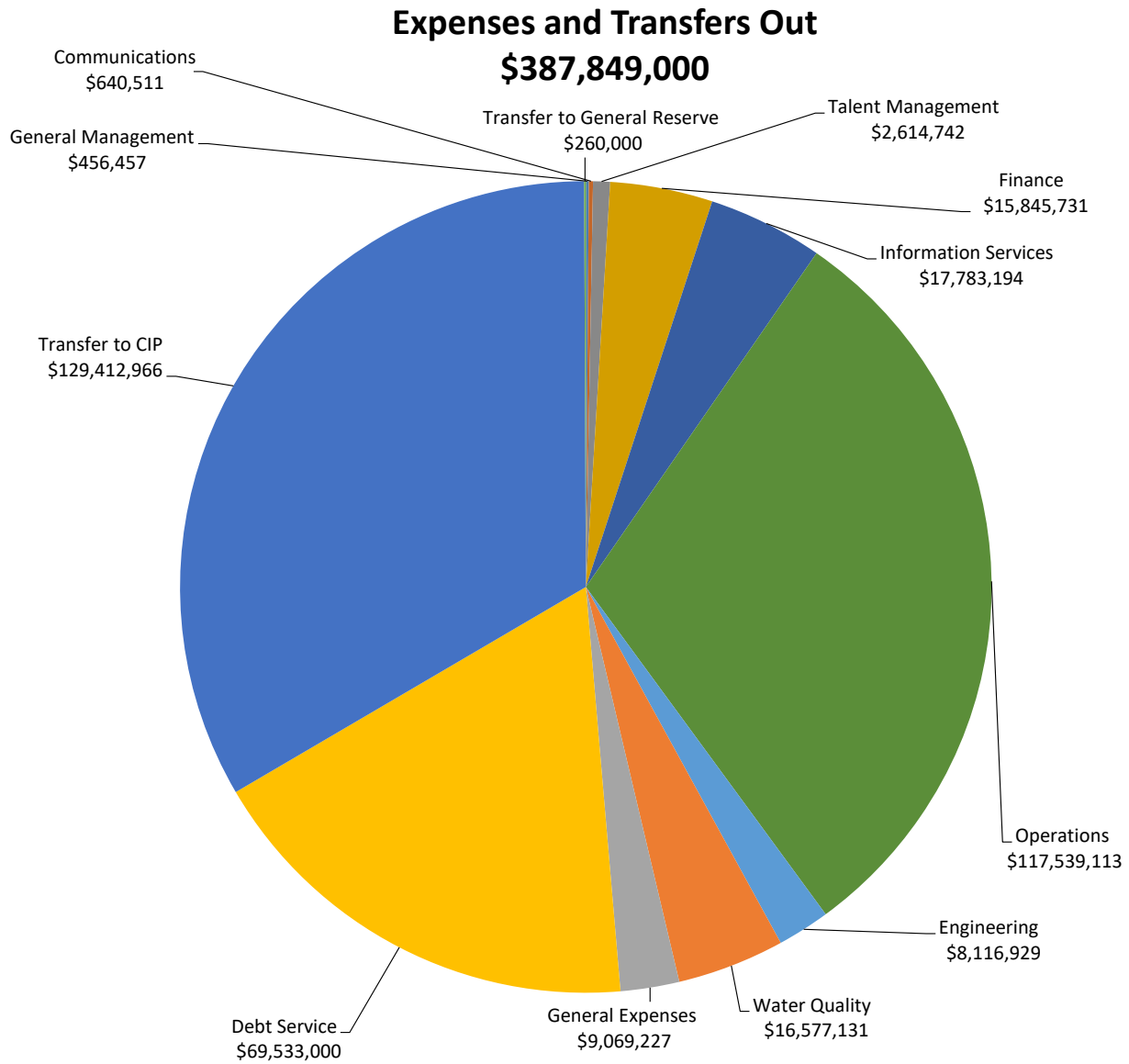
Full-time Positions:

Current	872
Changes	6
Budgeted	878

Operating Budget Charts



Operating Budget Charts



General Management

The General Manager supervises the department directors and the Commission Secretary. The Commission Secretary provides administrative support to the General Manager as well as the HRSD Commission.

Expenditure Budget

	FY-2023 Budget	FY-2022 Budget	Increase/ (Decrease)	Percentage Change
Personal Services	\$ 304,693	\$ 342,585	\$ (37,892)	(11%)
Fringe Benefits	79,264	83,431	(4,167)	(5%)
Material & Supplies	10,000	10,000	-	0%
Transportation	12,000	7,000	5,000	71%
Utilities	-	-	-	0%
Chemical Purchases	-	-	-	0%
Contractual Services	20,000	9,000	11,000	122%
Major Repairs	-	-	-	0%
Capital Assets	-	-	-	0%
Miscellaneous	30,500	13,500	17,000	126%
Total	\$ 456,457	\$ 465,516	\$ (9,059)	(2%)

Positions

	Grade	Adopted FY-2022	Adjustments	Final FY-2022	Adjustments	FY-2023
General Manager		1		1		1
Commission Secretary	7	1		1		1
Total		2	0	2	0	2

Communications

The Communications Department supports HRSD's mission and vision through public outreach, community engagement, educational programming and environmental and locality partnerships. The department manages communications strategy, internal and external communications, media relations and branding through numerous channels and resources - including publications, traditional media, social media and web, graphic design, speaking engagements, tours and special events.

Expenditure Budget

	FY-2023 Budget	FY-2022 Budget	Increase/ (Decrease)	Percentage Change
Personal Services	\$ 360,261	\$ 295,334	\$ 64,926	22%
Fringe Benefits	122,250	94,169	28,082	30%
Material & Supplies	45,000	45,000	-	0%
Transportation	8,500	8,500	-	0%
Utilities	-	-	-	0%
Chemical Purchases	-	-	-	0%
Contractual Services	95,000	-	95,000	0%
Major Repairs	-	-	-	0%
Capital Assets	-	-	-	0%
Miscellaneous	9,500	13,000	(3,500)	(27%)
Total	\$ 640,511	\$ 456,003	\$ 184,508	40%

Positions

	Grade	Adopted FY-2022	Adjustments	Final FY-2022	Adjustments	FY-2023
Director of Communications	12	1		1		1
Public Information Specialist	6	1		1	1	2
Community Education and Outreach Specialist	6	1		1		1
Total		3	0	3	1	4

Finance Department

The Finance Department is responsible for HRSD's general financial and business functions, including financial reporting, investment portfolio, debt and risk management and customer billing. The Accounting Division handles fiscal affairs such as preparing statements, budgets, management reports and payroll. The Capital Finance Division is responsible for planning and financing the Capital Improvement Program, debt management and compliance, and is the functional lead for the Enterprise Resource Process system. The Customer Care Center Division handles billing, payments, collections, maintenance of customer accounts and liaison with HRSD's customers. The Procurement Division is responsible for purchasing, renting, leasing or otherwise acquiring goods, professional and non-professional services, and certain construction services, managing supplier relationships and disposing of surplus property.

Expenditure Budget

	FY-2023 Budget	FY-2022 Budget	Increase/ (Decrease)	Percentage Change
Personal Services	\$ 6,545,190	\$ 6,290,168	\$ 255,022	4%
Fringe Benefits	2,573,254	2,526,643	46,612	2%
Material & Supplies	104,205	104,205	-	0%
Transportation	7,650	8,100	(450)	(6%)
Utilities	312,000	323,000	(11,000)	(3%)
Contractual Services	6,047,609	5,778,819	268,790	5%
Capital Assets	-	-	-	0%
Miscellaneous	255,823	272,150	(16,327)	(6%)
Total	\$ 15,845,731	\$15,303,085	\$ 542,646	4%

Positions

	Grade	Adopted FY-2022	Adjustments	Final FY-2022	Adjustments	FY-2023
Director of Finance	12	1		1		1
Chief of Accounting & Finance	11	1		1		1
Chief of Capital Finance	11	0	1	1		1
Chief of Compliance & Risk	11	1		1		1
Chief of Customer Care Center	11	1		1		1
Chief of Procurement	11	1		1		1
Business Process Engineer	10	0	1	1		1
Accounting Manager	9	3		3		3
Capital Program Manager	9	1	(1)	0		0
Customer Technology Manager	9	2		2		2
Customer Care Manager	9	2	1	3		3
Business Analyst	8	3	1	4		4
Financial Analyst	8	2		2		2
Grant Administrator	8	0		0	1	1
Procurement Analyst	8	2		2		2
Accounts Payable Supervisor	7	1		1		1
Capital Program Analyst	7	1	(1)	0		0
Customer Care Supervisor	7	4		4		4
Delinquency Management Analyst	7	1		1		1
Project Management System Information Analyst	7	0	1	1		1
Accounts Receivable Specialist	6	2		2		2
Payroll Specialist	6	1		1		1
ProCard & Contract Administrator	6	1		1		1
Procurement Specialist	6	5		5		5
Accounting Coordinator	4	1		1		1
Accounts Payable Coordinator	4	0	3	3		3
Accounts Receivable Technician	4	3		3		3
Customer Care Administrative Coordinator	4	1		1		1
Customer Care Coordinator	4	4		4		4
Procurement Coordinator	4	1		1		1
Account Investigator	3	11	(1)	10		10
Accounts Payable Associate	3	3	(3)	0		0
Customer Care Account Representative	3	38	(2)	36		36
Procurement Administrative Assistant	3	2		2		2
Mail Processing Clerk	2	2		2		2
Total		102	0	102	1	103

Information Technology Department

The Information Technology Department is responsible for HRSD's computer systems, communication systems, network systems, cyber security and data management functions. The Information Technology Operations Division assists HRSD departments in achieving their missions by ensuring all required hardware, storage and network devices are accessible and available to support all business and operational requirements. The Cybersecurity Division is responsible for ensuring the safety, integrity and availability of all HRSD information systems and business data. The Enterprise Data Services Division is responsible for data management, storage and all software supporting HRSD operations. Industrial Controls Division personnel also are responsible for programming industrial controls and automation at HRSD operation facilities.

Expenditure Budget

	FY-2023 Budget	FY-2022 Budget	Increase/ (Decrease)	Percentage Change
Personal Services	\$ 5,463,613	\$ 5,054,686	\$ 408,927	8%
Fringe Benefits	1,778,021	1,652,512	125,509	8%
Material & Supplies	1,458,100	1,099,750	358,350	33%
Transportation	38,700	12,700	26,000	205%
Utilities	1,300,000	1,176,000	124,000	11%
Contractual Services	6,124,260	6,292,500	(168,240)	(3%)
Major Repairs	1,247,000	1,125,000	122,000	11%
Miscellaneous	373,500	298,110	75,390	25%
Total	\$ 17,783,194	\$ 16,711,258	\$ 1,071,935	6%

Positions

	Grade	Adopted FY-2022	Adjustments	Final FY-2022	Adjustments	FY-2023
Director of Information Technology	12	1		1		1
Chief Information Security Officer	11	1		1		1
Chief of Enterprise Data Services	11	1		1		1
Chief of IT Operations and Support	11	0		0	1	1
Database Administrator	9	3		3		3
Enterprise Architect	9	3		3		3
IT Systems Security Manager	9	1		1		1
Oracle Developer	9	2		2		2
Programming Development Manager	9	1		1		1
Senior Systems Engineer	9	7		7		7
Systems Analysis Manager	9	1		1		1
Cybersecurity Analyst	8	0		0	1	1
Senior Programmer Analyst	8	8		8		8
Senior Systems Analyst	8	5		5		5
SharePoint Web Developer	8	1		1		1
Linux Systems Administrator	8	2		2		2
Unix System Administrator	8	0		0	1	1
IT HelpDesk Supervisor	7	1		1		1
Desktop Support Analyst	6	6		6		6
Systems Analyst	6	1		1		1
Web Portal Programmer	6	1		1		1
Telecommunications Coordinator	5	1		1		1
IT Administrative Coordinator	4	1		1		1
Computer Operator	3	3		3		3
Total		51	0	51	3	54

Talent Management

The Talent Management Department attracts, develops, and retains a talented diverse workforce and ensures employee safety. The Human Resources Division is responsible for recruitment and outreach, new employee onboarding, benefits administration, compensation and classification, employee relations, HRSD's wellness program, workers' compensation, employee records, retirement, and HR policies. The Organizational Development and Training (ODT) Division oversees HRSD's Apprenticeship Program and is dedicated to developing and supporting HRSD's strategic plan and key initiatives to promote training, education, and experiential experiences. The Safety Division is responsible for Occupational Safety & Health Compliance, safety programs, employee safety training, safety records, industrial hygiene monitoring, occupational health screening, safety audits, accident investigations, compliance reporting, and risk management support.

Expenditure Budget

	FY-2023 Budget	FY-2022 Budget	Increase/ (Decrease)	Percentage Change
Personal Services	\$ 1,713,691	\$ 1,620,907	\$ 92,783	6%
Fringe Benefits	585,149	606,870	(21,722)	(4%)
Material & Supplies	68,000	56,500	11,500	20%
Transportation	22,600	27,600	(5,000)	(18%)
Contractual Services	22,000	22,000	-	0%
Capital Assets	-	-	-	0%
Miscellaneous	203,302	198,770	4,532	2%
Total	\$ 2,614,742	\$ 2,532,647	\$ 82,094	3%

Positions

	Grade	Adopted FY-2022	Adjustments	Final FY-2022	Adjustments	FY-2023
Director of Talent Management	12	1		1		1
Chief of Human Resources	11	0	1	1		1
ODT Manager	10	1		1		1
Human Resources Manager	9	1	(1)	0		0
Safety Manager	9	1		1		1
Human Resources Business Analyst	8	1		1		1
Human Resources Business Partner	8	3		3		3
Industrial Hygienist	8	2		2		2
Training Superintendent	8	1		1		1
ODT Resource Specialist	6	1		1		1
Talent Acquisition Specialist	6	0		0	1	1
Safety Technician	5	2		2		2
Human Resources Coordinator	4	2		2		2
Organizational Development & Training Coordinator	4	1		1		1
Total		17	0	17	1	18

Operations Department

The Operations Department is responsible for operating and maintaining HRSD's treatment plants, pump stations, pipelines, buildings and equipment. HRSD provides wastewater treatment services for over 1.7 million people in 20 cities, counties and towns. The department also includes the Division of Water Technology and Research whose primary purpose is to research new technologies with a focus on rapid deployment of innovative solutions and water quality. Services are delivered through 9 divisions. There are three major treatment plant divisions. Services to small communities that are in the HRSD service area are provided by the Small Communities Division (SCD). The SCD operates four smaller treatment plants and the associated sewer collection systems for four counties on the Middle Peninsula and the Town of West Point. The SCD also includes the operation of two treatment plants and the associated sewer collection systems in the County of Surry. Finally, the SCD operates two treatment plants and the associated sewer collection services for the Towns of Nassawadox and Onancock on the Eastern Shore of Virginia. The Electrical and Instrumentation Division supports the electrical and instrumentation maintenance and construction needs of all HRSD facilities as well as programming industrial controls and automation at HRSD facilities. The two Interceptor Divisions operate and maintain over 500 miles of interceptor pipelines and over 100 pump stations ensuring wastewater is conveyed to each treatment plant. The Support Systems Division is responsible for the maintenance of the HRSD fleet, all buildings, operation of two carpentry shops, a full-service machine shop and managing an infrastructure assessment team. The department is also responsible for energy management and research to find innovative, cost-effective ways of managing our energy consumption more effectively.

Expenditure Budget

	FY-2023 Budget	FY-2022 Budget	Increase/ (Decrease)	Percentage Change
Personal Services	\$ 36,510,683	\$ 35,998,001	\$ 512,682	1%
Fringe Benefits	15,007,975	15,394,579	(386,604)	(3%)
Material & Supplies	8,805,130	5,752,726	3,052,404	53%
Transportation	1,658,041	1,385,430	272,611	20%
Utilities	12,809,119	10,347,561	2,461,558	24%
Chemical Purchases	12,472,034	8,651,935	3,820,099	44%
Contractual Services	21,662,969	22,260,313	(597,344)	(3%)
Major Repairs	7,174,970	10,148,820	(2,973,850)	(29%)
Capital Assets	447,684	470,000	(22,316)	(5%)
Miscellaneous	990,508	940,245	50,263	5%
Total	\$117,539,113	\$111,349,610	\$ 6,189,503	6%

Positions

	Grade	Adopted FY-2022	Adjustments	Final FY-2022	Adjustments	FY-2023
Director of Operations	12	1		1		1
Director of Water Technology and Research	12	1		1		1
Chief of Electrical & Instrumentation Division	11	1		1		1
Chief of Interceptor Operations North Shore	11	1		1		1
Chief of Interceptor Operations South Shore	11	1		1		1
Chief of Process Engineering & Research	11	1		1		1
Chief of Treatment	11	3		3		3
Energy Manager	11	1		1		1
Treatment Process Engineer	10	5	1	6		6
Electrical Manager	9	1		1	1	2
Industrial Automation Manager	9	1		1		1
Instrumentation Manager	9	1		1	1	2
Interceptor Engineer	9	2		2		2
Plant Manager	9	1	(1)	0		0
Project Manager	9	3		3		3
Support Systems Manager	9	1		1		1
SWIFT Project Manager	9	1		1		1
Systems Manager	9	2		2		2
Automotive Superintendent	8	1		1		1
Coating, Concrete and Roofing Superintendent	8	1		1		1
Condition Assessment Superintendent	8	1		1		1

Operations Department Positions (continued)

	Grade	Adopted FY-2022	Adjustments	Final FY-2022	Adjustments	FY-2023
Construction Superintendent	8	0	1	1		1
Electrical & Instrumentation Superintendent	8	5		5	1	6
Facility Superintendent	8	1		1	1	2
Industrial Automation Programmer	8	6	1	7		7
Interceptor Superintendent	8	2		2		2
Plant Superintendent	8	17	(1)	16		16
Chief Foreman	7	2		2		2
Chief Maintenance Management	7	2		2		2
Chief Systems Operator	7	2		2		2
Electrical & Instrumentation Process Specialist	7	1		1		1
Electrical & Instrumentation Specialist	7	64		64		64
Interceptor Specialist	7	2		2		2
Lead Operator	7	33	(1)	32	1	33
Operations Support Specialist	7	1		1		1
Automotive Foreman	6	2		2		2
Coatings Inspector	6	2		2		2
Condition Assessment Supervisor	6	1		1		1
Interceptor Foreman	6	7	(1)	6		6
Interceptor Inspector	6	2		2		2
Interceptor Systems Supervisor	6	2		2		2
Machinist Foreman	6	1		1		1
Maintenance Planner	6	7		7	1	8
Pump Station Supervisor	6	2		2		2
Automotive Technician	5	5		5		5
Carpenter	5	4	(1)	3	(1)	2
Equipment Technician	5	3		3		3
Facility Maintenance Technician	5	2		2		2
Interceptor Technician	5	30	(1)	29		29
Machinist	5	2		2		2
Maintenance Operator	5	69	(4)	65	7	72
Plant Operator	5	82	(7)	75	1	76
Automotive Coordinator	4	1		1		1
Heavy Equipment Operator 1	4	19	2	21		21
Materials Operations Coordinator	4	2		2		2
Operations Admin Coordinator	4	1		1		1
Operations Coordinator	4	2		2		2
Plant Administrative Assistant	3	10	(2)	8		8
Utility Administrative Assistant	3	1	(1)	0		0
SCADA Administrative Assistant	3	1		1		1
Interceptor Assistant	2	28		28		28
Maintenance Operations Assistant	2	44	(8)	36	1	37
Facility Assistant	1	1		1		1
Custodian	1	4		4		4
Subtotal - Operations		506	(23)	483	14	497
Small Communities						
Chief of Small Communities	11	0		0	1	1
Systems Manager	9	1		1		1
Systems Superintendent	8	2		2		2
Systems Chief Foreman	7	1	(1)	0		0
Systems Lead Operator	7	3		3		3
Systems Foreman	6	2	1	3		3
Systems Operator	5	12		12		12
Administrative Coordinator	4	1		1		1
Heavy Equipment Operator 1	4	1		1		1
Maintenance Operations Assistant	2	3		3		3
SCD Lab Assistant	2	1		1		1
Subtotal - Small Communities		27	0	27	0	27
Total		533	(23)	510	14	524

Engineering Department

The Engineering Department is responsible for facility planning, design and construction and related support. The Asset Management Division is responsible for the Computerized Maintenance Management System (CMMS), Condition Assessment, and Emergency Management procedures to extend the life of assets at the lowest life cycle cost. The Design and Construction Divisions deliver capital projects in a manner consistent with HRSD's quality standards. The Planning and Analysis Division manages numerous diverse functions including Hydraulic Modeling, Geographic Information System (GIS), Data Analysis and Records Management System and plans the capital infrastructure required to meet the region's future wastewater needs. The department is also responsible for all property and land acquisition to meet the needs of HRSD.

Expenditure Budget

	FY-2023 Budget	FY-2022 Budget	Increase/ (Decrease)	Percentage Change
Personal Services	\$ 5,109,944	\$ 4,439,309	\$ 670,635	15%
Fringe Benefits	1,782,671	1,576,016	206,655	13%
Material & Supplies	25,050	38,547	(13,497)	(35%)
Transportation	15,420	23,270	(7,850)	(34%)
Contractual Services	998,200	912,241	85,959	9%
Major Repairs	-	-	-	0%
Miscellaneous	185,643	119,500	66,143	55%
Total	\$ 8,116,929	\$ 7,108,883	\$ 1,008,045	14%

Positions

	Grade	Adopted FY-2022	Adjustments	Final FY-2022	Adjustments	FY-2023
Director of Engineering	12	1		1		1
Chief of Asset Management	11	1		1		1
Chief of Design & Construction	11	2		2		2
Chief of Design & Construction - Special Projects	11	0		0	1	1
Chief of Design & Construction - SWIFT	11	1		1		1
Chief of Planning & Analysis	11	1		1		1
Condition Assessment Manager	9	2		2		2
Data Analysis Manager	9	1		1		1
Enterprise Data Scientist	9	1		1		1
GIS Manager	9	1		1		1
Hydraulic Analysis Manager	9	4		4		4
Project Manager	9	10		10	3	13
Real Estate Manager	8	2		2	1	3
Condition Assessment Engineer	7	0		0	1	1
CMMS Analyst	7	2		2		2
Data Analyst	7	5		5	1	6
GIS Analyst	7	2		2		2
Planning Engineer	7	2		2		2
Contract Specialist	6	3		3	1	4
GIS CAD Technician	5	2		2		2
Administrative Coordinator	4	1		1		1
Engineering Clerk	2	1		1		1
Total		45	0	45	8	53

Water Quality Department

The Water Quality (WQ) Department's mission is to provide quality environmental services to support HRSD and its partners. This department helps ensure compliance with HRSD environmental permits and leads regulatory advocacy through the work of three divisions. The Central Environmental Laboratory (CEL) Division uses the Environmental Data Management System (EDMS) and other tools to provide analytical support for numerous monitoring, research and regulatory purposes. The Pretreatment and Pollution Prevention (P3) Division monitors wastewater conveyed to treatment plants using the Pretreatment Information Management System (PIMS) and other tools, and implements its Industrial Wastewater Discharge Regulations to protect treatment plant staff, facilities and processes. The Technical Services Division (TSD) is responsible for activities including environmental monitoring, specialized sampling, treatment process and research studies, the Municipal Assistance Program (MAP) to assist localities, as well as all reporting required by HRSD permits.

Expenditure Budget

	FY-2023 Budget	FY-2022 Budget	Increase/ (Decrease)	Percentage Change
Personal Services	\$ 8,740,032	\$ 8,459,559	\$ 280,473	3%
Fringe Benefits	3,448,350	3,424,426	23,924	1%
Material & Supplies	1,768,500	1,623,700	144,800	9%
Transportation	27,700	26,206	1,494	6%
Contractual Services	1,889,500	1,700,500	189,000	11%
Major Repairs	76,000	76,000	-	0%
Capital Assets	-	-	-	0%
Miscellaneous	624,350	583,050	41,300	7%
Total	\$ 16,577,131	\$ 15,896,141	\$ 680,991	4%

Positions

	Grade	Adopted FY-2022	Adjustments	Final FY-2022	Adjustments	FY-2023
Director of Water Quality	12	1		1		1
Chief of Lab	11	1		1		1
Chief of P3	11	1		1		1
Chief of TSD	11	1		1		1
TSD Geologist	10	1		1		1
Environmental Scientist	9	7		7		7
Lab Manager	9	4		4		4
Lab Quality Assurance Manager	9	1		1		1
LIMS Optimization Manager	9	1		1		1
P3 Manager	9	4		4		4
WQ/Ops Quality Assurance Manager	9	1		1		1
Lab EDMS Administrator	8	1		1		1
Lab Operations Manager	8	1		1		1
Lab Supervising Chemist	8	13		13		13
P3 Supervising Specialist	8	3		3		3
TSD Operations Manager	8	1		1		1
TSD Supervising Specialist	8	3		3		3
Quality Assurance Specialist	8	0	1	1		1
P3 Administrative Supervising Specialist	7	1		1		1
P3 PIMS Analyst	7	1		1		1
TSD Specialist	7	12	1	13		13
Lab EDMS Analyst	6	1		1		1
Lab Quality Assurance Specialist	6	1		1		1
Lab Specialist	6	14		14		14
P3 Specialist	6	5		5		5
Lab Data Technician	5	1		1		1
Lab Technician	5	5		5		5
P3 Administrative Technician	5	1		1		1
P3 Technician	5	10		10		10
TSD Technician	5	8		8		8
CEL Operations Coordinator	4	1		1		1
Lab Assistant	4	7		7		7
Lab Data Coordinator	4	1		1		1
TSD Operations Coordinator	4	1	(1)	0		0
TSD Administrative Coordinator	4	1		1		1
P3 Administrative Assistant	3	2		2		2
TSD Assistant	2	1		1		1
Total		119	1	120	0	120

General Expenses, Debt Service and Transfers

General Expenses includes operating expenditures not assigned to any specific HRSD Department. Debt Service includes payments on bonds issued by HRSD and through the Virginia Clean Water Revolving Loan Fund (VCWRLF). Transfers are made to fund the Capital Improvement Program (CIP) and the Risk Management reserve. The costs incurred to issue bonds are included in General Expenses - Miscellaneous.

Expenditure Budget

	FY-2023 Budget	FY-2022 Budget	Increase/ (Decrease)	Percentage Change
Personal Services	\$ (1,459,809)	\$ 275,506	\$ (1,735,315)	(630%)
Fringe Benefits	1,136,636	(201,900)	1,338,537	(663%)
Material & Supplies	26,000	26,000	-	0%
Utilities	525,000	440,000	85,000	19%
Contractual Services	8,031,950	7,500,221	531,729	7%
Miscellaneous	809,450	599,900	209,550	35%
Total General Expenses	\$ 9,069,227	\$ 8,639,727	\$ 429,501	5%
Publically Sold Bonds - Principal	\$ 23,630,000	\$ 22,430,000	\$ 1,200,000	5%
Publically Sold Bonds - Interest	24,553,000	22,730,000	1,823,000	8%
VRLF Bonds	21,350,000	19,148,209	2,201,791	11%
<i>Subtotal - Debt Service</i>	<u>69,533,000</u>	<u>64,308,209</u>	<u>5,224,791</u>	8%
Transfer to CIP	129,412,966	114,463,921	14,949,046	13%
Transfer to Risk Management	260,000	260,000	-	0%
<i>Subtotal - Transfers</i>	<u>129,672,966</u>	<u>114,723,921</u>	<u>14,949,046</u>	13%
Total Debt Service and Transfers	\$ 199,205,966	\$ 179,032,130	\$ 20,173,837	11%

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Capital Budget



Capital Budget

HRSD prepares a Capital Improvement Program (CIP) each year for the capital projects currently underway or proposed for the future. The first year of the CIP is authorized as the Capital Budget for FY-2023 in the amount of \$411 million. The remaining years (FY-2024 to FY-2032) include all known projects planned for these years; however, approval of the plan does not authorize the Capital Budgets for those years. Each year's Capital Budget will be approved during the budget process for the specific year.

The ten-year Capital Improvement Program for FY-2023 to FY-2032 highlights the anticipated cost of each project and the fiscal year(s) in which the work is expected to occur. All costs listed in the CIP are stated in current year dollars and total approximately \$3.1 billion.

The bond component of the plan may include one or all of the following:

- Interim or construction financings
- Federally subsidized borrowing programs administered by the Virginia Resource Authority and the Environmental Protection Agency
- HRSD Revenue Bonds or Notes

The grant component represents funds estimated to be received from a federal or state agency for specific projects. Other reimbursements, if any, include amounts paid by other parties who may participate in a project.

Capital Budget

CIP Budget Forecast (in thousands)	Total FY-2023					
	to FY-2032	FY-2023	FY-2024	FY-2025	FY-2026	FY-2027
Beginning Capital Reserves	-	-	-	-	-	-
Bonds	351,566	-	-	-	-	-
VCWRLF	300,000	100,000	100,000	100,000	-	-
WIFIA	821,565	172,508	286,441	175,481	28,593	25,004
Cash	1,287,352	129,413	135,811	137,111	148,684	142,738
WQIF	136,500	-	17,500	20,000	30,000	29,000
Grants and Other Reimbursements	69,832	6,635	23,291	14,186	2,485	6,295
Transfer from Line of Credit	125,186	2,444	67,956	83,222	100,239	6,963
Total Capital Resources	3,092,000	411,000	631,000	530,000	310,001	210,000
Capital Expenditures	3,092,000	411,000	631,000	530,000	310,000	210,000
Ending Capital Reserves	-	-	-	-	-	-

Capital Expenditures (in thousands)	(in	Total FY-2023					
		to FY-2032	FY-2023	FY-2024	FY-2025	FY-2026	FY-2027
Administration		71,928	10,074	14,402	17,884	8,027	3,675
Army Base		65,766	7,187	11,354	3,046	9	-
Atlantic		141,784	25,251	40,027	46,993	23,334	1,420
Boat Harbor		322,006	40,891	104,901	100,922	17,535	15,601
Chesapeake-Elizabeth		24,773	6,072	8,687	3,556	42	3,348
James River		302,600	92,041	105,586	60,098	18,886	16,353
Middle Peninsula		112,828	23,576	56,198	26,175	1,137	4,803
Nansemond		413,038	68,459	149,787	120,165	39,037	7,376
Surry		6,592	643	2,375	3,528	46	-
Virginia Initiative Plant		223,224	48,818	65,418	48,481	21,941	2,698
Williamsburg		23,544	3,205	2,117	2,841	778	711
York River		80,527	31,959	18,093	6,566	20,225	3,682
General		1,239,224	134,793	151,999	109,982	174,819	161,385
Future Improvements		281,196	-	-	-	-	-
<i>Sub-Total</i>		3,361,366	513,750	742,353	557,895	326,316	221,053
Program Spend Rate			80%	85%	95%	95%	95%
Total Expenditures		3,092,000	411,000	631,000	530,000	310,000	210,000

Capital Budget

CIP Budget Forecast

(in thousands)

	FY-2028	FY-2029	FY-2030	FY-2031	FY-2032
Beginning Capital Reserves	-	-	-	-	-
Bonds	-	351,566	-	-	-
VCWRLF	-	-	-	-	-
WIFIA	14,420	36,493	49,953	21,781	10,891
Cash	164,265	84,363	131,578	136,156	77,232
WQIF	25,000	7,500	5,000	2,500	-
Grants and Other Reimbursements	5,936	5,002	5,002	1,000	-
Transfer from Line of Credit	(9,621)	(284,924)	8,468	38,563	111,876
Total Capital Resources	200,000	200,000	200,000	200,000	199,999
Capital Expenditures	200,000	200,000	200,000	200,000	200,000
Ending Capital Reserves	-	-	-	-	-

Capital Expenditures

(in thousands)

	FY-2028	FY-2029	FY-2030	FY-2031	FY-2032
Administration	3,634	3,634	3,634	3,634	3,331
Army Base	-	-	-	16,895	27,275
Atlantic	700	-	-	2,610	1,450
Boat Harbor	36,157	6,000	-	-	-
Chesapeake-Elizabeth	3,069	-	-	-	-
James River	9,637	-	-	-	-
Middle Peninsula	936	2	2	-	-
Nansemond	6,288	10,971	10,927	28	-
Surry	-	-	-	-	-
Virginia Initiative Plant	9,242	11,615	10,134	3,396	1,480
Williamsburg	913	-	-	6,345	6,634
York River	1	-	-	-	-
General	129,423	140,631	115,610	77,450	43,131
Future Improvements	-	23,668	57,504	86,402	113,622
<i>Sub-Total</i>	200,000	200,000	200,000	200,000	200,000
Program Spend Rate	100%	100%	100%	100%	100%
Total Expenditures	200,000	200,000	200,000	200,000	200,000

FY-2023 to FY-2032 Cash Flow Projections (in thousands)

CIP No	Project Name	Total FY-2023 to FY-2032	FY-2023	FY-2024	FY-2025	FY-2026	FY-2027
Administration							
AD012500	Cybersecurity Practice & Procedure Initiative	\$ 12,239	\$ 4,196	\$ 4,196	\$ 3,846	\$ -	\$ -
AD012600	Central Environmental Laboratory Expansion and Rehabilitation	\$ 23,689	\$ 2,278	\$ 6,572	\$ 10,404	\$ 4,393	\$ 42
AD012700	Capital Improvement Program Labor Program	\$ 32,400	\$ -	\$ 3,634	\$ 3,634	\$ 3,634	\$ 3,634
AD012710	Capital Improvement Program Internal Labor FY23	\$ 3,600	\$ 3,600	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 71,928	\$ 10,074	\$ 14,402	\$ 17,884	\$ 8,027	\$ 3,675
Army Base							
AB010000	Army Base 24-Inch and 20-Inch Transmission Main Replacements	\$ 12,641	\$ 4,324	\$ 7,095	\$ 1,216	\$ 7	\$ -
AB010500	Section W Force Main Replacement	\$ 1,422	\$ 487	\$ 788	\$ 144	\$ 3	\$ -
AB011800	Army Base to VIP Transmission Force Main	\$ 49,930	\$ -	\$ -	\$ -	\$ -	\$ -
AB011900	Army Base Treatment Plant Administration Building Renovation (2021)	\$ 1,524	\$ 926	\$ 591	\$ 7	\$ -	\$ -
AB012000	Wards Corner Sanitary Sewer Pumping Station	\$ 6,010	\$ 1,450	\$ 2,880	\$ 1,680	\$ -	\$ -
	Subtotal	\$ 65,766	\$ 7,187	\$ 11,354	\$ 3,046	\$ 9	\$ -
Atlantic							
AT011520	Shippo Corner Pressure Reducing Station Modifications	\$ 1,436	\$ 913	\$ 523	\$ -	\$ -	\$ -
AT011900	Great Bridge Interceptor Extension 16-Inch Replacement	\$ 8,361	\$ 400	\$ 3,118	\$ 4,798	\$ 46	\$ -
AT012920	Atlantic Treatment Plant Access Road Extension	\$ 9,987	\$ 1,456	\$ 2,931	\$ 4,200	\$ 1,400	\$ -
AT013000	Washington District Pump Station Area Sanitary Sewer Improvements	\$ 5,937	\$ 1,626	\$ 1,771	\$ 1,771	\$ 756	\$ 15
AT013010	Washington District Pump Station Replacement	\$ 9,513	\$ 1,269	\$ 4,935	\$ 3,296	\$ 13	\$ -
AT013110	South Norfolk Area Gravity Sewer Improvements, Phase II	\$ 10,219	\$ 3,296	\$ 6,923	\$ -	\$ -	\$ -
AT013700	Atlantic Trunk Interceptor Force Main Relocation (VDOT Laskin Road Betterment)	\$ 284	\$ 248	\$ 36	\$ -	\$ -	\$ -
AT014000	Lynnhaven-Great Neck IFM (SF-021) Relocation	\$ 1,569	\$ -	\$ 523	\$ 1,046	\$ -	\$ -
AT014100	Suffolk Regional Landfill Transmission Force Main	\$ 4,000	\$ 4,000	\$ -	\$ -	\$ -	\$ -
AT014301	Atlantic Service Area I-I Reduction Phase I (CHES)	\$ 12,344	\$ 858	\$ 865	\$ 3,196	\$ 7,405	\$ 20
AT014302	Atlantic Service Area I-I Reduction Phase II (CHES)	\$ 10,859	\$ 977	\$ 702	\$ 1,166	\$ 6,850	\$ 1,160
AT014303	Chesapeake Pump Station Capacity Improvements (AT-HPP-01C)	\$ 935	\$ -	\$ -	\$ -	\$ 52	\$ 187
AT014600	Kempsville Interceptor Force Main Replacement - Phase I	\$ 5,864	\$ 241	\$ 389	\$ 2,770	\$ 2,456	\$ 7
AT014800	Atlantic Treatment Plant Electrical Workspace Renovation	\$ 315	\$ 315	\$ -	\$ -	\$ -	\$ -
AT014900	Atlantic Treatment Plant Gravity Belt Thickener Expansion	\$ 5,079	\$ 3,102	\$ 1,963	\$ 14	\$ -	\$ -
AT015000	Atlantic Treatment Plant Polymer System Replacement	\$ 2,289	\$ 1,392	\$ 890	\$ 6	\$ -	\$ -
AT015100	Atlantic Treatment Plant Solids Storage Pad Improvements	\$ 513	\$ 511	\$ 2	\$ -	\$ -	\$ -
AT015200	Cedar Road Interceptor Force Main Replacement Phase I	\$ 6,047	\$ 235	\$ 352	\$ 2,912	\$ 2,520	\$ 29
AT015300	High Priority Projects Round 2 Project 2	\$ 28,998	\$ -	\$ -	\$ -	\$ -	\$ -
AT015400	Doziers Corner Pump Station Replacement	\$ 7,775	\$ 745	\$ 2,874	\$ 3,818	\$ 337	\$ 2
AT015500	Atlantic Treatment Plant Secondary Clarifier Effluent Weir Replacement and Enhancements	\$ 1,648	\$ 824	\$ 824	\$ -	\$ -	\$ -
AT015600	Atlantic Treatment Plant Solids Handling Improvements and Odor Control Upgrades Phase I	\$ 26,025	\$ 2,429	\$ 8,430	\$ 14,000	\$ 1,167	\$ -
AT015700	Atlantic Plant Solids Handling Improvements Waste Gas Flare Replacement	\$ 6,725	\$ 414	\$ 1,977	\$ 4,000	\$ 333	\$ -
	Subtotal	\$ 141,784	\$ 25,251	\$ 40,027	\$ 46,993	\$ 23,334	\$ 1,420
Boat Harbor							
BH013020	Willard Avenue Pump Station Replacement	\$ 11,010	\$ 4,887	\$ 4,887	\$ 1,235	\$ 2	\$ -
BH014000	West Avenue and 35th Street Interceptor Force Main Replacement	\$ 2,405	\$ 2,400	\$ 5	\$ -	\$ -	\$ -
BH014220	Hampton Trunk Sewer Extension Divisions I and J Relocation Phase II	\$ 13,828	\$ 6,139	\$ 6,139	\$ 1,548	\$ 2	\$ -
BH014500	Ivy Home-Shell Road Sewer Extension Division I Replacement	\$ 1,969	\$ 85	\$ 1,724	\$ 161	\$ -	\$ -
BH014600	46th Street Diversion Sewer Rehabilitation Replacement	\$ 4,531	\$ 2,852	\$ 1,673	\$ 6	\$ -	\$ -
BH014610	46th Street Diversion Sewer Rehabilitation Replacement, HII-NNS	\$ 2,194	\$ 1,463	\$ 731	\$ -	\$ -	\$ -
BH014900	Hampton Trunk Sewer Extension Division K Gravity Improvements	\$ 2,015	\$ 889	\$ 889	\$ 236	\$ 2	\$ -
BH015700	Boat Harbor Treatment Plant Pump Station Conversion	\$ 59,724	\$ 5,133	\$ 26,750	\$ 24,889	\$ 2,951	\$ -
BH015710	Boat Harbor Treatment Plant Transmission Force Main Section 1 (Subaqueous)	\$ 127,107	\$ 8,145	\$ 52,595	\$ 60,390	\$ 5,977	\$ -
BH015720	Boat Harbor Treatment Plant Transmission Force Main Section 2 (Land)	\$ 24,824	\$ 3,836	\$ 8,357	\$ 8,390	\$ 4,241	\$ -
BH015730	Boat Harbor Treatment Plant Decommission and Demolition	\$ 28,626	\$ -	\$ 516	\$ 1,866	\$ 244	\$ 10,000
BH015801	14th Street Offline Storage (BH-HPP-01A)	\$ 500	\$ 500	\$ -	\$ -	\$ -	\$ -
BH015802	Claremont Pump Station Upgrade (BH-HPP-01B)	\$ 12,049	\$ -	\$ -	\$ -	\$ 308	\$ 986
BH015803	Chesapeake Avenue Interceptor Improvements (BH-HPP-01C)	\$ 16,277	\$ -	\$ -	\$ -	\$ 1,310	\$ 2,115
BH015900	Bloxoms Corner Force Main Replacement	\$ 4,947	\$ 4,562	\$ 385	\$ -	\$ -	\$ -
BH016100	High Priority Projects Round 2 Project 3	\$ 28,490	\$ -	\$ -	\$ -	\$ -	\$ -
BH016200	Inflow Reduction Program - Phase II	\$ 10,000	\$ -	\$ 250	\$ 2,200	\$ 2,500	\$ 2,500
	Subtotal	\$ 322,006	\$ 40,891	\$ 104,901	\$ 100,922	\$ 17,535	\$ 15,601
Note:	VIP - Virginia Initiative Plant VDOT - Virginia Department of Transportation IFM - Interceptor Force Main CHES - City of Chesapeake BH - Boat Harbor Treatment Plant HPP - High Priority Project HII-NNS - Huntingon Ingalls Industries - Newport News Shipbuilding						

FY-2023 to FY-2032 Cash Flow Projections (in thousands)

CIP No	Project Name	FY-2028	FY-2029	FY-2030	FY-2031	FY-2032
Administration						
AD012500	Cybersecurity Practice & Procedure Initiative	\$ -	\$ -	\$ -	\$ -	\$ -
AD012600	Central Environmental Laboratory Expansion and Rehabilitation	\$ -	\$ -	\$ -	\$ -	\$ -
AD012700	Capital Improvement Program Labor Program	\$ 3,634	\$ 3,634	\$ 3,634	\$ 3,634	\$ 3,331
AD012710	Capital Improvement Program Internal Labor FY23	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 3,634	\$ 3,634	\$ 3,634	\$ 3,634	\$ 3,331
Army Base						
AB010000	Army Base 24-Inch and 20-Inch Transmission Main Replacements	\$ -	\$ -	\$ -	\$ -	\$ -
AB010500	Section W Force Main Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
AB011800	Army Base to VIP Transmission Force Main	\$ -	\$ -	\$ -	\$ 16,895	\$ 27,275
AB011900	Army Base Treatment Plant Administration Building Renovation (2021)	\$ -	\$ -	\$ -	\$ -	\$ -
AB012000	Wards Corner Sanitary Sewer Pumping Station	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ -	\$ -	\$ -	\$ 16,895	\$ 27,275
Atlantic						
AT011520	Shipps Corner Pressure Reducing Station Modifications	\$ -	\$ -	\$ -	\$ -	\$ -
AT011900	Great Bridge Interceptor Extension 16-Inch Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
AT012920	Atlantic Treatment Plant Access Road Extension	\$ -	\$ -	\$ -	\$ -	\$ -
AT013000	Washington District Pump Station Area Sanitary Sewer Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
AT013010	Washington District Pump Station Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
AT013110	South Norfolk Area Gravity Sewer Improvements, Phase II	\$ -	\$ -	\$ -	\$ -	\$ -
AT013700	Atlantic Trunk Interceptor Force Main Relocation (VDOT Laskin Road Betterment)	\$ -	\$ -	\$ -	\$ -	\$ -
AT014000	Lynnhaven-Great Neck IFM (SF-021) Relocation	\$ -	\$ -	\$ -	\$ -	\$ -
AT014100	Suffolk Regional Landfill Transmission Force Main	\$ -	\$ -	\$ -	\$ -	\$ -
AT014301	Atlantic Service Area I-I Reduction Phase I (CHES)	\$ -	\$ -	\$ -	\$ -	\$ -
AT014302	Atlantic Service Area I-I Reduction Phase II (CHES)	\$ 4	\$ -	\$ -	\$ -	\$ -
AT014303	Chesapeake Pump Station Capacity Improvements (AT-HPP-01C)	\$ 696	\$ -	\$ -	\$ -	\$ -
AT014600	Kempsville Interceptor Force Main Replacement - Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
AT014800	Atlantic Treatment Plant Electrical Workspace Renovation	\$ -	\$ -	\$ -	\$ -	\$ -
AT014900	Atlantic Treatment Plant Gravity Belt Thickener Expansion	\$ -	\$ -	\$ -	\$ -	\$ -
AT015000	Atlantic Treatment Plant Polymer System Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
AT015100	Atlantic Treatment Plant Solids Storage Pad Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
AT015200	Cedar Road Interceptor Force Main Replacement Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
AT015300	High Priority Projects Round 2 Project 2	\$ -	\$ -	\$ -	\$ 2,610	\$ 1,450
AT015400	Doziers Corner Pump Station Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
AT015500	Atlantic Treatment Plant Secondary Clarifier Effluent Weir Replacement and Enhancements	\$ -	\$ -	\$ -	\$ -	\$ -
AT015600	Atlantic Treatment Plant Solids Handling Improvements and Odor Control Upgrades Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
AT015700	Atlantic Plant Solids Handling Improvements Waste Gas Flare Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 700	\$ -	\$ -	\$ 2,610	\$ 1,450
Boat Harbor						
BH013020	Willard Avenue Pump Station Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
BH014000	West Avenue and 35th Street Interceptor Force Main Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
BH014220	Hampton Trunk Sewer Extension Divisions I and J Relocation Phase II	\$ -	\$ -	\$ -	\$ -	\$ -
BH014500	Ivy Home-Shell Road Sewer Extension Division I Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
BH014600	46th Street Diversion Sewer Rehabilitation Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
BH014610	46th Street Diversion Sewer Rehabilitation Replacement, HII-NNS	\$ -	\$ -	\$ -	\$ -	\$ -
BH014900	Hampton Trunk Sewer Extension Division K Gravity Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
BH015700	Boat Harbor Treatment Plant Pump Station Conversion	\$ -	\$ -	\$ -	\$ -	\$ -
BH015710	Boat Harbor Treatment Plant Transmission Force Main Section 1 (Subaqueous)	\$ -	\$ -	\$ -	\$ -	\$ -
BH015720	Boat Harbor Treatment Plant Transmission Force Main Section 2 (Land)	\$ -	\$ -	\$ -	\$ -	\$ -
BH015730	Boat Harbor Treatment Plant Decommission and Demolition	\$ 10,000	\$ 6,000	\$ -	\$ -	\$ -
BH015801	14th Street Offline Storage (BH-HPP-01A)	\$ -	\$ -	\$ -	\$ -	\$ -
BH015802	Claremont Pump Station Upgrade (BH-HPP-01B)	\$ 10,755	\$ -	\$ -	\$ -	\$ -
BH015803	Chesapeake Avenue Interceptor Improvements (BH-HPP-01C)	\$ 12,852	\$ -	\$ -	\$ -	\$ -
BH015900	Bloxoms Corner Force Main Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
BH016100	High Priority Projects Round 2 Project 3	\$ -	\$ -	\$ -	\$ -	\$ -
BH016200	Inflow Reduction Program - Phase II	\$ 2,550	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 36,157	\$ 6,000	\$ -	\$ -	\$ -
Note:	VIP - Virginia Initiative Plant VDOT - Virginia Department of Transportation IFM - Interceptor Force Main CHES - City of Chesapeake BH - Boat Harbor Treatment Plant HPP - High Priority Project HII-NNS - Huntingon Ingalls Industries - Newport News Shipbuilding					

FY-2023 to FY-2032 Cash Flow Projections (in thousands)

CIP No	Project Name	Total FY-2023 to FY-2032	FY-2023	FY-2024	FY-2025	FY-2026	FY-2027
Chesapeake-Elizabeth							
CE011300	Birchwood Trunk 24-Inch and 30-Inch Force Main at Independence Boulevard Replacement Phase II	\$ 1,601	\$ 591	\$ 1,003	\$ 7	\$ -	\$ -
CE011600	Poplar Hall Davis Corner Trunk 24-Inch Gravity Sewer Improvements	\$ 1,948	\$ 288	\$ 1,651	\$ 9	\$ -	\$ -
CE011810	Chesapeake-Elizabeth Treatment Plant Decommissioning	\$ 11,274	\$ 2,229	\$ 5,529	\$ 3,517	\$ -	\$ -
CE011827	Atlantic PRS Reliability Modifications	\$ 304	\$ 304	\$ -	\$ -	\$ -	\$ -
CE011828	Kempsville PRS Reliability Modifications	\$ 94	\$ 94	\$ -	\$ -	\$ -	\$ -
CE011835	Virginia Beach City Pump Station Upgrades, Phase V	\$ 1,250	\$ 1,250	\$ -	\$ -	\$ -	\$ -
CE011836	Norfolk City Pump Station Upgrades	\$ 588	\$ 588	\$ -	\$ -	\$ -	\$ -
CE011837	Private Pump Station Improvements	\$ 615	\$ 615	\$ -	\$ -	\$ -	\$ -
CE011850	Atlantic Service Area Automated Diversion Facilities Phase I	\$ 82	\$ 24	\$ 24	\$ 24	\$ 12	\$ -
CE012100	Witchduck Road Interceptor Force Main Improvements	\$ 7,017	\$ 90	\$ 480	\$ -	\$ 30	\$ 3,348
	Subtotal	\$ 24,773	\$ 6,072	\$ 8,687	\$ 3,556	\$ 42	\$ 3,348
Eastern Shore							
ES010000	Eastern Shore Infrastructure Improvements - Interim Plant Improvements	\$ 1,200	\$ 1,200	\$ -	\$ -	\$ -	\$ -
ES010100	Eastern Shore Infrastructure Improvements - Transmission Force Main Phase I	\$ 20,911	\$ 16,376	\$ 4,102	\$ 3	\$ -	\$ -
ES010200	Eastern Shore Infrastructure Improvements - Transmission Force Main Phase II	\$ 12,204	\$ -	\$ -	\$ -	\$ -	\$ -
ES010300	Onancock Treatment Plant Administration Building Upgrade	\$ 490	\$ 36	\$ 454	\$ -	\$ -	\$ -
ES010400	Northern Accomack Wastewater Conveyance, Treatment, and Disposal Study	\$ 237	\$ 237	\$ -	\$ -	\$ -	\$ -
ES010500	Chincoteague Treatment Plant	\$ 14,867	\$ 2,767	\$ 6,000	\$ 5,600	\$ 500	\$ -
ES010600	Onancock Meter Replacement	\$ 2,176	\$ 32	\$ 272	\$ 1,872	\$ -	\$ -
ES010700	Onancock Carnival Grounds Gravity Sewer Extension	\$ 898	\$ 134	\$ 582	\$ 183	\$ -	\$ -
	Subtotal	\$ 52,336	\$ 20,782	\$ 11,409	\$ 7,657	\$ 500	\$ -
James River							
JR011730	Jefferson Avenue Interceptor Force Main Replacement Phase III	\$ 17,458	\$ 9,970	\$ 7,485	\$ 3	\$ -	\$ -
JR013000	Morrison Pump Station Discharge Force Main Replacement & Capacity Enhancements	\$ 562	\$ 562	\$ -	\$ -	\$ -	\$ -
JR013200	Lucas Creek-Woodhaven Interceptor Force Main Replacement Phase II	\$ 2,036	\$ 569	\$ 1,457	\$ 10	\$ -	\$ -
JR013400	James River Treatment Plant Advanced Nutrient Reduction Improvements	\$ 233,279	\$ 70,362	\$ 88,255	\$ 56,111	\$ 17,843	\$ 708
JR013401	James River Treatment Plant MIFAS Conversion Emergency	\$ 1,493	\$ 1,493	\$ -	\$ -	\$ -	\$ -
JR013410	James River Treatment Plant Outfall Modifications	\$ 1,350	\$ -	\$ 750	\$ 189	\$ 206	\$ 206
JR013500	Lucas Creek Pump Station Replacement	\$ 11,535	\$ 4,771	\$ 4,771	\$ 1,989	\$ 2	\$ 2
JR013610	James River Treatment Plant Automation Improvements Phase I	\$ 4,198	\$ 1,643	\$ 2,554	\$ -	\$ -	\$ -
JR013620	James River Treatment Plant Primary Treatment and Automation Improvements Phase II	\$ 10,349	\$ -	\$ -	\$ 227	\$ 830	\$ 4,919
JR013700	High Priority Projects Round 2 Project 6	\$ 18,457	\$ -	\$ -	\$ -	\$ -	\$ -
JR013800	James River Treatment Plant Shoreline Stabilization	\$ 2,073	\$ 2,196	\$ -	\$ -	\$ -	\$ -
JR014000	Center Avenue Force Main Replacement	\$ 18,144	\$ 473	\$ 314	\$ 1,569	\$ 5	\$ 10,518
	Subtotal	\$ 302,600	\$ 92,041	\$ 105,586	\$ 60,098	\$ 18,886	\$ 16,353
Middle Peninsula							
MP011700	Middle Peninsula Interceptor Systems Pump Station Control and SCADA Upgrades and Enhancements	\$ 2,156	\$ 1,814	\$ 312	\$ 11	\$ 11	\$ 8
MP012000	King William Treatment Plant Improvements Phase I	\$ 190	\$ 189	\$ -	\$ -	\$ -	\$ -
MP013000	Small Communities Collection System Rehabilitation Phase I	\$ 30	\$ 30	\$ -	\$ -	\$ -	\$ -
MP013020	Small Communities Collection System Rehabilitation Phase III	\$ 1,083	\$ 480	\$ 599	\$ 4	\$ -	\$ -
MP013300	King William Treatment Plant Improvements Phase II	\$ 28,258	\$ 1,652	\$ 12,659	\$ 13,917	\$ 31	\$ -
MP013400	Small Communities Operation Center Parking and Laydown Area	\$ 174	\$ 174	\$ -	\$ -	\$ -	\$ -
MP013500	Middlesex Collection System-Cooks Corner	\$ 1,488	\$ 1,484	\$ 3	\$ -	\$ -	\$ -
MP013710	Middlesex Interceptor System Program Phase II-Saluda Pump Station	\$ 1,893	\$ 440	\$ 621	\$ 621	\$ 212	\$ -
MP013720	Middlesex Interceptor System Program Phase II-Hartfield Pump Station	\$ 4,120	\$ 1,416	\$ 2,024	\$ 680	\$ -	\$ -
MP013730	Middlesex Interceptor System Program Phase II-Transmission Force Main	\$ 25,825	\$ 8,805	\$ 12,761	\$ 4,259	\$ -	\$ -
MP013810	Middlesex Interceptor System Program Phase III	\$ 2,248	\$ 182	\$ 1,377	\$ 686	\$ -	\$ -
MP013820	Middlesex Interceptor System Program Phase III (Topping)	\$ 1,261	\$ 108	\$ 1,047	\$ 104	\$ 1	\$ -
MP013900	Urbanna Wastewater Treatment Plant Reliability Improvements	\$ 249	\$ -	\$ 21	\$ 228	\$ -	\$ -
MP014100	Middlesex Collection System-Christ's Church Service Area	\$ 1,133	\$ -	\$ 113	\$ -	\$ 699	\$ 321
MP014200	Middlesex Collection System-Topping Service Area Phase I	\$ 3,589	\$ 252	\$ 2,777	\$ 558	\$ 2	\$ -
Note:	PRS - Pressure Reducing Station MIFAS - Moving Media Inegrated Fixed-Film Activated Sludge SCADA - Supervisory Control and Data Acquisition						

FY-2023 to FY-2032 Cash Flow Projections (in thousands)

CIP No	Project Name	FY-2028	FY-2029	FY-2030	FY-2031	FY-2032
Chesapeake-Elizabeth						
CE011300	Birchwood Trunk 24-Inch and 30-Inch Force Main at Independence Boulevard Replacement Phase II	\$ -	\$ -	\$ -	\$ -	\$ -
CE011600	Poplar Hall Davis Corner Trunk 24-Inch Gravity Sewer Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
CE011810	Chesapeake-Elizabeth Treatment Plant Decommissioning	\$ -	\$ -	\$ -	\$ -	\$ -
CE011827	Atlantic PRS Reliability Modifications	\$ -	\$ -	\$ -	\$ -	\$ -
CE011828	Kempsville PRS Reliability Modifications	\$ -	\$ -	\$ -	\$ -	\$ -
CE011835	Virginia Beach City Pump Station Upgrades, Phase V	\$ -	\$ -	\$ -	\$ -	\$ -
CE011836	Norfolk City Pump Station Upgrades	\$ -	\$ -	\$ -	\$ -	\$ -
CE011837	Private Pump Station Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
CE011850	Atlantic Service Area Automated Diversion Facilities Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
CE012100	Witchduck Road Interceptor Force Main Improvements	\$ 3,069	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 3,069	\$ -	\$ -	\$ -	\$ -
Eastern Shore						
ES010000	Eastern Shore Infrastructure Improvements - Interim Plant Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
ES010100	Eastern Shore Infrastructure Improvements - Transmission Force Main Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
ES010200	Eastern Shore Infrastructure Improvements - Transmission Force Main Phase II	\$ -	\$ 3,480	\$ 2,190	\$ 3,240	\$ 3,078
ES010300	Onancock Treatment Plant Administration Building Upgrade	\$ -	\$ -	\$ -	\$ -	\$ -
ES010400	Northern Accomack Wastewater Conveyance, Treatment, and Disposal Study	\$ -	\$ -	\$ -	\$ -	\$ -
ES010500	Chincoteague Treatment Plant	\$ -	\$ -	\$ -	\$ -	\$ -
ES010600	Onancock Meter Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
ES010700	Onancock Carnival Grounds Gravity Sewer Extension	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ -	\$ 3,480	\$ 2,190	\$ 3,240	\$ 3,078
James River						
JR011730	Jefferson Avenue Interceptor Force Main Replacement Phase III	\$ -	\$ -	\$ -	\$ -	\$ -
JR013000	Morrison Pump Station Discharge Force Main Replacement & Capacity Enhancements	\$ -	\$ -	\$ -	\$ -	\$ -
JR013200	Lucas Creek-Woodhaven Interceptor Force Main Replacement Phase II	\$ -	\$ -	\$ -	\$ -	\$ -
JR013400	James River Treatment Plant Advanced Nutrient Reduction Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
JR013401	James River Treatment Plant MIFAS Conversion Emergency	\$ -	\$ -	\$ -	\$ -	\$ -
JR013410	James River Treatment Plant Outfall Modifications	\$ -	\$ -	\$ -	\$ -	\$ -
JR013500	Lucas Creek Pump Station Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
JR013610	James River Treatment Plant Automation Improvements Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
JR013620	James River Treatment Plant Primary Treatment and Automation Improvements Phase II	\$ 4,373	\$ -	\$ -	\$ -	\$ -
JR013700	High Priority Projects Round 2 Project 6	\$ -	\$ -	\$ -	\$ -	\$ -
JR013800	James River Treatment Plant Shoreline Stabilization	\$ -	\$ -	\$ -	\$ -	\$ -
JR014000	Center Avenue Force Main Replacement	\$ 5,264	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 9,637	\$ -	\$ -	\$ -	\$ -
Middle Peninsula						
MP011700	Middle Peninsula Interceptor Systems Pump Station Control and SCADA Upgrades and Enhancements	\$ -	\$ -	\$ -	\$ -	\$ -
MP012000	King William Treatment Plant Improvements Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
MP013000	Small Communities Collection System Rehabilitation Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
MP013020	Small Communities Collection System Rehabilitation Phase III	\$ -	\$ -	\$ -	\$ -	\$ -
MP013300	King William Treatment Plant Improvements Phase II	\$ -	\$ -	\$ -	\$ -	\$ -
MP013400	Small Communities Operation Center Parking and Laydown Area	\$ -	\$ -	\$ -	\$ -	\$ -
MP013500	Middlesex Collection System-Cooks Corner	\$ -	\$ -	\$ -	\$ -	\$ -
MP013710	Middlesex Interceptor System Program Phase II-Saluda Pump Station	\$ -	\$ -	\$ -	\$ -	\$ -
MP013720	Middlesex Interceptor System Program Phase II-Hartfield Pump Station	\$ -	\$ -	\$ -	\$ -	\$ -
MP013730	Middlesex Interceptor System Program Phase II-Transmission Force Main	\$ -	\$ -	\$ -	\$ -	\$ -
MP013810	Middlesex Interceptor System Program Phase III	\$ -	\$ -	\$ -	\$ -	\$ -
MP013820	Middlesex Interceptor System Program Phase III (Topping)	\$ -	\$ -	\$ -	\$ -	\$ -
MP013900	Urbanna Wastewater Treatment Plant Reliability Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
MP014100	Middlesex Collection System-Christ's Church Service Area	\$ -	\$ -	\$ -	\$ -	\$ -
MP014200	Middlesex Collection System-Topping Service Area Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
Note:	PRS - Pressure Reducing Station MIFAS - Moving Media Inegrated Fixed-Film Activated Sludge SCADA - Supervisory Control and Data Acquisition					

FY-2023 to FY-2032 Cash Flow Projections (in thousands)

CIP No	Project Name	Total FY-2023 to FY-2032	FY-2023	FY-2024	FY-2025	FY-2026	FY-2027
MP014300	Middlesex Collection System-Locust Hill Service Area	\$ 3,910	\$ 375	\$ 2,935	\$ 600	\$ -	\$ -
MP014410	Middlesex County Hartfield Sewer Collection System Phase I Improvements	\$ 3,176	\$ 1,150	\$ 1,865	\$ 161	\$ -	\$ -
MP014500	Middlesex Collection System-Saluda Service Area	\$ 3,295	\$ -	\$ -	\$ 318	\$ -	\$ 2,043
MP014510	Middlesex County Saluda Sewer Collection System Phase I	\$ 345	\$ 134	\$ 191	\$ 21	\$ -	\$ -
MP014600	Middlesex Collection System-Deltaville Service Area	\$ 16,055	\$ 1,374	\$ 12,194	\$ 2,487	\$ -	\$ -
MP014700	Small Communities Rehabilitation Phase IV	\$ 2,344	\$ 1,712	\$ 630	\$ 2	\$ -	\$ -
MP014800	Small Communities Rehabilitation Phase V	\$ 585	\$ 116	\$ 429	\$ 40	\$ -	\$ -
MP014900	Middle Peninsula Operations Center Locker Room and Administrative Facilities	\$ 5	\$ 5	\$ -	\$ -	\$ -	\$ -
MP015000	Sharon Road Gravity Sewer Improvements	\$ 869	\$ 488	\$ 379	\$ 2	\$ -	\$ -
MP015100	West Point Pump Station 4 (Thompson Avenue) Rehabilitation	\$ 808	\$ 521	\$ 285	\$ 2	\$ -	\$ -
MP015300	King William Central Crossing Pump Station Rehabilitation	\$ 935	\$ 155	\$ 716	\$ 63	\$ -	\$ -
MP015400	Middlesex Interceptor System Program Phase IV	\$ 2,729	\$ -	\$ -	\$ 114	\$ 179	\$ 2,431
MP015500	Small Communities Rehabilitation Phase VI	\$ 1,170	\$ 181	\$ 909	\$ 80	\$ -	\$ -
MP015600	West Point Treatment Plant Final Effluent Pump Station Improvements	\$ 680	\$ 118	\$ 514	\$ 47	\$ -	\$ -
MP015700	West Point Treatment Plant Secondary Clarifier Improvements	\$ 790	\$ 135	\$ 600	\$ 55	\$ -	\$ -
MP015800	King William Main Pump Station Improvements	\$ 1,439	\$ 87	\$ 236	\$ 1,116	\$ -	\$ -
	Subtotal	\$ 112,828	\$ 23,576	\$ 56,198	\$ 26,175	\$ 1,137	\$ 4,803
Nansemond							
NP010620	Suffolk Pump Station Replacement	\$ 22,178	\$ 14	\$ 6,936	\$ 8,307	\$ 6,922	\$ -
NP012400	Western Branch Sewer System Gravity Improvements	\$ 3,976	\$ 393	\$ 3,083	\$ 500	\$ -	\$ -
NP013000	Nansemond Treatment Plant Motor Control Center Replacements	\$ 858	\$ 858	\$ -	\$ -	\$ -	\$ -
NP013400	Deep Creek Interceptor Force Main Risk Mitigation Project	\$ 457	\$ 392	\$ 65	\$ -	\$ -	\$ -
NP013700	Nansemond Treatment Plant Struvite Recovery Facility Improvements	\$ 24,310	\$ 12,681	\$ 11,627	\$ 3	\$ -	\$ -
NP013820	Nansemond Treatment Plant Advanced Nutrient Reduction Improvements Ph II	\$ 254,047	\$ 34,051	\$ 108,813	\$ 91,549	\$ 19,634	\$ -
NP013901	Nansemond Service Area I-I Reduction Phase II (CHES)	\$ 17,117	\$ -	\$ -	\$ -	\$ -	\$ 1,131
NP013902	Nansemond Service Area I-I Reduction Phase III (CHES)	\$ 17,035	\$ -	\$ -	\$ 908	\$ 1,282	\$ 2,619
NP014000	Wilroy Pressure Reducing Station and Off-line Storage Facility	\$ 27,005	\$ 1,367	\$ 1,161	\$ 9,977	\$ 10,875	\$ 3,625
NP014400	Nansemond Treatment Plant Influent Screen Replacement	\$ 11	\$ 11	\$ -	\$ -	\$ -	\$ -
NP014500	Nansemond Treatment Plant Regional Residuals Facility Upgrade	\$ 1,552	\$ 52	\$ 600	\$ 900	\$ -	\$ -
NP014600	West Road Interceptor Force Main Extension	\$ 6,280	\$ 2,162	\$ 1,896	\$ 1,896	\$ 324	\$ 2
NP014700	Nansemond Treatment Plant Digester Capacity Upgrades	\$ 27,352	\$ 14,266	\$ 13,082	\$ 5	\$ -	\$ -
NP014800	High Priority Projects Round 2 Project 8	\$ 30,402	\$ -	\$ -	\$ -	\$ -	\$ -
NP014900	Nansemond Treatment Plant Interceptors Storage Yard	\$ 1,488	\$ 1,488	\$ -	\$ -	\$ -	\$ -
NP015000	Shell Road Interceptor Force Main (SF-144) Segmental Replacement	\$ 743	\$ 575	\$ 168	\$ -	\$ -	\$ -
NP015100	Nansemond Treatment Plant Administration Building Replacement	\$ 8,627	\$ 149	\$ 2,357	\$ 6,122	\$ -	\$ -
	Subtotal	\$ 413,038	\$ 68,459	\$ 149,787	\$ 120,165	\$ 39,037	\$ 7,376
Surry							
SU010200	Surry Hydraulic Improvements and Interceptor Force Main	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SU010400	Surry Force Main and Pump Station-Dominion Power Extension	\$ 6,592	\$ 643	\$ 2,375	\$ 3,528	\$ 46	\$ -
	Subtotal	\$ 6,592	\$ 643	\$ 2,375	\$ 3,528	\$ 46	\$ -
Virginia Initiative Plant							
VP010920	Norview Estabrook Division I 18-Inch Force Main Replacement Phase II, Section 2	\$ 3,098	\$ 1,119	\$ 1,397	\$ 582	\$ -	\$ -
VP014010	Ferebee Avenue Pump Station Replacement	\$ 7,038	\$ 2,584	\$ 3,818	\$ 636	\$ -	\$ -
VP014021	Sanitary Sewer Project 1950-Part 1 30-Inch Gravity Sewer	\$ 583	\$ 583	\$ -	\$ -	\$ -	\$ -
VP014022	Sanitary Sewer Replacement 1950 - Part 2	\$ 10,810	\$ 4,060	\$ 5,400	\$ 1,350	\$ -	\$ -
VP014700	Ingleside Road Pump Station Replacement	\$ 4,911	\$ 1,773	\$ 3,131	\$ 7	\$ -	\$ -
VP014800	Lee Avenue-Wesley Street Horizontal Valve Replacement	\$ 3,267	\$ 114	\$ 431	\$ 2,722	\$ -	\$ -
VP015320	Larchmont Area Sanitary Sewer Improvements	\$ 62,441	\$ 15,165	\$ 21,774	\$ 21,774	\$ 3,685	\$ 44
VP015400	Lafayette Norview-Estabrook Pump Station Replacements	\$ 17	\$ 17	\$ -	\$ -	\$ -	\$ -
VP015410	City Park Pump Station (PS 106) Replacement	\$ 2,908	\$ 1,381	\$ 1,526	\$ -	\$ -	\$ -
VP015420	Luxembourg Pump Station (PS 113) Replacement and Ashland Sewer Extension	\$ 7,880	\$ 2,156	\$ 4,293	\$ 1,431	\$ -	\$ -
VP015430	Station (PS 57) Rehabilitation	\$ 7,190	\$ 1,159	\$ 3,446	\$ 2,585	\$ -	\$ -
VP016500	Norview-Estabrook Division I 12-Inch Force Main Replacement	\$ 2,384	\$ 741	\$ 1,160	\$ 483	\$ -	\$ -
VP016700	Norview-Estabrook Division I 18-Inch Force Main Replacement Phase III	\$ 2,920	\$ 890	\$ 1,432	\$ 597	\$ -	\$ -
VP017120	Central Norfolk Area Gravity Sewer Improvements Phase II	\$ 1,745	\$ 189	\$ 916	\$ 634	\$ 6	\$ -
Note:	CHES - City of Chesapeake SF - Storage Facility PS - Pump Station						

FY-2023 to FY-2032 Cash Flow Projections (in thousands)

CIP No	Project Name	FY-2028	FY-2029	FY-2030	FY-2031	FY-2032
MP014300	Middlesex Collection System-Locust Hill Service Area	\$ -	\$ -	\$ -	\$ -	\$ -
MP014410	Middlesex County Hartfield Sewer Collection System Phase I Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
MP014500	Middlesex Collection System-Saluda Service Area	\$ 935	\$ -	\$ -	\$ -	\$ -
MP014510	Middlesex County Saluda Sewer Collection System Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
MP014600	Middlesex Collection System-Deltaville Service Area	\$ -	\$ -	\$ -	\$ -	\$ -
MP014700	Small Communities Rehabilitation Phase IV	\$ -	\$ -	\$ -	\$ -	\$ -
MP014800	Small Communities Rehabilitation Phase V	\$ -	\$ -	\$ -	\$ -	\$ -
MP014900	Middle Peninsula Operations Center Locker Room and Administrative Facilities	\$ -	\$ -	\$ -	\$ -	\$ -
MP015000	Sharon Road Gravity Sewer Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
MP015100	West Point Pump Station 4 (Thompson Avenue) Rehabilitation	\$ -	\$ -	\$ -	\$ -	\$ -
MP015300	King William Central Crossing Pump Station Rehabilitation	\$ -	\$ -	\$ -	\$ -	\$ -
MP015400	Middlesex Interceptor System Program Phase IV	\$ 2	\$ 2	\$ 2	\$ -	\$ -
MP015500	Small Communities Rehabilitation Phase VI	\$ -	\$ -	\$ -	\$ -	\$ -
MP015600	West Point Treatment Plant Final Effluent Pump Station Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
MP015700	West Point Treatment Plant Secondary Clarifier Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
MP015800	King William Main Pump Station Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 936	\$ 2	\$ 2	\$ -	\$ -
Nansemond						
NP010620	Suffolk Pump Station Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
NP012400	Western Branch Sewer System Gravity Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
NP013000	Nansemond Treatment Plant Motor Control Center Replacements	\$ -	\$ -	\$ -	\$ -	\$ -
NP013400	Deep Creek Interceptor Force Main Risk Mitigation Project	\$ -	\$ -	\$ -	\$ -	\$ -
NP013700	Nansemond Treatment Plant Struvite Recovery Facility Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
NP013820	Nansemond Treatment Plant Advanced Nutrient Reduction Improvements Ph II	\$ -	\$ -	\$ -	\$ -	\$ -
NP013901	Nansemond Service Area I-I Reduction Phase II (CHES)	\$ 1,407	\$ 6,089	\$ 8,475	\$ 17	\$ -
NP013902	Nansemond Service Area I-I Reduction Phase III (CHES)	\$ 4,882	\$ 4,882	\$ 2,452	\$ 11	\$ -
NP014000	Wilroy Pressure Reducing Station and Off-line Storage Facility	\$ -	\$ -	\$ -	\$ -	\$ -
NP014400	Nansemond Treatment Plant Influent Screen Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
NP014500	Nansemond Treatment Plant Regional Residuals Facility Upgrade	\$ -	\$ -	\$ -	\$ -	\$ -
NP014600	West Road Interceptor Force Main Extension	\$ -	\$ -	\$ -	\$ -	\$ -
NP014700	Nansemond Treatment Plant Digester Capacity Upgrades	\$ -	\$ -	\$ -	\$ -	\$ -
NP014800	High Priority Projects Round 2 Project 8	\$ -	\$ -	\$ -	\$ -	\$ -
NP014900	Nansemond Treatment Plant Interceptors Storage Yard	\$ -	\$ -	\$ -	\$ -	\$ -
NP015000	Shell Road Interceptor Force Main (SF-144) Segmental Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
NP015100	Nansemond Treatment Plant Administration Building Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 6,288	\$ 10,971	\$ 10,927	\$ 28	\$ -
Surry						
SU010200	Surry Hydraulic Improvements and Interceptor Force Main	\$ -	\$ -	\$ -	\$ -	\$ -
SU010400	Surry Force Main and Pump Station-Dominion Power Extension	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ -	\$ -	\$ -	\$ -	\$ -
Virginia Initiative Plant						
VP010920	Norview Estabrook Division I 18-Inch Force Main Replacement Phase II, Section 2	\$ -	\$ -	\$ -	\$ -	\$ -
VP014010	Ferebee Avenue Pump Station Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
VP014021	Sanitary Sewer Project 1950-Part 1 30-Inch Gravity Sewer	\$ -	\$ -	\$ -	\$ -	\$ -
VP014022	Sanitary Sewer Replacement 1950 – Part 2	\$ -	\$ -	\$ -	\$ -	\$ -
VP014700	Ingleside Road Pump Station Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
VP014800	Lee Avenue-Wesley Street Horizontal Valve Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
VP015320	Larchmont Area Sanitary Sewer Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
VP015400	Lafayette Norview-Estabrook Pump Station Replacements	\$ -	\$ -	\$ -	\$ -	\$ -
VP015410	City Park Pump Station (PS 106) Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
VP015420	Luxembourg Pump Station (PS 113) Replacement and Ashland Sewer Extension	\$ -	\$ -	\$ -	\$ -	\$ -
VP015430	Station (PS 57) Rehabilitation	\$ -	\$ -	\$ -	\$ -	\$ -
VP016500	Norview-Estabrook Division I 12-Inch Force Main Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
VP016700	Norview-Estabrook Division I 18-Inch Force Main Replacement Phase III	\$ -	\$ -	\$ -	\$ -	\$ -
VP017120	Central Norfolk Area Gravity Sewer Improvements Phase II	\$ -	\$ -	\$ -	\$ -	\$ -
Note:	CHES - City of Chesapeake SF - Storage Facility PS - Pump Station					

FY-2023 to FY-2032 Cash Flow Projections (in thousands)

CIP No	Project Name	Total FY-2023 to FY-2032	FY-2023	FY-2024	FY-2025	FY-2026	FY-2027
VP017130	Central Norfolk Area Gravity Sewer Improvements Phase IIA	\$ 4,309	\$ 386	\$ 2,430	\$ 1,474	\$ 19	\$ -
VP018000	Park Avenue Pump Station Replacement	\$ 11,449	\$ 4,695	\$ 6,235	\$ 520	\$ -	\$ -
VP018200	Effingham Interceptor Vault Removal	\$ 3,630	\$ 2,555	\$ 1,075	\$ -	\$ -	\$ -
VP018301	VIP Service Area I-I Reduction Phase I (PORTS)	\$ 13,023	\$ 689	\$ 1,011	\$ 4,003	\$ 7,300	\$ 20
VP018302	Portsmouth Pump Station Upgrades (VIP-HPP-04B)	\$ 11,369	\$ -	\$ -	\$ -	\$ 312	\$ 823
VP018303	VIP Service Area I-I Reduction Phase III (PORTS)	\$ 13,023	\$ 689	\$ 1,011	\$ 4,003	\$ 7,300	\$ 20
VP018304	Camden Avenue Pump Station Upgrades (VIP-HPP-04D)	\$ 5,916	\$ -	\$ -	\$ -	\$ 182	\$ 297
VP018305	Camden Avenue Gravity Improvements (VIP-HPP-04E)	\$ 6,852	\$ -	\$ 470	\$ 4,666	\$ 1,716	\$ -
VP018400	State Street Pressure Reducing Station and Offline Storage (VIP-HPP-05)	\$ 20,336	\$ 249	\$ 249	\$ 249	\$ 249	\$ 614
VP018500	Elizabeth River Crossing Reliability Improvements	\$ 1,651	\$ 1,102	\$ 499	\$ 50	\$ -	\$ -
VP018800	Virginia Initiative Plant Administration Building Renovation	\$ 3,178	\$ 1,880	\$ 1,281	\$ 17	\$ -	\$ -
VP018900	Norchester Pump Station Screening Improvements	\$ 417	\$ 326	\$ 90	\$ 1	\$ -	\$ -
VP019000	Colley Ave Pump Station Pump Replacement	\$ 693	\$ 316	\$ 372	\$ 5	\$ -	\$ -
VP019100	Virginia Initiative Plant Incinerator Burner Replacement	\$ 4,441	\$ 2,961	\$ 1,480	\$ -	\$ -	\$ -
VP019200	Virginia Initiative Plant Motor Control Center Replacements	\$ 1,474	\$ 1,040	\$ 433	\$ -	\$ -	\$ -
VP019300	High Priority Projects Round 2 Project 4	\$ 13,370	\$ -	\$ -	\$ -	\$ -	\$ -
VP019400	High Priority Projects Round 2 Project 5	\$ 16,135	\$ -	\$ -	\$ -	\$ -	\$ -
VP019600	Virginia Initiative Plant Waste Activated Solids Thickening Improvements	\$ 2,800	\$ -	\$ 56	\$ 692	\$ 1,172	\$ 881
	Subtotal	\$ 223,224	\$ 48,818	\$ 65,418	\$ 48,481	\$ 21,941	\$ 2,698
Williamsburg							
WB012500	Lodge Road Pump Station Upgrades	\$ 1,699	\$ 44	\$ 177	\$ 921	\$ 554	\$ 3
WB012600	Kingsmill Pump Station Piping Replacement and Wet Well Rehabilitation	\$ 810	\$ 810	\$ -	\$ -	\$ -	\$ -
WB012900	Williamsburg Treatment Plant Administration Building Renovation	\$ 1,775	\$ 1,770	\$ -	\$ -	\$ -	\$ -
WB013000	Williamsburg Treatment Plant Intermediate Clarifier Wet Weather System	\$ 2,088	\$ 139	\$ 272	\$ -	\$ -	\$ -
WB013100	Williamsburg Treatment Plant Outfall Flow Control System Repairs	\$ 1,561	\$ 201	\$ 1,355	\$ 1	\$ 1	\$ 1
WB013200	High Priority Projects Round 2 Project 1	\$ 57,683	\$ -	\$ -	\$ -	\$ -	\$ -
WB013300	Williamsburg Treatment Plant Motor Control Center Replacements	\$ 2,633	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 23,544	\$ 3,205	\$ 2,117	\$ 2,841	\$ 778	\$ 711
York River							
YR010300	Foxridge, Woodland Road and Fox Hill Road Gravity Sewer Rehabilitation	\$ 3,092	\$ 1,027	\$ 2,060	\$ 4	\$ -	\$ -
YR010520	Magruder Mercury Interceptor Force Main Replacement - Section B	\$ 5,142	\$ 829	\$ 3,446	\$ 865	\$ 1	\$ -
YR010530	Magruder Mercury Interceptor Force Main Replacement - Section C	\$ 6,235	\$ 65	\$ 571	\$ 3,448	\$ 2,151	\$ -
YR010900	Tabb Pressure Reducing Station and Offline Storage Facility	\$ 24,441	\$ 18,327	\$ 6,114	\$ -	\$ -	\$ -
YR011900	Bethel-Poquoson Force Main Part III Replacement	\$ 371	\$ 202	\$ 169	\$ -	\$ -	\$ -
YR013900	York River System Isolation Valve Installation and Replacement	\$ 2,912	\$ 2,912	\$ -	\$ -	\$ -	\$ -
YR014000	York River Treatment Plant Administration Building Renovation	\$ 5,923	\$ 3,382	\$ 2,538	\$ 4	\$ -	\$ -
YR014100	Coliseum Pressure Reducing Station Enhanced Storage	\$ 8,086	\$ 55	\$ -	\$ 492	\$ 6,704	\$ 834
YR014200	LaSalle Avenue Boat Harbor to York River Interconnect Force Main	\$ 16,816	\$ -	\$ 1,020	\$ 1,582	\$ 11,367	\$ 2,846
YR014300	Bethel-Poquoson Force Main Phase II (Wythe Creek Road) Replacement	\$ 1,023	\$ 1,022	\$ 1	\$ -	\$ -	\$ -
YR014600	Bethel-Poquoson Force Main Part IV Replacement-Wythe Creek Exposed Crossing	\$ 1,383	\$ 694	\$ 685	\$ 1	\$ 1	\$ 1
YR014700	Coliseum PRS Off-Line Storage Tank Odor Control Upgrades	\$ 807	\$ 386	\$ 420	\$ 2	\$ -	\$ -
YR014800	York River Treatment Plant Primary Clarifier Influent and Effluent Pipe Rehabilitation	\$ 3,796	\$ 2,976	\$ 820	\$ -	\$ -	\$ -
YR014900	York River DEMON Upgrades	\$ 500	\$ 83	\$ 250	\$ 167	\$ -	\$ -
	Subtotal	\$ 80,527	\$ 31,959	\$ 18,093	\$ 6,566	\$ 20,225	\$ 3,682
General							
GN010730	Horizontal Valve Replacement Phase III	\$ 1,213	\$ 45	\$ 159	\$ 1,009	\$ -	\$ -
GN013300	Treatment Plant Grease Handling Facilities	\$ 2,255	\$ 2,255	\$ -	\$ -	\$ -	\$ -
GN014900	North Shore Gravity Sewer Improvements Phase I	\$ 5,426	\$ 4,332	\$ 1,091	\$ 3	\$ -	\$ -
GN015000	South Shore Gravity Sewer Improvements Phase I	\$ 786	\$ 130	\$ 656	\$ -	\$ -	\$ -
GN015300	Interceptor System Valve Improvements Phase I	\$ 2,502	\$ 236	\$ 1,596	\$ 668	\$ 2	\$ -
GN015400	South Shore Aerial Crossing Improvements	\$ 243	\$ 243	\$ -	\$ -	\$ -	\$ -
GN015800	North Shore Automated Diversion Facilities	\$ 1,816	\$ 1,671	\$ 144	\$ -	\$ -	\$ -
GN016220	SWIFT Research Center Full Scale MAR Well Integration	\$ 859	\$ 859	\$ -	\$ -	\$ -	\$ -
GN016311	Outfall Dispersion Modeling for Full Scale SWIFT	\$ 1,118	\$ 100	\$ 101	\$ 102	\$ 102	\$ 102
GN016320	Program Management of SWIFT Full Scale Implementation	\$ 57,118	\$ 5,603	\$ 5,863	\$ 5,688	\$ 5,688	\$ 5,688
GN016331	SWIFT Managed Aquifer Recharge Services	\$ 420	\$ 275	\$ 145	\$ -	\$ -	\$ -
GN016342	Williamsburg SWIFT Land Acquisition	\$ 1,497	\$ -	\$ -	\$ -	\$ -	\$ -
Note:	PORTS - City of Portsmouth VIP - Virginia Initiative Plant HPP - High Priority Project DEMON - Deamonification SWIFT - Sustainable Water Initiative for Tomorrow MAR - Managed Aquifer Recharge						

FY-2023 to FY-2032 Cash Flow Projections (in thousands)

CIP No	Project Name	FY-2028	FY-2029	FY-2030	FY-2031	FY-2032
VP017130	Central Norfolk Area Gravity Sewer Improvements Phase IIA	\$ -	\$ -	\$ -	\$ -	\$ -
VP018000	Park Avenue Pump Station Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
VP018200	Effingham Interceptor Vault Removal	\$ -	\$ -	\$ -	\$ -	\$ -
VP018301	VIP Service Area I-I Reduction Phase I (PORTS)	\$ -	\$ -	\$ -	\$ -	\$ -
VP018302	Portsmouth Pump Station Upgrades (VIP-HPP-04B)	\$ 6,673	\$ 3,562	\$ -	\$ -	\$ -
VP018303	VIP Service Area I-I Reduction Phase III (PORTS)	\$ -	\$ -	\$ -	\$ -	\$ -
VP018304	Camden Avenue Pump Station Upgrades (VIP-HPP-04D)	\$ 1,866	\$ 3,572	\$ -	\$ -	\$ -
VP018305	Camden Avenue Gravity Improvements (VIP-HPP-04E)	\$ -	\$ -	\$ -	\$ -	\$ -
VP018400	State Street Pressure Reducing Station and Offline Storage (VIP-HPP-05)	\$ 704	\$ 4,481	\$ 10,134	\$ 3,396	\$ 9
VP018500	Elizabeth River Crossing Reliability Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
VP018800	Virginia Initiative Plant Administration Building Renovation	\$ -	\$ -	\$ -	\$ -	\$ -
VP018900	Norchester Pump Station Screening Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
VP019000	Colley Ave Pump Station Pump Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
VP019100	Virginia Initiative Plant Incinerator Burner Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
VP019200	Virginia Initiative Plant Motor Control Center Replacements	\$ -	\$ -	\$ -	\$ -	\$ -
VP019300	High Priority Projects Round 2 Project 4	\$ -	\$ -	\$ -	\$ -	\$ 1,471
VP019400	High Priority Projects Round 2 Project 5	\$ -	\$ -	\$ -	\$ -	\$ -
VP019600	Virginia Initiative Plant Waste Activated Solids Thickening Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 9,242	\$ 11,615	\$ 10,134	\$ 3,396	\$ 1,480
Williamsburg						
WB012500	Lodge Road Pump Station Upgrades	\$ -	\$ -	\$ -	\$ -	\$ -
WB012600	Kingsmill Pump Station Piping Replacement and Wet Well Rehabilitation	\$ -	\$ -	\$ -	\$ -	\$ -
WB012900	Williamsburg Treatment Plant Administration Building Renovation	\$ -	\$ -	\$ -	\$ -	\$ -
WB013000	Williamsburg Treatment Plant Intermediate Clarifier Wet Weather System	\$ -	\$ -	\$ -	\$ -	\$ -
WB013100	Williamsburg Treatment Plant Outfall Flow Control System Repairs	\$ -	\$ -	\$ -	\$ -	\$ -
WB013200	High Priority Projects Round 2 Project 1	\$ -	\$ -	\$ -	\$ 6,345	\$ 6,634
WB013300	Williamsburg Treatment Plant Motor Control Center Replacements	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 913	\$ -	\$ -	\$ 6,345	\$ 6,634
York River						
YR010300	Foxridge, Woodland Road and Fox Hill Road Gravity Sewer Rehabilitation	\$ -	\$ -	\$ -	\$ -	\$ -
YR010520	Magruder Mercury Interceptor Force Main Replacement - Section B	\$ -	\$ -	\$ -	\$ -	\$ -
YR010530	Magruder Mercury Interceptor Force Main Replacement - Section C	\$ -	\$ -	\$ -	\$ -	\$ -
YR010900	Tabb Pressure Reducing Station and Offline Storage Facility	\$ -	\$ -	\$ -	\$ -	\$ -
YR011900	Bethel-Poquoson Force Main Part III Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
YR013900	York River System Isolation Valve Installation and Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
YR014000	York River Treatment Plant Administration Building Renovation	\$ -	\$ -	\$ -	\$ -	\$ -
YR014100	Coliseum Pressure Reducing Station Enhanced Storage	\$ -	\$ -	\$ -	\$ -	\$ -
YR014200	LaSalle Avenue Boat Harbor to York River Interconnect Force Main	\$ 1	\$ -	\$ -	\$ -	\$ -
YR014300	Bethel-Poquoson Force Main Phase II (Wythe Creek Road) Replacement	\$ -	\$ -	\$ -	\$ -	\$ -
YR014600	Bethel-Poquoson Force Main Part IV Replacement-Wythe Creek Exposed Crossing	\$ -	\$ -	\$ -	\$ -	\$ -
YR014700	Coliseum PRS Off-Line Storage Tank Odor Control Upgrades	\$ -	\$ -	\$ -	\$ -	\$ -
YR014800	York River Treatment Plant Primary Clarifier Influent and Effluent Pipe Rehabilitation	\$ -	\$ -	\$ -	\$ -	\$ -
YR014900	York River DEMON Upgrades	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 1	\$ -	\$ -	\$ -	\$ -
General						
GN010730	Horizontal Valve Replacement Phase III	\$ -	\$ -	\$ -	\$ -	\$ -
GN013300	Treatment Plant Grease Handling Facilities	\$ -	\$ -	\$ -	\$ -	\$ -
GN014900	North Shore Gravity Sewer Improvements Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
GN015000	South Shore Gravity Sewer Improvements Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
GN015300	Interceptor System Valve Improvements Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
GN015400	South Shore Aerial Crossing Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
GN015800	North Shore Automated Diversion Facilities	\$ -	\$ -	\$ -	\$ -	\$ -
GN016220	SWIFT Research Center Full Scale MAR Well Integration	\$ -	\$ -	\$ -	\$ -	\$ -
GN016311	Outfall Dispersion Modeling for Full Scale SWIFT	\$ 102	\$ 101	\$ 101	\$ 102	\$ 102
GN016320	Program Management of SWIFT Full Scale Implementation	\$ 5,688	\$ 5,688	\$ 5,688	\$ 5,220	\$ 4,790
GN016331	SWIFT Managed Aquifer Recharge Services	\$ -	\$ -	\$ -	\$ -	\$ -
GN016342	Williamsburg SWIFT Land Acquisition	\$ -	\$ -	\$ -	\$ 642	\$ 856
Note:	PORTS - City of Portsmouth VIP - Virginia Initiative Plant HPP - High Priority Project DEMON - Deamonification SWIFT - Sustainable Water Initiative for Tomorrow MAR - Managed Aquifer Recharge					

FY-2023 to FY-2032 Cash Flow Projections (in thousands)

CIP No	Project Name	Total FY-2023 to FY-2032	FY-2023	FY-2024	FY-2025	FY-2026	FY-2027
GN016344	James River Land Improvements	\$ 4,388	\$ 4,032	\$ 356	\$ -	\$ -	\$ -
GN016346	Boat Harbor Transmission Force Main Land Acquisition	\$ 1,250	\$ 1,250	\$ -	\$ -	\$ -	\$ -
GN016347	James River Land Improvements, Phase II Trails	\$ 1,489	\$ -	\$ -	\$ 681	\$ 808	\$ -
GN016350	Williamsburg SWIFT Facility	\$ 130,508	\$ -	\$ -	\$ -	\$ -	\$ -
GN016351	Williamsburg Recharge Wells	\$ 24,444	\$ -	\$ -	\$ -	\$ -	\$ -
GN016360	James River SWIFT Facility	\$ 238,925	\$ 69,435	\$ 96,891	\$ 53,133	\$ 18,697	\$ 768
GN016361	James River Recharge Wells (On Site)	\$ 12,626	\$ 12,355	\$ 271	\$ -	\$ -	\$ -
GN016362	James River Recharge Wells (Off Site)	\$ 42,766	\$ 12,896	\$ 21,874	\$ 7,996	\$ -	\$ -
GN016363	James River Recharge Well Enhancements	\$ 305	\$ -	\$ -	\$ 103	\$ 203	\$ -
GN016370	York River SWIFT Facility	\$ 175,556	\$ -	\$ -	\$ -	\$ -	\$ -
GN016371	York River Recharge Wells	\$ 27,500	\$ -	\$ -	\$ -	\$ -	\$ -
GN016380	Nansemond SWIFT Facility	\$ 306,350	\$ 4,453	\$ 4,964	\$ 19,128	\$ 86,017	\$ 120,574
GN016381	Nansemond Recharge Wells	\$ 48,048	\$ 940	\$ 714	\$ 5,501	\$ 13,066	\$ 14,671
GN016390	VIP SWIFT Facility	\$ 334,132	\$ -	\$ 5,506	\$ 328	\$ 8,312	\$ 8,132
GN016391	VIP Recharge Wells	\$ 73,332	\$ -	\$ 188	\$ 1,948	\$ 688	\$ 592
GN016392	VIP SWIFT Site Work	\$ 38,893	\$ 702	\$ 583	\$ 2,600	\$ 31,110	\$ 3,897
GN016700	Treatment Plant Solids Handling Replacement Phase II	\$ 4,354	\$ 2,750	\$ 1,604	\$ -	\$ -	\$ -
GN017100	Climate Change Planning	\$ 1,271	\$ 1,271	\$ -	\$ -	\$ -	\$ -
GN017200	Interceptor Systems Pump Station Control and SCADA Upgrades and Enhancements Phase II	\$ 5,066	\$ 1,223	\$ 1,223	\$ 1,223	\$ 1,223	\$ 172
GN017300	Treatment Plant Dewatering Replacement Program	\$ 31,500	\$ -	\$ -	\$ 4,540	\$ 4,540	\$ 4,540
GN017400	Treatment Plant Dewatering Replacement Phase III	\$ 3,596	\$ 346	\$ 3,250	\$ -	\$ -	\$ -
GN017500	Fleet Management Program	\$ 13,088	\$ -	\$ 2,392	\$ 2,698	\$ 2,469	\$ 1,833
GN017900	Solids System Improvements for Army Base MHI Offline	\$ 4,000	\$ 2,667	\$ 1,333	\$ -	\$ -	\$ -
GN018000	Inflow Reduction Program - Phase I	\$ 964	\$ 753	\$ 163	\$ -	\$ -	\$ -
GN018400	Conceptual Project Development (FY23)	\$ 413	\$ 413	\$ -	\$ -	\$ -	\$ -
GN018500	Fleet Management (FY23)	\$ 2,623	\$ 2,623	\$ -	\$ -	\$ -	\$ -
GN018600	North Shore Galvanic Cathodic Protection Rehabilitation	\$ 1,293	\$ -	\$ 423	\$ 870	\$ -	\$ -
GN018700	South Shore Galvanic Cathodic Protection Rehabilitation Phase I	\$ 1,461	\$ -	\$ -	\$ 144	\$ 1,317	\$ -
GN018800	South Shore Galvanic Cathodic Protection Rehabilitation Phase II	\$ 1,461	\$ -	\$ 94	\$ 1,203	\$ 164	\$ -
GN018900	Pump Station Motor Control Center Replacements – Phase I	\$ 2,490	\$ 830	\$ 415	\$ 415	\$ 415	\$ 415
GN019000	Water Quality Department Instrumentation Equipment (FY23)	\$ 104	\$ 104	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 1,239,224	\$ 134,793	\$ 151,999	\$ 109,982	\$ 174,819	\$ 161,385
Future Improvements							
IP010400	Interceptor System Rehabilitation and Replacement	\$ 281,196	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 281,196	\$ -	\$ -	\$ -	\$ -	\$ -
	CIP TOTALS	\$ 3,361,366	\$ 513,750	\$ 742,353	\$ 557,895	\$ 326,316	\$ 221,053
Note:	SWIFT - Sustainable Water Initiative for Tomorrow VIP - Virginia Initiative Plant SCADA - Supervisory Control and Data Acquisition MHI - Multiple Hearth Incinerator						

FY-2023 to FY-2032
Cash Flow Projections (in thousands)

CIP No	Project Name	FY-2028	FY-2029	FY-2030	FY-2031	FY-2032
GN016344	James River Land Improvements	\$ -	\$ -	\$ -	\$ -	\$ -
GN016346	Boat Harbor Transmission Force Main Land Acquisition	\$ -	\$ -	\$ -	\$ -	\$ -
GN016347	James River Land Improvements, Phase II Trails	\$ -	\$ -	\$ -	\$ -	\$ -
GN016350	Williamsburg SWIFT Facility	\$ -	\$ -	\$ -	\$ -	\$ 2,175
GN016351	Williamsburg Recharge Wells	\$ -	\$ -	\$ -	\$ -	\$ 467
GN016360	James River SWIFT Facility	\$ -	\$ -	\$ -	\$ -	\$ -
GN016361	James River Recharge Wells (On Site)	\$ -	\$ -	\$ -	\$ -	\$ -
GN016362	James River Recharge Wells (Off Site)	\$ -	\$ -	\$ -	\$ -	\$ -
GN016363	James River Recharge Well Enhancements	\$ -	\$ -	\$ -	\$ -	\$ -
GN016370	York River SWIFT Facility	\$ -	\$ -	\$ -	\$ 1,413	\$ 1,571
GN016371	York River Recharge Wells	\$ -	\$ -	\$ -	\$ -	\$ -
GN016380	Nansemond SWIFT Facility	\$ 50,944	\$ 20,270	\$ -	\$ -	\$ -
GN016381	Nansemond Recharge Wells	\$ 10,680	\$ 2,476	\$ -	\$ -	\$ -
GN016390	VIP SWIFT Facility	\$ 45,000	\$ 94,954	\$ 94,531	\$ 55,024	\$ 22,345
GN016391	VIP Recharge Wells	\$ 10,626	\$ 10,749	\$ 10,749	\$ 10,792	\$ 10,824
GN016392	VIP SWIFT Site Work	\$ -	\$ -	\$ -	\$ -	\$ -
GN016700	Treatment Plant Solids Handling Replacement Phase II	\$ -	\$ -	\$ -	\$ -	\$ -
GN017100	Climate Change Planning	\$ -	\$ -	\$ -	\$ -	\$ -
GN017200	Interceptor Systems Pump Station Control and SCADA Upgrades and Enhancements Phase II	\$ -	\$ -	\$ -	\$ -	\$ -
GN017300	Treatment Plant Dewatering Replacement Program	\$ 4,540	\$ 4,540	\$ 4,540	\$ 4,259	\$ -
GN017400	Treatment Plant Dewatering Replacement Phase III	\$ -	\$ -	\$ -	\$ -	\$ -
GN017500	Fleet Management Program	\$ 1,843	\$ 1,853	\$ -	\$ -	\$ -
GN017900	Solids System Improvements for Army Base MHI Offline	\$ -	\$ -	\$ -	\$ -	\$ -
GN018000	Inflow Reduction Program - Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
GN018400	Conceptual Project Development (FY23)	\$ -	\$ -	\$ -	\$ -	\$ -
GN018500	Fleet Management (FY23)	\$ -	\$ -	\$ -	\$ -	\$ -
GN018600	North Shore Galvanic Cathodic Protection Rehabilitation	\$ -	\$ -	\$ -	\$ -	\$ -
GN018700	South Shore Galvanic Cathodic Protection Rehabilitation Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
GN018800	South Shore Galvanic Cathodic Protection Rehabilitation Phase II	\$ -	\$ -	\$ -	\$ -	\$ -
GN018900	Pump Station Motor Control Center Replacements – Phase I	\$ -	\$ -	\$ -	\$ -	\$ -
GN019000	Water Quality Department Instrumentation Equipment (FY23)	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	\$ 129,423	\$ 140,631	\$ 115,610	\$ 77,450	\$ 43,131
Future Improvements						
IP010400	Interceptor System Rehabilitation and Replacement	\$ -	\$ 23,668	\$ 57,504	\$ 86,402	\$ 113,622
	Subtotal	\$ -	\$ 23,668	\$ 57,504	\$ 86,402	\$ 113,622
	CIP TOTALS	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000
Note:	SWIFT - Sustainable Water Initiative for Tomorrow VIP - Virginia Initiative Plant SCADA - Supervisory Control and Data Acquisition MHI - Multiple Hearth Incinerator					



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*Photos used for this publication feature the
Grand Opening of Woodstock Park in Virginia Beach, Virginia.
Printed on recycled paper using environmentally friendly ink.*

AGENDA ITEM 5. – May 24, 2022

Subject: Bank of America Second Amended and Restated Credit Agreement Resolution

Recommended Action: Adopt a resolution authorizing the execution and delivery of an amended and restated credit agreement with Bank of America, N.A. and grant the authority to execute and deliver such other documents and agreements relating to such transaction as may be necessary or appropriate.

Agreement Description: On October 27, 2015, the Commission approved a resolution to establish a junior lien \$90 million Line of Credit (LOC) with Bank of America to fund the Capital Improvement Program. After the LOC was paid off with proceeds from the February 2016 Fixed Rate bond sale, HRSD continued to extend the LOC to keep this credit facility open. Most recently, the Commission approved the Amended and Restated Credit Agreement on April 27, 2021 to extend the agreement and increase the amount available to \$200 million.

In the proposed [agreement](#), Bank of America will initially provide a \$100 million revolving line of credit for capital projects with the ability to increase the amount to \$300 million. There is a provision that allows up to six requests to change the line of credit amount (in \$25 million increments). The termination date is set for June 30, 2025, but HRSD can request an extension at least 30 days, but no more than 120 days ahead of time. The tax-exempt interest rate will be based on the Bloomberg Short-Term Bank Yield Index (BSBY) (80% of the one month rate), currently 0.67%, plus 0.39%. Under the advice of counsel to prevent fraud, two signatures will be required to request a withdrawal and the bank is required to deposit it in HRSD's account.

The attached [Resolution](#) was prepared by HRSD legal counsel and reviewed by staff.

Hampton Roads Sanitation District
Resolution of
May 24, 2022

HAMPTON ROADS SANITATION DISTRICT COMMISSION

RESOLUTION AUTHORIZING THE EXECUTION AND DELIVERY OF A SECOND AMENDED AND RESTATED CREDIT AGREEMENT WITH BANK OF AMERICA, N.A.; AND GRANTING THE AUTHORITY TO EXECUTE AND DELIVER SUCH OTHER DOCUMENTS AND AGREEMENTS RELATING TO SUCH TRANSACTION AS MAY BE NECESSARY OR APPROPRIATE.

Adopted May 24, 2022

**RESOLUTION AUTHORIZING THE EXECUTION AND DELIVERY
OF A SECOND AMENDED AND RESTATED CREDIT AGREEMENT
WITH BANK OF AMERICA, N.A.; AND GRANTING THE
AUTHORITY TO EXECUTE AND DELIVER SUCH OTHER
DOCUMENTS AND AGREEMENTS RELATING TO SUCH
TRANSACTION AS MAY BE NECESSARY OR APPROPRIATE**

WHEREAS, the Hampton Roads Sanitation District (the “District”) and Bank of America, N.A. (the “Bank”), entered into a Credit Agreement, dated as of October 30, 2015, as previously modified by (i) the Amendment, dated as of March 30, 2016, (ii) the Second Amendment, dated as of April 5, 2017, (iii) the Third Amendment, dated as of May 31, 2018, (iv) the Fourth Amendment, dated as of June 6, 2019, (v) the Fifth Amendment, dated as of April 30, 2020, and (vi) the Amended and Restated Credit Agreement, dated as of April 29, 2021 (as so amended, the “Existing Credit Agreement”), pursuant to which the Bank agreed, on the terms and conditions set forth in the Existing Credit Agreement, to provide a line of credit to the District to provide interim financing or refinancing for the costs of the District’s Capital Improvement Program (the “Projects”); and

WHEREAS, the Hampton Roads Sanitation District Commission (the “Commission”) is the District’s governing body; and

WHEREAS, the District and the Bank desire to amend and restate the Existing Credit Agreement to provide the District a revolving line of credit in an aggregate principal amount of \$100,000,000, subject to increase of up to a maximum aggregate principal amount of \$300,000,000, to provide interim financing or refinancing for costs of the Projects, to extend the scheduled termination date of the Existing Credit Agreement to June 30, 2025, to amend provisions relating to the determination of the rate of interest on amounts advanced thereunder and to make certain other changes; and

WHEREAS, there has been presented to the Commission a proposed form of such amendment and restatement of the Existing Credit Agreement pursuant to a Second Amended and Restated Credit Agreement between the District and the Bank (the “Second Amended and Restated Credit Agreement”); and

WHEREAS, the District’s obligation to make payments under the Existing Credit Agreement, as amended by the Second Amended and Restated Credit Agreement and any Note (as defined therein) issued under the terms thereof, will constitute a Junior Obligation within the meaning of the Trust Agreement, dated as of November 1, 2011, as amended and supplemented (the “Trust Agreement”), between the District and The Bank of New York Mellon Trust Company, N.A., as trustee, and will be expressly subordinate and junior to the Lien on Net Revenues Available for Debt Service (each as defined in the Trust Agreement) created pursuant to Section 701(a) thereof; and

WHEREAS, the Commission has duly reviewed and considered the form of the Second Amended and Restated Credit Agreement and has determined that it is in acceptable form; now therefore,

BE IT RESOLVED by the Hampton Roads Sanitation District Commission as follows:

SECTION 1. Authorization of the Second Amended and Restated Credit Agreement. The Commission hereby authorizes the execution of the Second Amended and Restated Credit Agreement, and the Chair of the Commission, the Vice Chair of the Commission, the Secretary of the Commission, the General Manager of the District or the Chief Financial Officer of the District (each a “Delegate”) are hereby each authorized, directed and empowered to execute and deliver, under seal, in the name and on behalf of the District, the Second Amended and Restated Credit Agreement in such form and containing substantially the same terms and provisions, with such additions and modifications as shall be approved by the Delegate executing such Second Amended and Restated Credit Agreement, the execution thereof by any such officer being conclusive evidence of such approval.

SECTION 2. Execution of Documents. The execution and delivery by any Delegate of the Second Amended and Restated Credit Agreement, and any other agreements, documents, closing papers and certificates executed and delivered pursuant to this Resolution shall be conclusive evidence of his or her approval of the changes, if any, in the forms thereof.

SECTION 3. Ratification. All actions taken by the District, the members of the Commission, and officers, agents and employees of the District in connection with the authorization, execution and delivery of the Second Amended and Restated Credit Agreement and the authorization, execution and delivery of the agreements, certificates and other documents to be executed by the District and delivered in connection with such authorization, execution and delivery are hereby ratified and confirmed.

SECTION 4. Further Actions. The members, officers, employees and agents of the District are hereby authorized and directed to do all acts and things, including without limitation the execution and delivery of such agreements, documents, certificates and closing papers on behalf of the District required of them by the provisions of the Second Amended and Restated Credit Agreement for the full, punctual and complete performance of all the terms, covenants, provisions and agreements of the Second Amended and Restated Credit Agreement and, also, to do all acts and things required of them by the provisions of this Resolution. After the execution and delivery of the Second Amended and Restated Credit Agreement, each Delegate is also authorized to do all acts and things that may be necessary or desirable, from time to time, to seek and obtain one or more increases in the maximum aggregate principal amount of the revolving line of credit thereunder up to a maximum aggregate principal amount of \$300,000,000.

SECTION 5. Delegate Certificate. Each Delegate may execute a certificate or certificates evidencing the determinations made or other actions carried out pursuant to the authority granted in this Resolution, and any such certificate shall be conclusive evidence of the actions or determinations as stated therein.

SECTION 6. Repeal of Conflicting Resolutions. Any and all resolutions of the Commission or portions thereof in conflict with the provisions of this Resolution are hereby repealed to the extent of such conflict.

SECTION 7. Effective Date. This resolution shall take effect immediately upon its adoption.

[END OF RESOLUTION]

Adopted By the Hampton Roads Sanitation District Commission on May 24, 2022:

Frederick N. Elofson, Chair

SECOND AMENDED AND RESTATED
CREDIT AGREEMENT

Dated as of June 30, 2022

by and between

HAMPTON ROADS SANITATION DISTRICT

and

BANK OF AMERICA, N.A.

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This SECOND AMENDED AND RESTATED CREDIT AGREEMENT (this "Agreement"), dated as of June 30, 2022, between HAMPTON ROADS SANITATION DISTRICT, a political subdivision of the Commonwealth of Virginia having its principal office at 1434 Air Rail Avenue, Virginia Beach, Virginia (the "District"), and BANK OF AMERICA, N.A., a national banking association organized under the laws of the United States (the "Bank").

RECITALS

WHEREAS, the District and the Bank are parties to that certain Amended and Restated Credit Agreement dated as of April 29, 2021 (the "Existing Credit Agreement"), whereby the Bank has extended a line of credit to the District to provide interim financing or refinancing for costs of the District's Capital Improvement Program (the "Projects"); and

WHEREAS, the District and the Bank desire to amend and restate the Existing Credit Agreement, and the Exhibits thereto, to extend the Scheduled Termination Date, amend the interest rate on Advances, increase the Commitment, and make certain other changes, all as set forth herein; and

WHEREAS, in order to induce the Bank to enter into this Agreement and make Advances (as hereinafter defined) hereunder, the District has agreed to execute and deliver to the Bank, prior to any Advance, the Tax-Exempt Note and the Taxable Note (as each is hereinafter defined), as applicable, and any related agreements, undertakings, instruments and documents to provide for the repayment to the Bank of (i) any Advances hereunder and (ii) any other payment made hereunder; and

WHEREAS, the District plans, but is not obligated under the terms of this Agreement, to make all principal payments on an Advance made for purposes of financing a Project from proceeds of permanent financings or other sources in accordance with the terms and conditions of this Agreement; and

WHEREAS, the District's obligation to make payments under this Agreement and each Note issued pursuant to the terms hereof shall constitute a Junior Obligation within the meaning of the Trust Agreement, dated as of October 1, 2011, as amended and supplemented, between the District and The Bank of New York Mellon Trust Company, N.A., as trustee, and are expressly subordinate and junior to the Lien on Net Revenues Available for Debt Service (each as defined in the Trust Agreement) created pursuant to Section 701(a) thereof; and

WHEREAS, the Bank is willing to amend and restate the Existing Credit Agreement and provide a line of credit to the District upon the terms and conditions set forth in this Agreement;

NOW, THEREFORE, in consideration of the mutual promises contained herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and in order to induce the Bank to enter into this Agreement and make Advances to the District hereunder, the District and the Bank hereby amend and restate the Existing Credit Agreement in its entirety as follows:

SECTION I DEFINITIONS

1.1 Definitions. In addition to the defined terms set forth in the Recitals, as used in this Agreement, the following terms as used in this Agreement shall have the following meanings (such meanings to be equally applicable to both the singular and the plural forms of the terms defined):

"Advance" has the meaning ascribed to such term in Section 2.1(a) hereof.

"Advance Date" means the date an Advance is made by the Bank hereunder.

"Advance Notice" means an irrevocable request, substantially in the form of **Exhibit A**, given by the District, pursuant to Section 2.1 of this Agreement.

"Affiliate" means, with respect to any Person, any Person that directly or indirectly through one or more intermediaries, controls, or is controlled by, or is under common control with, such first Person. A Person shall be deemed to control another Person for the purposes of this definition if such first Person possesses, directly or indirectly, the power to direct, or cause the direction of, the management and policies of the second Person, whether through (i) the ownership of at least a majority of its voting securities, (ii) the right to designate or elect at least a majority of the members of its board of directors or other governing board or body, or (iii) by contract or otherwise.

"Agreement" means this Second Amended and Restated Credit Agreement, as the same may be further amended, restated, supplemented or otherwise modified from time to time.

"Applicable BSBY Interest Rate" means (A) for an Advance that finances a Tax-Exempt Project, a per annum rate equal to the sum of (x) 80% of either (A) BSBY Daily Floating Rate or (B) BSBY Rate for the applicable BSBY Interest Rate Period, as the case may be, and (y) 39 basis points (i.e., 0.39) or (B) for an Advance that finances a Taxable Project, a per annum rate equal to the sum of (x) either (A) BSBY Daily Floating Rate or (B) BSBY Rate for the applicable BSBY Interest Rate Period, as the case may be, and (y) 50 basis points (i.e., 0.50). The Applicable BSBY Interest Rate will be determined on the date of each Advance and (i) for BSBY Daily Floating Rate, will be adjusted on each banking day, and (ii) for all other Applicable BSBY Interest Rates will be applicable through the end of the chosen BSBY Interest Rate Period. An Applicable BSBY Interest Rate for a BSBY Interest Rate Period of one-month will set as of and on the first day of an applicable Advance and reset on the same day of each month thereafter, based on the District's initial selection as communicated in writing to the Bank, substantially in the form of Exhibit B. Applicable BSBY Interest Rates for all other BSBY Interest Rate Periods will be manually set and reset at the District's discretion in writing, substantially in the form of **Exhibit B**.

"Applicable SOFR Interest Rate" means (i) for an Advance that finances a Tax-Exempt Project, a per annum rate equal to the sum of (x) 80% of Daily SOFR, and (y) 47 basis points (i.e., 0.47) or (ii) for an Advance that finances a Taxable Project or other

expenses of the District, a per annum rate equal to the sum of (x) Daily SOFR, and (y) 60 basis points (i.e., 0.60).

"Available Commitment," as of any day, means the Commitment less the outstanding principal amount of any Advances.

"Bank" has the meaning ascribed to such term at the beginning of this Agreement.

"Banking Day" or "banking day" means a day other than Saturday, Sunday or other day on which commercial banks in the Commonwealth of Virginia are authorized to close, or are in fact closed, in the state where the Bank's lending office is located, and if such day relates to amounts bearing interest at a Reference Rate, in New York City.

"Bank's Prime Rate" means on any day, the rate of interest in effect for such day as publicly announced from time to time by the Bank as its "prime rate." The "prime rate" is a rate set by the Bank based upon various factors including the Bank's costs and desired return, general economic conditions and other factors, and is used as a reference point for pricing some loans, which may be priced at, above, or below such announced rate. Any change in such rate announced by the Bank shall take effect at the opening of business on the day specified in the public announcement of such change.

"Base Rate" means the greater of (i) the Bank's Prime Rate +1.00% and (ii) the Federal Funds Rate + 2.00%.

"Bond Counsel" means Norton Rose Fulbright US LLP or such other attorney or firm of attorneys experienced in the field of municipal bonds whose opinions are generally accepted by purchasers of municipal bonds and acceptable to the Bank.

"BSBY Daily Floating Rate" means a fluctuating rate of interest that can change on each banking day. The rate will be adjusted on each banking day to equal the BSBY Screen Rate for U.S. Dollar deposits two (2) banking days prior to the date of determination for a one month term beginning on that date; provided that if such rate is not published on such determination date then the rate will be the BSBY Screen Rate on the first banking day immediately prior thereto. If such rate is not available at such time for any reason or the Bank makes the determination to incorporate or adopt a new interest rate to replace the BSBY Daily Floating Rate in credit agreements, then the Bank may replace the BSBY Daily Floating Rate with Daily SOFR and the Applicable BSBY Interest Rate with the Applicable SOFR Interest Rate. In addition, the District shall have the right, by giving the Bank at least five (5) days' prior notice (by email or facsimile) to replace the BSBY Daily Floating Rate with Daily SOFR and the Applicable BSBY Interest Rate with the Applicable SOFR Interest Rate. In connection with the implementation of the Daily SOFR, the Bank will have the right, from time to time, in good faith, to make any conforming, technical, administrative or operational changes to this Agreement as may be appropriate to reflect the adoption and administration thereof and, notwithstanding anything to the contrary herein or in any other loan document, any amendments to this Agreement implementing such conforming changes will become effective upon notice (by email or facsimile) to the District

without any further action or consent of the other parties hereto. If at any time the BSBY Daily Floating Rate or Daily SOFR is less than zero, such rate shall be deemed to be zero for purposes of this Agreement.

"BSBY Interest Rate Period" means one-month, three-months or six-months for an applicable Advance as chosen by the District. If for a particular BSBY Interest Rate Period a BSBY Rate is not available, the District shall choose (or shall be deemed to have been chosen) a BSBY Interest Rate Period with an available BSBY Rate. The District shall irrevocably choose a BSBY Interest Rate Period no later than 12:00 Noon on the banking day two (2) banking days before an Advance is made or before the end of a current BSBY Interest Rate Period. The District shall communicate electronically the chosen BSBY Interest Rate Period substantially in the form of Exhibit B.

"BSBY Rate" means, for any applicable interest period, the rate per annum equal to the BSBY Screen Rate two (2) banking days prior to the commencement of such interest period with a term equivalent to such interest period; provided that if such rate is not published on such determination date then the rate will be the BSBY Screen Rate on the first banking day immediately prior thereto. If the BSBY Rate is not available at such time for any reason or the Bank makes the determination to incorporate or adopt a new interest rate to replace the BSBY Rate in credit agreements, then the Bank shall replace the BSBY Rate with Daily SOFR and the Applicable BSBY Interest Rate with the Applicable SOFR Interest Rate. In connection with the implementation of the Daily SOFR, the Bank will have the right, from time to time, in good faith to make any conforming, technical, administrative or operational changes to this Agreement as may be appropriate to reflect the adoption and administration thereof and, notwithstanding anything to the contrary herein or in any other loan document, any amendments to this Agreement implementing such conforming changes will become effective upon notice (by email or facsimile) to the District without any further action or consent of the other parties hereto. If at any time the BSBY Rate or Daily SOFR is less than zero, such rate shall be deemed to be zero for purposes of this Agreement.

"BSBY Screen Rate" means the Bloomberg Short-Term Bank Yield Index rate ('BSBY') administered by Bloomberg Index Services Limited and published on the applicable Bloomberg screen page (or such other commercially available source providing such quotations as may be designated by the Bank from time to time).

"Closing Date" means June 30, 2022.

"Code" means the United States Internal Revenue Code of 1986, as the same may be amended from time to time, and the regulations and published interpretations thereof.

"Commission" means the Hampton Roads Sanitation District Commission, which is the governing body of the District.

"Commitment" means initially \$100,000,000, as such amount may be increased or reduced pursuant to Section 2.11 and Section 6.2 hereof.

"Commitment Increase/Decrease Request" means a request substantially in the form of **Exhibit D**, given by the District pursuant to Section 2.11(b) of this Agreement.

"Commitment Period" means the period commencing on the Closing Date and ending on the Termination Date.

"Daily SOFR" means the rate per annum equal to SOFR determined for any day pursuant to the definition thereof. Any change in Daily SOFR shall be effective from and including the date of such change without further notice.

Where,

- (i) 'SOFR' means, for each day any Advance which bears interest at an Applicable SOFR Interest Rate is outstanding, the Secured Overnight Financing Rate published on such date by the SOFR Administrator on the Federal Reserve Bank of New York's website (or any successor source); provided however that if such determination date is not a U.S. Government Securities Business Day, then SOFR means such rate that applied on the first U.S. Government Securities Business Day immediately prior thereto.
- (ii) 'SOFR Administrator' means the Federal Reserve Bank of New York, as the administrator of SOFR, or any successor administrator of SOFR designated by the Federal Reserve Bank of New York or other person acting as the SOFR Administrator at such time.
- (iii) 'U.S. Government Securities Business Day' means any business day, except any business day on which any of the Securities Industry and Financial Markets Association, the New York Stock Exchange or the Federal Reserve Bank of New York is not open for business because such day is a legal holiday under the federal laws of the United States or the laws of the State of New York, as applicable.

Daily SOFR is a fluctuating rate of interest which can change on each banking day. If (i) SOFR is not available at such time for any reason or (ii) the Bank and the District agree to incorporate or adopt a new interest rate to replace SOFR or Daily SOFR in this Agreement, then (x) in the case of clause (i) above, the Bank may replace SOFR or Daily SOFR, as applicable, with an alternate interest rate and adjustment, if applicable, as reasonably selected by the Bank, giving due consideration to any evolving or then existing conventions for such interest rate and adjustment and (y) in the case of clause (ii) above, the

parties may replace SOFR or Daily SOFR, as applicable, with an alternate interest rate and adjustment, if applicable, as reasonably selected by the parties, giving due consideration to any evolving or then existing conventions for such interest rate and adjustment (any such successor interest rate, as adjusted, the "SOFR Successor Rate"). In connection with the implementation of the SOFR Successor Rate, the Bank will have the right, from time to time, in good faith to make any conforming, technical, administrative or operational changes to this Agreement as may be appropriate to reflect the adoption and administration thereof and, notwithstanding anything to the contrary herein or in any other loan document, any amendments to this Agreement implementing such conforming changes will become effective upon notice (by email or facsimile) to the District without any further action or consent of the other parties hereto. At any time Daily SOFR or any SOFR Successor Rate is less than zero, such rate shall be deemed to be zero for the purposes of this Agreement.

"Default" means any event, condition or occurrence that with notice or the lapse of time, or both, would constitute an Event of Default hereunder.

"Default Rate" means the Base Rate plus 4.00%.

"Derivative Agreement" has the meaning set forth in the Trust Agreement.

"Designated Jurisdiction" means any country or territory to the extent that such country or territory itself is the subject of any Sanction.

"District" means the Hampton Roads Sanitation District, a political subdivision of the Commonwealth of Virginia.

"District Representative" means each of the persons at the time designated to act on behalf of the District in a written certificate furnished to the Bank, which certificate shall contain the specimen signature(s) of such person(s) and shall be signed on behalf of the District by an authorized officer of the District.

"Event of Default" means any of the events specified in Section 6.1 of this Agreement, provided that any requirement for the giving of notice, the lapse of time, or both, or any other condition, has been satisfied.

"Federal Funds Rate" means, for any day, the rate per annum equal to the weighted average of the rates on overnight federal funds transactions with members of the Federal Reserve System arranged by federal funds brokers on such day, as published by the Federal Reserve Bank of New York on the banking day next succeeding such day; provided that (a) if such day is not a banking day, the Federal Funds Rate for such day shall be such rate on such transactions on the next preceding banking day as so published on the next succeeding banking day, and (b) if no such rate is so published on such next succeeding banking day, the Federal Funds Rate for such day shall be the average rate (rounded upward, if necessary, to a whole multiple of 1/100 of 1%) charged to the Bank on such day on such transactions as determined by the Bank.

"Fiscal Year" means the period beginning on July 1 of any year and ending on June 30 of the following year.

"Fitch" means Fitch Ratings, Inc., a corporation duly organized and existing under and by virtue of the laws of the State of Delaware, and its successors and assigns.

"Governmental Authority" means any nation, government, or state, or any political subdivision thereof, or any court, entity or agency exercising executive, legislative, judicial, regulatory or administrative functions of or pertaining to government.

"Interest Payment Date" means the first day of each calendar month, provided that if the first day of a month is not a banking day then the Interest Payment Date for such month shall be the next succeeding banking day.

"Loan Documents" means this Agreement, the Tax-Exempt Note, any Taxable Note, and all other agreements, documents, certificates and instruments executed and delivered in connection with this Agreement, or any Note or that evidences, secures or otherwise pertains to the loan made by the Bank to the District pursuant to this Agreement.

"Material Adverse Effect" means (a) a material adverse change in, or a material adverse effect on, the operations, business, assets, properties, liabilities (actual or contingent), condition (financial or otherwise) or prospects of the District (including, without limitation, contingent liabilities indicated in the notes to the District's financial statements), taken as a whole; (b) material impairment of the rights and remedies of the Bank under this Agreement or any Related Documents; or (c) a material adverse effect upon the legality, validity, binding effect or enforceability against the District of this Agreement or any Related Documents, in each case as determined in the sole discretion of the Bank.

"Maturity Date" means the maturity date of an applicable Advance as chosen by the District which date must be either (i) the Scheduled Termination Date or (ii) the last day of a BSBY Interest Rate Period.

"Maximum Rate" has the meaning ascribed to such term in Section 7.16.

"Moody's" means Moody's Investors Service, Inc., a corporation duly organized and existing under and by virtue of the laws of the State of Delaware, and its successors and assigns.

"Note" means a Tax-Exempt Note or Taxable Note evidencing Advances made by the Bank to the District under the Commitment, substantially in the form of **Exhibit C** attached hereto.

"Obligations" means all obligations and all liabilities of the District under this Agreement, including, but not limited to, its obligations to make all payments required by Section 2.2 of this Agreement.

"OFAC" means the Office of Foreign Assets Control of the United States Department of the Treasury.

"Person" means any individual, partnership, firm, corporation, limited liability company, association, joint venture, trust or other entity, or any government or political subdivision or agency, department or instrumentality thereof.

"Private Activity Bond Tests" means either the Private Business Test or the Private Loan Test.

"Private Business Test" means any use of proceeds of the Tax-Exempt Note that would cause (i) more than ten percent (10%) of such proceeds to be used for any activities that constitute a Private Use and (ii) more than ten percent (10%) of the principal of or interest on the Tax-Exempt Note, under the terms thereof or any underlying arrangement, to be, directly or indirectly, (A) secured by any interest in (I) property used or to be used for a Private Use or (II) payments in respect of such property or (B) derived from payments in respect of property used or to be used for a Private Use, whether or not such property is a part of a Tax-Exempt Project. Such ten percent (10%) limitation shall be reduced to five percent (5%) to the extent the use of the proceeds is unrelated to any governmental use of a Tax-Exempt Project or any Private Use of a Tax-Exempt Project that is disproportionate to a related governmental use.

"Private Loan Test" means any use of proceeds of the Tax-Exempt Note that would cause more than the lesser of five percent (5%) of the proceeds of the Tax-Exempt Note and \$5 million to be used to make or finance loans to any person other than to a state or local governmental unit.

"Private Use" means any activity that constitutes a trade or business that is carried on by persons or entities, other than state or local governmental entities. Any activity carried on by a person other than a natural person shall be treated as a trade or business.

"Projects" has the meaning ascribed to such term in the Recitals.

"Property" means any interest in any kind of property or asset, whether real, personal or mixed, and whether tangible or intangible upon which a Project is financed through Advances.

"Rate Adjustment Event" means any determination by the Internal Revenue Service, any federal administrative agency or any court that the District has taken an action, or failed to take an action, with the result that the interest payments on the Tax-Exempt Note are includable in gross income for federal income tax purposes.

"Rating Agency" means Moody's, S&P or Fitch.

"Reference Rate" means an interest rate index provided for in this Agreement.

"Reimbursement Obligations" means all obligations and liabilities of the District to the Bank, whether direct or indirect, absolute or contingent, due or to become due, or now existing or hereafter incurred, that may arise under, out of, or in connection with this Agreement or any other document executed and delivered in connection therewith or herewith.

"Related Documents" means this Agreement, the Tax-Exempt Note, any Taxable Note, the Trust Agreement and any other documents related to any of the foregoing or executed in connection therewith or otherwise made to evidence, secure or set forth the terms of the District's obligations hereunder or thereunder, and any and all future renewals and extensions or restatements of, or amendments or supplements to, any of the foregoing permitted hereunder and thereunder.

"Related Party" means, with respect to any Person, any of such Person's Affiliates and any of the partners, directors, officers, employees, agents, trustees, administrators, managers, advisors and representatives of such Person and of such Person's Affiliates.

"Relevant Governmental Body" means the Federal Reserve Board and/or the Federal Reserve Bank of New York, or a committee officially endorsed or convened by the Federal Reserve Board and/or the Federal Reserve Bank of New York.

"Requirement of Law" means, as to any Person, any law, rule, treaty, regulation or determination of an arbitrator or court, or other Governmental Authority, in each case applicable to or binding upon such Person, any operation or conduct by or on behalf of such Person or any of its Property or assets or to which any such Person or any of its Property or assets may be bound or affected.

"S&P" means S&P Global Ratings, a division of Standard & Poor's Financial Services LLC, and its successors and assigns.

"Sanction(s)" means any international economic sanction administered or enforced by the United States Government (including, without limitation, OFAC), the United Nations Security Council, the European Union, Her Majesty's Treasury or other relevant sanctions authority.

"Scheduled Termination Date" means June 30, 2025, or such other date determined in accordance with Section 2.9.

"Solvent" means, with respect to any Person, that as of the date of determination (without duplication) both (i) (a) the sum of such Person's debt (including contingent liabilities) does not exceed all of its property, at a fair valuation; (b) the Person is able to pay the probable liabilities on such Person's then existing debts as they become absolute and matured; (c) such Person's capital is not unreasonably small in relation to its business or any contemplated or undertaken transaction; and (d) such Person does not intend to incur, or believe (nor should it reasonably believe) that it will incur, debts beyond its ability to pay such debts as they become due; and (ii) such Person is "solvent" within the meaning given that term and similar terms under applicable laws relating to fraudulent transfers and conveyances. For purposes of this definition, the amount of any contingent liability at any time shall be computed as the amount that, in light of all of the facts and circumstances existing at such time, represents the amount that can reasonably be expected to become an actual or matured liability (discounted to present value at rates believed to be reasonable by such Person acting in good faith).

"Tax-Exempt Interest Rate" means the Applicable BSBY Interest Rate (and any replacement thereof) for an Advance that finances a Tax-Exempt Project.

"Tax-Exempt Note" shall have the meaning ascribed to such term in Section 2.1(b).

"Tax-Exempt Project" means a Project that is financed with an Advance that accrues interest at the Tax-Exempt Interest Rate.

"Taxable Interest Rate" means the Applicable BSBY Interest Rate (and any replacement thereof) for an Advance that finances a Taxable Project.

"Taxable Note" shall have the meaning set forth in Section 2.1(b).

"Taxable Project" means a Project that is financed with an Advance that accrues interest at a Taxable Interest Rate.

"Termination Date" means the date which is the earliest of (i) 5:00 p.m. (New York City time) on the Scheduled Termination Date, (ii) the date on which the Commitment shall have been reduced to zero (whether by termination by the District or otherwise) and is not subject to reinstatement upon repayment of Advances and (iii) the date the Commitment is terminated pursuant to Section 6.2 hereof.

"Trust Agreement" means the Trust Agreement, dated as of October 1, 2011, as amended and restated as of March 1, 2016, by and between the District and The Bank of New York Mellon Trust Company, N.A., as trustee, securing Subordinate Obligations (as defined in the Trust Agreement), as supplemented and amended from time to time.

1.2 Other Definitions.

(a) All terms used in this Agreement shall have the defined meanings when used in any certificate or other document made or delivered pursuant hereto. The words "hereof," "herein" and "hereunder" and words of similar import when used in this Agreement shall refer to this Agreement as a whole and not to any particular provision of this Agreement, and section, subsection, schedule and exhibit references are to this Agreement unless otherwise specified.

(b) All accounting terms not specifically defined in this Agreement shall be construed, and all calculations with respect to accounting or financial matters shall be computed, in accordance with Generally Accepted Accounting Practices (GAAP) applied in a manner consistent with the application of the principles in the preparation of the financial statements of the District required hereunder.

(c) In this Agreement, in the computation of a period of time from a specified date to a later specified date, the word "from" means "from and including" and the words "to" and "until" each mean "to but excluding."

(d) The following rules shall apply to the construction of this Agreement unless the context requires otherwise: (1) the singular includes the plural and the plural, the singular; (2) words importing any gender include the other gender; (3) references to statutes are to be construed as including all statutory provisions consolidating, amending or replacing the statute to which reference is made; (4) references to "writing" include printing, photocopy, typing, lithography and other means of reproducing words in a tangible visible form; (5) the words "including," "includes" and "include" shall be deemed to be followed by the words "without limitation;" (6) references to agreements and other contractual instruments shall be deemed to include all subsequent amendments and other modifications to such instruments, but only to the extent that such amendments and other modifications are permitted or not prohibited by the terms of this Agreement; (7) references to Persons include their respective permitted successors and assigns; and (8) headings herein are solely for the convenience of reference and shall not constitute a part of this Agreement nor shall they affect its meaning, construction or effect.

All times given herein shall refer to New York, New York time, unless otherwise specified.

SECTION II
AMOUNT AND TERMS OF ADVANCES UNDER THE LOAN DOCUMENTS;
INTEREST; REPAYMENTS AND FEES

2.1 The Advances.

(a) Extension of Credit. The Bank agrees, on the terms and conditions set forth in this Agreement, to make advances under the Commitment (collectively, "Advances" and severally, an "Advance") to the District from time to time, during the Commitment Period; *provided* that in no event shall the aggregate principal amount of Advances to be made by the Bank on any date exceed the Available Commitment as of such date. Each Advance shall be made in such amount as requested pursuant to an Advance Notice solely for the purpose of providing a source of funds for payment of the Projects. The District may borrow under this Section 2.1(a), repay or prepay under Sections 2.2 and 2.3 and reborrow under this Section 2.1(a).

(b) Note.

(i) The Advances made on a tax-exempt basis shall be evidenced by a Note, payable to the Bank, in substantially the form attached hereto as **Exhibit C**. Such Note shall be referred to as the "*Tax-Exempt Note*." The principal amount outstanding of the Tax-Exempt Note at any time shall equal the amount of the then outstanding and unpaid Advances for Tax-Exempt Projects under the Commitment. The Tax-Exempt Note shall bear interest during the same periods and at the same rates as are applicable to the Advances for Tax-Exempt Projects determined as provided herein in accordance with the provisions hereof. The principal of the Tax-Exempt Note, and the interest thereon, shall be payable (and prepayable) at the same times and in the same amounts as are applicable to the related

Advances evidenced by the Tax-Exempt Note, determined as provided herein in accordance with the provisions hereof.

(ii) If any Advances are to be made on a taxable basis, the District will provide an additional Note in substantially the form attached hereto as **Exhibit C**, payable to the Bank, for Advances made to finance Taxable Projects. Such Note shall be referred to as the "*Taxable Note*." The principal amount outstanding of the Taxable Note at any time shall equal the amount of the then outstanding and unpaid Advances for Taxable Projects under the Commitment. The Taxable Note shall bear interest during the same periods and at the same rates as are applicable to the Advances for Taxable Projects determined as provided herein in accordance with the provisions hereof. The principal of the Taxable Note, and the interest thereon, shall be payable (and prepayable) at the same times and in the same amounts as are applicable to the related Advances evidenced by the Taxable Note, determined as provided herein in accordance with the provisions hereof.

(c) Advance Notices. Each Advance shall be made based on the receipt by the Bank of an Advance Notice given by the District. Each Advance Notice shall be for an amount not less than \$100,000. Each Advance Notice shall be by telephone, electronically in PDF format or telecopy, confirmed in writing, in substantially the form of **Exhibit A** attached hereto, specifying (i) the requested date for such Advance, which shall be a banking day and (ii) the aggregate principal amount of such requested Advance.

If the Bank makes a new Advance under this Agreement on a day on which the District is to repay all or any part of an Advance, the Bank shall apply the proceeds of its new Advance to make such repayment and only an amount equal to the difference (if any) between the amount being borrowed and the amount being repaid shall be made available by the Bank or remitted by the District as provided in Section 2.1(e) or 2.2, as the case may be.

If any Advance Notice does not select BSBY Daily Floating Rate and fails to specify the BSBY Rate Period such period shall be deemed to be one month and the Applicable BSBY Interest Rate will continue to automatically reset for a one month period.

On or before the day an Advance Notice is provided to the Bank, the District shall determine if the Advance will finance a Tax-Exempt Project, or Taxable Project and either BSBY Daily Floating Rate or the BSBY Interest Rate Period of such Advance.

The District shall irrevocably request an Advance no later than 12:00 Noon New York City Time on the banking day two (2) banking days before the Applicable BSBY Interest Rate takes effect for such Advance. For example, if there are no intervening holidays or weekend days in any of the relevant locations, the request must be made at least two (2) days before the BSBY Rate takes effect. The BSBY Daily Floating Rate or BSBY Interest Rate Period during which the BSBY Rate will be in effect shall be as selected by the District in the Advance Notice. The first day of the BSBY Interest Rate Period must be a banking day.

The Bank will have no obligation to make an Advance bearing interest at the Applicable BSBY Interest Rate if any of the following described events has occurred and is continuing:

(i) the BSBY Rate does not accurately reflect the cost of the Advance; or

(ii) adequate and reasonable means do not exist for determining the BSBY Rate for any requested interest period.

(d) Opinion as to Tax Exemption. On the date of the first Advance with respect to a Tax-Exempt Note, and prior to the Bank approving the initial Advance Notice with respect to a new Tax-Exempt Project, the District shall provide to the Bank an unqualified opinion of Bond Counsel that the interest on the Tax-Exempt Note is not includable in gross income of the owner thereof for purposes of federal income tax.

(e) Making the Advances. Upon receipt of an Advance Notice from the District not later than 12:00 noon (New York City time) on the banking day two (2) banking days preceding the day of the proposed borrowing (which shall be a banking day), the Bank, subject to the terms and conditions of this Agreement, shall be required to make an Advance by 2:00 p.m. (New York City time) on the day of the proposed borrowing for the account of the District in an amount equal to the amount of the requested borrowing. Any Advance Notice shall be signed by two (2) District Representatives. Each Advance shall be made by the Bank by transfer of immediately available funds to an account of the District with the Bank in accordance with written instructions provided by the District.

2.2 Repayment and Interest.

(a) Subject to the provisions of Section 2.11 and Section 6.2(c) hereof, Advances shall bear interest from and including their applicable Advance Date, to but not including, the date the Bank is reimbursed therefor at a per annum rate equal to the Applicable BSBY Interest Rate, or the Applicable SOFR Interest Rate, as the case may be, for each applicable Advance. In addition, any Advance previously made and outstanding on the date hereof that was bearing interest at an Applicable LIBOR Interest Rate (as defined in the Existing Credit Agreement prior to being amended by this Second Amended and Restated Credit Agreement and Note dated June 30, 2022) shall, on and after the date hereof, bear interest at BSBY Daily Floating Rate until a BSBY Interest Rate Period is selected by the District and communicated to the Bank in writing substantially in the form of **Exhibit B**, after which the Applicable BSBY Interest Rate will be the interest rate calculated using the BSBY Rate for the BSBY Interest Rate Period selected by the District. The District shall pay to the Bank on each Interest Payment Date all accrued and unpaid interest on outstanding Advances. The District shall pay to the Bank on each Maturity Date all accrued and unpaid interest on the Advance that is being repaid. The District shall pay to the Bank all accrued and unpaid interest upon demand by the Bank during the continuance of an Event of Default.

(b) Subject to Section 2.3, the District shall repay each Advance on its Maturity Date.

2.3 Prepayment of Advances. With respect to Advances bearing interest at BSBY Daily Floating Rate or Daily SOFR, the District may prepay all or any portion of such Advances without cost, penalty or premium, and with respect to all other Advances, the District may prepay all or any portion of the Advance without cost, penalty or premium provided at least ten (10) Banking Days' electronic notice is provided to the Bank and such prepayment occurs on the final Banking Day of the then applicable BSBY Interest Rate Period to which such prepayment will be applied. In connection with any such prepayment prior to the Scheduled Termination Date that is made on any day other than final Banking Day of the then applicable BSBY Interest Rate Period, the District shall pay to the Bank the amount of any loss, cost or expense (including, without limitation, any loss, cost or expense incurred by reason of the liquidation or reemployment of deposits or other funds acquired or contracted to be acquired by the Bank or the rendering or reinvesting of such deposits or other amounts prepaid to the Bank) incurred by the Bank as a result of such prepayment. In any request for payment of the amounts described in the preceding sentence, the Bank shall include a calculation of such amounts requested in reasonable detail. Each such notice of optional prepayment shall be irrevocable and shall bind the District to make such prepayment in accordance with such notice; provided, however, that in the event that the District certifies to the Bank that the source of payment is the proceeds of a borrowing by the District, such optional notice of prepayment shall be deemed conditional in that it is subject to the timely closing of the borrowing and should the borrowing for any reason not close on or before the date fixed for such prepayment, such notice of optional prepayment shall be deemed withdrawn and of no effect. All prepayments of principal shall include accrued interest to the date of prepayment and all other amounts due pursuant to this Agreement.

2.4 [Reserved].

2.5 Payments and Computations.

(a) Computations of the Tax-Exempt Interest Rate and any other amounts under the Tax-Exempt Note shall be made on the basis of a 365/366 day year for the actual number of days elapsed and computations of the Taxable Interest Rate and any other amounts under the Taxable Note shall be made on the basis of a 360 day year for the actual number of days elapsed. If, by the terms of this Agreement, the District at any time is required or obligated to pay interest at a rate in excess of the Maximum Rate, the provisions of Section 7.16 hereof shall apply.

(b) The District shall make all payments on Advances or fees or interest under this Agreement not later than 2:00 p.m. (New York City time) on the day when due in lawful money of the United States of America in good and available funds without set-off or counterclaim of any nature or kind to the Bank by wire transfer pursuant to wire instructions as the Bank may, from time to time, deliver to the District in writing.

(c) Whenever any payment to be made hereunder shall be stated to be due on a day that is not a banking day, such payment shall be made on the next succeeding Banking Day, and interest and any applicable fees other than late fees shall accrue during such extension through and including the date of payment.

2.6 [Reserved]

2.7 Payment of Obligations.

(a) The obligations of the District to make payments on Advances under this Agreement are Junior Obligations within the meaning of the Trust Agreement and are expressly subordinate and junior to the Lien on Net Revenues Available for Debt Service (as defined in the Trust Agreement). The obligations of the District under this Agreement shall be observed strictly in accordance with the terms of this Agreement or the Note, as applicable, under all circumstances whatsoever including, without limitation, the following circumstances:

(i) the existence of any claim, set-off, defense or other right which the District may have at any time against the Bank or any beneficiary or transferee, whether in connection with this Agreement, the transactions contemplated therein, or any unrelated transaction;

(ii) any Advance Notice presented hereunder proving to be forged, fraudulent or invalid in any respect or any statement therein being untrue or inaccurate in any respect whatsoever;

(iii) any statement or any other document presented hereunder proving to be forged, fraudulent, invalid or insufficient in any respect or any statement therein being untrue or inaccurate in any respect;

(iv) payment by the Bank hereunder against presentation of an Advance Notice which does not strictly comply with the terms hereof;

(v) any exchange, acceptance, release or non-perfection as to any collateral or release or addition of any other Person primarily or secondarily liable;

(vi) the failure of the Bank: (a) to enforce any right or remedy against the District or any other Person under the provisions of this Agreement or otherwise, or (b) to exercise any right or remedy against any payment of all or any of the Reimbursement Obligations, or any other extension, compromise or renewal of any Reimbursement Obligations with respect to the District or any other Person; or

(vii) any other circumstances or happening whatsoever, whether or not similar to any of the foregoing.

(b) The District shall pay all amounts owed under any Advances and any other amounts owed under this Agreement free of any abatement, charges, counterclaims, assessments, set-offs, offsets, impositions or deductions of any kind whatsoever, and under no circumstances or conditions shall the District be expected or required to make any payment of any kind with respect to Agreement or be under any obligation or liability hereunder, except as provided in this Agreement and the Note.

2.8 Extension of Scheduled Termination Date. The District may request an extension of the Scheduled Termination Date no more than 120 days and no less than 30 days prior to the Scheduled Termination Date. The Bank will respond in writing within 30 days of receipt of a written request, and the Bank's determination to accept or reject any such request shall be within the Bank's sole and absolute discretion. The failure of the Bank to respond to a request for an extension shall be deemed the denial of the request. No such extension of the Scheduled Termination Date shall take effect until the District shall have provided the Bank an opinion of Bond Counsel that such extension will not, in and of itself, adversely affect the exclusion of interest on the Tax-Exempt Note from gross income of the owner thereof for federal income tax purposes.

2.9 Early Termination. The District may direct in writing that this Agreement and the Commitment shall be terminated at any time before the Scheduled Termination Date; provided, however, that this Agreement shall not actually terminated until all amounts payable under this Agreement, including all Advances, made have been paid in full.

2.10 Interest Rate and Payment Adjustment. (a) From and after a Rate Adjustment Event, the interest rate on the Tax-Exempt Note shall change to a rate equal to the interest rate applicable for a Taxable Project.

(b) It is further expressly provided that the District shall additionally pay to the Bank, any taxes, interest, penalties or other charges assessed against or payable by the Bank and attributable to a Rate Adjustment Event, notwithstanding the repayment of all Advances, together with any and all attorney's fees, court costs or other out-of-pocket costs incurred by the Bank in connection therewith.

2.11 Changes to the Commitment.

(a) By written amendment to this Agreement, the District and Bank may agree to increase or decrease the Commitment. No change in the Commitment shall take effect until the District shall have provided the Bank an opinion of Bond Counsel to the effect that such change will not, in and of itself, adversely affect the exclusion of interest on the Tax-Exempt Note from gross income of the owner thereof for federal income tax purposes.

(b) At any time, but not more than two (2) times in any twelve (12) month period, the District may request, pursuant to a Commitment Increase/Decrease Request, that the aggregate Commitment be increased or decreased; provided that: (i) the District shall provide the Bank an opinion of Bond Counsel to the effect that such change will not, in and of itself, adversely affect the exclusion of interest on the Tax-Exempt Note from gross income of the owner thereof for federal income tax purposes, (ii) the aggregate Commitment shall at no time exceed \$300,000,000, and (iii) such request will be in a minimum amount of a \$25,000,000 increase or decrease. Such request shall be made in a written notice given to the Bank by two (2) District Representatives not less than 30 days prior to the proposed effective date of such increase or decrease and shall be subject to the written approval of the Bank, in its sole discretion (it being understood that the Bank shall

give reasonable consideration to any request for such an increase or decrease). Any increase or decrease in the Commitment shall be subject to the receipt by the Bank of a certificate, signed by two (2) District Representatives as of the effective date of the increase or decrease in the Commitment, which sets forth that before and after giving effect to such Commitment (a) the representations and warranties set forth under Section III hereof shall be true and correct in all material respects as though made on such date and (b) no event shall have occurred and then be continuing which constitutes a an Event of Default or which would, with notice and/or lapse of time, constitute an Event of Default. Any increase or decrease in the Commitment shall be evidenced and effected by a written Amendment to this Agreement as set forth in paragraph (a) above.

SECTION III REPRESENTATIONS AND WARRANTIES

3.1 Representations and Warranties. To induce the Bank to make Advances hereunder, the District represents and warrants to the Bank as of the Closing Date and as of the date of each Advance that:

(a) Organization and Qualification. The District is a political subdivision of the Commonwealth of Virginia, validly existing under the laws of the Commonwealth of Virginia.

(b) Corporate Power and Authority. The District has all requisite power and authority to execute, deliver and carry out the terms and provisions of this Agreement and the other instruments and documents to be executed or delivered by it pursuant hereto or in connection herewith and has taken or caused to be taken by it all necessary action required of it in connection with the receipt of Advances, to authorize the execution, delivery and performance by the District of this Agreement, the occurrence of the obligations contemplated hereunder and thereunder and the execution, delivery and performance of the other instruments and documents to be executed or delivered by it pursuant hereto or in connection herewith or therewith. This Agreement and each of the other instruments and documents executed or delivered by the District pursuant hereto or thereto or in connection herewith or therewith have been duly executed and delivered by the District and constitute the legal, valid and binding obligations of the District and are enforceable against the District in accordance with their respective terms, except as the enforceability thereof may be limited by applicable bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the enforcement of creditors' rights generally, and by general equitable principles.

(c) Compliance with Law and Contracts. Neither the execution and delivery of this Agreement nor the consummation of the transactions contemplated therein to be consummated by the District or the compliance by the District with the provisions thereof, will conflict with, or constitute on the part of the District a material violation or breach of or an event of default under, (x) any statute, indenture, mortgage, commitment, note or other agreement or instrument to which the District is a party or by which the District is bound, or (y) any existing law, rule, regulation or ordinance or judgment, order or decree of any court or Governmental Authority having jurisdiction over

the District or any of its activities or properties. All consents, approvals, authorizations and orders of Governmental Authorities that are required for the District's execution and delivery of, consummation of the transactions contemplated by and compliance with the provisions of this Agreement have been obtained or can be obtained in a timely manner. The District is duly authorized and licensed to own its Property and to operate its business under the laws, rulings, regulations and ordinances of all Governmental Authorities having the jurisdiction to license or regulate such Property or business activity, and the District has obtained all requisite approvals of all such governing bodies required to be obtained for such purposes.

(d) Litigation. There is no action, suit, proceeding, inquiry or investigation, at law or in equity, before or by any court, public board or body, pending or threatened against or affecting the District or its properties and rights or powers, its legal existence, or the actions taken or contemplated to be taken by it, nor is there any basis therefor, wherein an unfavorable decision, ruling or finding would be reasonably likely to result in a Material Adverse Effect upon the financial condition or operations of the District, the validity or enforceability of this Agreement or the Related Documents or the transactions contemplated hereby or thereby.

(e) Governmental Approvals. No authorization or approval or other action by, filing with, or notice to, any Person or Governmental Authority is required for the due execution, delivery and performance by the District of this Agreement, or any other instrument or document to be executed and/or delivered pursuant hereto or thereto or in connection herewith or therewith, except such authorizations, approvals, actions or filings which have been duly obtained or notices which have been duly given by the District, each of which is in full force and effect (or will be obtained as and when required).

(f) Securities Laws. The District is not an "investment company," or a Person "controlled" by an "investment company," within the meaning of the Investment Company Act of 1940, as amended.

(g) Taxes. The execution and delivery of this Agreement is not subject to any tax, duty, fee or other charge, including, without limitation, any registration or transfer tax, stamp duty or similar levy, imposed by any Governmental Authority that has not been paid.

(h) Continuing Representations. Each Advance Notice shall be deemed to constitute a representation and warranty by the District as of the date of such Advance that each of the representations and warranties herein made are true and correct in all material respects on and as of such date as though made on and as of such date; provided, however, that any representations or warranties given as of a specific date shall remain true and correct in all material respects as of such date.

(i) Financial Condition. The most recent financial statements of the District delivered to the Bank hereunder are complete and accurate and fairly present the financial condition and the results of operations and cash flows of the District on the dates thereof and for the periods then ended and such financial statements show all known

liabilities, direct or contingent, of the District as of the dates thereof and were prepared in accordance with GAAP.

(j) No Misrepresentations or Omissions. None of this Agreement, any Related Documents or any other document, certificate, information, report or statement furnished to the Bank by the District contains any untrue statements of a material fact or omits to state a material fact necessary in order to make the statements contained herein and therein not misleading. Any financial, budget and other projections furnished by the District to the Bank were prepared in good faith on the basis of the assumptions stated therein, which assumptions were fair and reasonable in light of conditions existing at the time of delivery of such financial, budget or other projections.

(k) No Material Adverse Facts. There are no facts that the District has failed to disclose to the Bank that, individually or in the aggregate, could have a Material Adverse Effect or, as far as the District can reasonably foresee, could have a Material Adverse Effect.

(l) Margin Stock. The District is not engaged in, nor does it have as one of its substantial activities, the business of extending or obtaining credit for the purpose of purchasing or carrying "margin stock" (as that term is defined in Regulation U of the Board of Governors of the Federal Reserve System) and no proceeds of any Advances will be used for such purpose or for the purpose of purchasing or carrying any shares of margin stock.

(m) No Maximum Interest Rate Violation. The obligations of the District under this Agreement are not in violation of any Requirement of Law prescribing a maximum rate of interest.

(n) Consent Orders. The operations of the District are in material compliance with all of the requirements of that certain Civil Action No. 2:09-cv-481 Consent Decree agreement imposed by the United States Environmental Protection Agency ("EPA") and the Virginia Department of Environmental Quality on the District in February 2010 in Federal Court relating to sanitary sewer overflows, where a failure to comply with any such requirement or the need for any such remedial action could reasonably be expected to result in a Material Adverse Effect.

The District, EPA, and the Virginia Department of Environmental Quality have agreed upon a Fifth Amended Consent Decree that was lodged with the Court on February 8, 2022. The Fifth Amended Consent Decree requires the District to implement its approved Regional Wet Weather Management Plan ("RWWMP") to control regional, capacity-related sewer overflows within 14 localities that the District serves.

In accordance with the Fifth Amended Consent Decree, the RWWMP requires the District to implement 15 high priority project groups to be constructed through 2040. The District anticipates that this approximately \$410 million investment will reduce sewer overflow volume during a 5-year peak flow event by 69%. In parallel, the District currently

plans to invest over \$1 billion to implement the District's Sustainable Water Initiative for Tomorrow (SWIFT) program through 2032.

The Fifth Amended Consent Decree also requires the District to perform a post-RWWMP implementation performance assessment between 2040 and 2043. That assessment may call for (1) additional wet weather capacity controls/projects, (2) investments in emerging environmental issues including sea level rise adaptation, or (3) some combination of these and/or other regional environmental priorities. While cost projections in this time frame are inherently speculative, the additional projects could cost \$1 billion or more over a 20 to 25-year period (through 2060 or later).

(o) Solvent. The District is Solvent.

(p) Derivative Agreements. The District has not entered into any Derivative Agreement that requires the District to post cash collateral to secure its obligations thereunder.

(q) Labor Matters. The District has no knowledge of any existing or pending strike, walkout or work stoppage relating to the District or its wastewater system.

(r) No Sanctions. The District (i) is not currently the subject of any Sanctions, (ii) is not located, organized or residing in any Designated Jurisdiction, or (iii) is not and has not been (within the previous five (5) years) engaged in any transaction with any Person who is now or was then the subject of Sanctions or who is located, organized or residing in any Designated Jurisdiction. The proceeds from the Note or the transaction contemplated by this Agreement have not been used, directly or indirectly, to lend, contribute, provide or otherwise be made available to fund any activity or business in any Designated Jurisdiction or to fund any activity or business of any Person located, organized or residing in any Designated Jurisdiction or who is the subject of any Sanctions, or in any other manner that will result in any violation by any Person (including the Bank) of Sanctions.

SECTION IV CONDITIONS PRECEDENT

4.1 Conditions Precedent to Effectiveness. This Agreement shall become effective when each of the following conditions precedent has been fulfilled in a manner satisfactory to the Bank:

(a) Delivery of Documents. The Bank shall have received on or before the Closing Date the following, each in form and substance satisfactory to the Bank, unless indicated otherwise, dated the Closing Date:

(i) the Note;

(ii) a certificate of the Chair or General Manager of the Commission certifying as to the incumbency and signature of each of the District Representatives authorized to sign this Agreement and any Advance Notices;

(iii) certified copies of any resolutions, approvals or authorizations required in connection with the transactions contemplated by this Agreement;

(iv) the audited financial statements of the District for the Fiscal Year ended June 30, 2021, a copy of the current budget and a copy of the capital improvement program of the District;

(v) a favorable opinion of Norton Rose Fulbright US LLP, Washington, D.C., Bond Counsel as to the validity of this Agreement and of the Note, including an opinion as to the tax status of interest on the Tax-Exempt Note;

(vi) a favorable opinion of counsel to the District, as to such matters as mutually agreed to by the parties to this Agreement; and

(vii) such other documents, instruments, approvals or opinions as mutually agreed to by the parties to this Agreement.

(b) Representations; Defaults. The following statements shall be true and correct on and as of the Closing Date, and the Bank shall have received certificates signed by a District Representative, dated the Closing Date, stating that:

(i) the representations and warranties of the District contained in Section 3.1 of this Agreement are true and correct in all material respects on and as of the Closing Date as though made on and as of such date; and

(ii) no Default shall have occurred and be continuing or would result from the making of any Advance.

(c) Material Adverse Change. Since June 30, 2021, no material adverse change in the financial condition, business, assets, liabilities or prospects of the District shall have occurred.

4.2 Conditions Precedent to the Making of Advances. As conditions precedent to the approval by the Bank hereunder of each Advance Notice (including the initial Advance Notice on or after the Closing Date):

(a) The Bank shall have received (or waived the receipt of, in the sole discretion of the Bank) the written Advance Notice required under, and in strict conformity with Section 2.1(c) of this Agreement, in a manner satisfactory to the Bank.

(b) The Termination Date shall not have occurred.

(c) No Event of Default shall have occurred and be continuing or shall result from the funding of the Advance in question.

(d) The District shall have delivered to the Bank if applicable, such additional instruments or documents and such additional approvals and opinions as the

Bank may reasonably request under the terms of this Agreement, or otherwise as soon as commercially reasonable after request therefor.

- (e) No Material Adverse Effect shall have occurred.

Unless the District shall have otherwise previously advised the Bank in writing, delivery to the Bank of an Advance Notice shall be deemed to constitute a representation and warranty by the District that on the date of such Advance each such condition is satisfied.

Approval by the Bank of any one or more Advance Notices when one or more conditions contained in this Section 4.2 have not been fulfilled, shall not be deemed a waiver of such condition or conditions as to the Bank's approval of subsequent Advance Notices.

SECTION V COVENANTS OF THE DISTRICT

5.1 Affirmative Covenants. The District agrees that, so long as any Advances remain outstanding or any amount is due or owing to the Bank under this Agreement or the Note, the District shall keep and perform fully each and all of the following covenants:

- (a) Compliance with Laws, Etc. The District shall comply with all Requirements of Law or any change therein or in the application, the administration or interpretation thereof (including, without limitation, any request, directive, guideline or policy, whether or not having the force of law) by any Governmental Authority charged with the administration or interpretation thereof and all indentures, mortgages, deeds of trust, agreements or other instruments or contractual obligations to which it is a party or by which it or any of its Property may be bound or affected, except such Requirements of Law or indentures, mortgages, deeds of trust, agreements or other instruments or contractual obligations noncompliance with which could not reasonably be expected to have a Material Adverse Effect.

- (b) Keeping of Books. The District shall keep proper books of record and account, containing complete and accurate entries of all financial and business transactions relating to the business, operations, Property, assets, condition (financial or otherwise) or prospects of the District in conformity with GAAP and all Requirements of Law. At any reasonable time and from time to time during reasonable business hours, the District shall permit the Bank or any agents or representatives thereof to examine and make copies of and abstracts from the records and books of account (other than those books and records that must be treated as confidential under any Requirement of Law) of, and visit the Property of, on which the Projects are located upon and to discuss the affairs, finances and accounts of the District with any of its officers.

- (c) Notice of Default. The District shall promptly notify the Bank in writing of (i) the occurrence of any Default or Event of Default hereunder, or (ii) any default, or event, condition or occurrence which with notice or the lapse of time, or both, would constitute a default by any party thereto under the Senior Trust Agreement (as defined

in the Trust Agreement) and the Trust Agreement or by which any of its Property may be bound or affected and which could reasonably be expected to have a Material Adverse Effect.

(d) Maintenance of Insurance. The District shall maintain insurance as required by Section 708 of the Trust Agreement.

(e) Performance and Compliance with Other Covenants. The District shall perform and comply in all material respects, and subject to the applicable grace periods, with each of the covenants binding on it, as in effect on the Closing Date, including, without limitation, all covenants hereunder and all covenants under the Related Documents.

(f) Payment of Taxes and Other Claims. The District shall pay when due all taxes, assessments and charges which are imposed upon it or its operations or properties, or which it is required to withhold and pay over (including payroll withholding taxes), and shall pay all other claims which, if unpaid, might become liens or charges upon its properties and except to the extent such taxes, liens or charges are the subject of a good faith contest.

(g) Use of Proceeds. The proceeds of any Advances will be used, by the District solely to finance the costs of the Projects. None of such proceeds will be used, directly or indirectly, for the purpose, whether immediate, incidental or ultimate, of purchasing or carrying any "margin stock" within the meaning of Regulation U of the Board of Governors of the Federal Reserve System. The District shall use, or cause to be used, the proceeds of the Advances in compliance with all applicable legal and regulatory requirements of any Governmental Authority (including, without limitation, Regulations U and X of the Board of Governors of the Federal Reserve System and the Securities Exchange Act of 1934 and the Securities Act of 1933 and any regulations thereunder).

(h) Financial and Other Information. The District agrees that it will furnish its Annual Report, including without limitation, the audited financial statements of the District, directly to the Bank (and to The Electronic Municipal Market Access ("EMMA") system administered by the Municipal Securities Rulemaking Board) when the same becomes available, but in no event more than 270 days after the close of each Fiscal Year. Simultaneously therewith, the District shall deliver to the Bank a certificate signed by a District Representative stating that no Event of Default or Default has occurred, or if such Event of Default or Default has occurred, specifying the nature of such Event of Default or Default, the period of its existence, the status thereof and any remedial steps taken or proposed to correct such Event of Default or Default. The District shall provide to the Bank such other information regarding the business affairs, financial condition and/or operations of the District as the Bank may from time to time reasonably request.

(i) Litigation; Material Change. The District shall promptly notify the Bank of (i) the existence and status of any litigation that the counsel for the District determines is not reasonably certain to have a favorable outcome and which individually or in the aggregate could have a Material Adverse Effect on the financial condition or operations of the District or its obligation to perform its obligations under this Agreement,

or (ii) any change in any material fact or circumstance represented or warranted in this Agreement.

(j) General Tax Covenant. The District hereby covenants that it will not take any action which will, or fail to take any action which failure will, cause the interest on the Tax-Exempt Note to become includable in the gross income of the owners of the Tax-Exempt Note for federal income tax purposes pursuant to the provisions of the Code and the regulations promulgated thereunder in effect on the date of original issuance of the Tax-Exempt Note. In furtherance of this covenant, the District will execute a tax certificate in connection with the first Advance under the Tax-Exempt Note that will set forth the requirements that must be satisfied so that the Tax-Exempt Note will not be a private activity bond within the meaning of Section 141 of the Code.

(k) Private Activity Bond Covenant. The District hereby covenants that it will not take any action that would cause the Tax-Exempt Note to be a private activity bond within the meaning of Section 141 of the Code and the applicable regulations thereunder.

(l) Arbitrage Covenant. The District hereby covenants that money on deposit in any fund or account maintained in connection with the Tax-Exempt Note, whether or not such money was derived from draws on the Tax-Exempt Note or from any other sources, will not be used in a manner that would cause the Tax-Exempt Note to be an "arbitrage bond" within the meaning of Section 148 of the Code and the applicable regulations thereunder. To that end, the District shall comply with all requirements of Section 148 of the Code and all regulations of the United States Department of the Treasury issued thereunder to the extent such requirements are, at the time, in effect and applicable to the Bonds.

(m) Derivative Agreements. Without the prior written consent of the Bank the District shall not enter into any Derivative Agreement which requires the District to post cash collateral to secure its obligations thereunder.

(n) Fundamental Changes. The District shall not merge, dissolve, liquidate, consolidate with or into another Person, or dispose of (whether in one transaction or in a series of transactions) all or substantially all of its assets (whether now owned or hereafter acquired) to or in favor of any Person (referred to herein as a "Fundamental Change"); provided, however, the District may undertake a Fundamental Change to the extent permitted by the Trust Agreement, provided that (i) after giving effect to any such Fundamental Change no Default or Event of Default shall have occurred, (ii) such Fundamental Change would not reasonably be expected to have a Material Adverse Effect; (iii) the District is the surviving entity of any such Fundamental Change; and (iv) after giving effect to such Fundamental Change, the District would be in pro forma compliance with the covenants set forth in Section 705 of the Trust Agreement.

SECTION VI
EVENTS OF DEFAULT

6.1 Events of Default. The occurrence of any of the following events shall be an Event of Default hereunder:

(a) failure by the District (i) to pay or cause to be paid any scheduled principal of or interest on any Advance when due for any reason other than the failure of any Bank to perform its obligations hereunder and such failure is not cured by one (1) Banking Day after such non-payment, or (ii) to pay or cause to be paid within five (5) Banking Days after its due date any amount payable under this Agreement; or

(b) failure by the District to observe or perform any of the covenants set forth in any of the following paragraphs of Section 5.1: (g), (m) or (n) and such failure continues for a period of five (5) Banking Days after the occurrence of such failure; or

(c) failure by the District to observe or perform any of the other covenants set forth in Section 5.1 and such failure continues for a period of thirty (30) or more days after (i) written notice thereof to the District from the Bank or (ii) the Bank is notified of such failure, or should have been notified of such failure by the District, pursuant to the terms of this Agreement, unless such failure is not reasonably capable of being cured within such thirty (30) day period but is capable of being cured within ninety (90) days and the District commences action to cure such failure within such thirty (30) day period and diligently and continuously prosecutes such action to completion and causes such failure to be cured within ninety (90) days after the date of the written notice specified above; or

(d) failure by the District to observe or perform any other term, condition, covenant or agreement set forth in this Agreement to be observed or performed by the District (and not constituting an Event of Default under any of the preceding or following provisions of this Section VI) and such failure continues for a period of thirty (30) or more days after (i) written notice thereof to the District from the Bank or (ii) the Bank is notified of such failure, or should have been notified of such failure by the District, pursuant to the terms of this Agreement, unless such failure is not reasonably capable of being cured within such thirty (30) day period but is capable of being cured within ninety (90) days and the District commences action to cure such failure within such thirty (30) day period and diligently and continuously prosecutes such action to completion and causes such failure to be cured within ninety (90) days after the date of the written notice specified above; or

(e) any representation, warranty or statement made or deemed made by or on behalf of the District in this Agreement or which is contained in any certificate, document or financial or other statement furnished at any time under or in connection with this Agreement shall prove to have been misleading or incorrect when made or deemed made which could reasonably be expected to have a Material Adverse Effect; or

(f) any material provision of this Agreement shall for any reason cease to be valid and binding on the District or be in full force and effect for the District; or

(g) the District shall (i) apply for or consent to the appointment of, or the taking of possession by, a receiver, custodian, trustee or liquidator or other similar official of itself or of all or a substantial part of its Property, (ii) admit in writing its inability, or be generally unable, to pay its debts as they become due, (iii) make a general assignment for the benefit of creditors, (iv) commence a voluntary case, proceeding or other action under any existing or future law of any jurisdiction, domestic or foreign, relating to bankruptcy, insolvency, reorganization or relief of debtors, seek to have an order of relief entered with respect to it or seek to adjudicate it a bankrupt or insolvent, or seek reorganization, arrangement, adjustment, winding-up, liquidation, dissolution, composition or other relief with respect to its debts, or (v) take any corporate action for the purpose of effecting any of the foregoing; or

(h) a case, proceeding or other action shall be commenced without the application or consent of the District, in any court of competent jurisdiction, seeking the liquidation or readjustment of debts, the appointment of a trustee, receiver, custodian, liquidator or the like of the District, or of all or any substantial part of its assets, or any similar action with respect to the District, under any existing or future law of any jurisdiction, domestic or foreign relating to bankruptcy, insolvency, reorganization or relief of debtors and such case, proceeding or other action shall continue undismissed, or unstayed and in effect, for a period of ninety (90) days, or an order for relief against the District, shall be entered in any such involuntary case, proceeding or other action or the District, shall take any action in furtherance of, or indicating its consent to, approval of or acquiescence in any of the actions described above; or

(i) a final judgment for an amount not otherwise covered by insurance, in excess of \$5,000,000 (which the Bank determines to not be covered by insurance or as to which the insurer has given notice of a denial of coverage) is rendered against the District, within ninety (90) days after entry thereof, such judgment has not been discharged or execution thereof stayed pending appeal or if, within thirty (30) days after the expiration of any such stay, such judgment has not been discharged; or

(j) the ratings on Parity Obligations issued under the Trust Agreement are withdrawn for credit reasons or rated lower than Baa2 from Moody's, BBB from S&P or BBB from Fitch.

6.2 Rights and Remedies Upon Default.

(a) Upon the occurrence of any Event of Default specified in Sections 6.1(g) or 6.1(h) (each, a "Special Event of Default"), the obligations of the Bank to make Advances hereunder shall automatically and immediately terminate and the Commitment shall be reduced to zero without notice or other action on the part of the Bank and all Obligations shall immediately become due and payable.

(b) Upon the occurrence of any Event of Default (other than a Special Event of Default) (i) the Available Commitment shall immediately be reduced to zero (and, accordingly, the obligations of the Bank to make Advances hereunder shall

automatically and immediately terminate) and (ii) and the Bank shall have the right to declare that all Obligations shall immediately become due and payable.

(c) During the continuance of any Event of Default all outstanding Advances shall accrue interest at the Default Rate.

SECTION VII MISCELLANEOUS PROVISIONS

7.1 Amendments, Etc. No amendment or waiver of any provision of this Agreement nor consent to any departure by the District therefrom shall in any event be effective unless the same shall be in writing and signed by the Bank. In the case of any waiver, the District and the Bank shall be restored to their former position and rights hereunder, and any default or Event of Default waived shall be deemed to be cured and not continuing; but no such waiver shall extend to any subsequent or other default or Event of Default or impair any right consequent thereon.

7.2 Notices.

(a) Except as provided in paragraph (b) below, all notices, requests and demands to be given to, or made hereunder by, the District or the Bank shall be given or made in writing and shall be deemed to be properly given or made if delivered by personal delivery, by nationally recognized overnight courier service or by certified United States mail, postage prepaid, addressed to the party to whom directed at the applicable address set forth below (or such address changed by similar notice in writing given by the particular party whose address is to be changed), or electronically in pdf format (so long as any notice sent electronically is also sent by one of the other methods no later than the following day). Notices, requests and demands shall be deemed to have been given either at the time of personal delivery or, in the case of courier or U.S. mail, as of the date of first attempted delivery at the address and in the manner provided herein, or, in the case of email as set forth in paragraph (c) below. Notwithstanding the foregoing, no notice of change of address shall be effective except upon actual receipt. Notices, requests and demands are to be addressed as follows:

(i) If to the District, to:

Hampton Roads Sanitation District
1434 Air Rail Avenue
Virginia Beach, VA 23455
Attention: Chief of Capital Finance
email: EGirardi@hrsd.com

(ii) If to the Bank, to:

R. Brooks Scurry III
Senior Vice President
Bank of America
Bank of America Tower
NC1-030-25-01
620 S. Tryon St.
Charlotte, NC 28255
email: r.b.scurry@bofa.com

With a copy thereof sent to:

Kevin Larkin
SVP & Senior Client Manager
VA 3-999-08-01
999 Waterside Drive, 8th Floor
Norfolk, VA 23510
email: kevin.larkin@bofa.com

(b) Notices and other communications to the Bank hereunder may, in the Bank's discretion, be sent by electronic communication (including e-mail and Internet or intranet websites) in accordance with procedures approved by the Bank. During any epidemic, pandemic, pestilence, or other healthcare emergency, or any terrorism, national, state or local emergency, or any quarantine, or stay-at-home or shelter-in-place orders issued by a Governmental Authority in which the Bank closes, or restricts access to, all or any of its offices, the Bank may require that all notices, requests, and demands to it be given by email or other electronic communication as specified by the Bank. The District agrees to accept notices and other communications to it hereunder by email as noted above in paragraph (a), and may, in its discretion, also provide for receipt of other electronic communications pursuant to procedures approved by it.

(c) Unless the Bank specifies otherwise, (i) notices and other communications sent by e-mail shall be deemed received upon the sender's receipt of an acknowledgment from the intended recipient (such as by the "return receipt requested" function, as available, return e-mail or other written acknowledgment), and (ii) notices or communications posted to an Internet or intranet website shall be deemed received upon the deemed receipt by the intended recipient at its e-mail address as described in the foregoing clause (i) of notification that such notice or communication is available and identifying the website address therefor; provided that, in the case of clauses (i) and (ii) above, if such notice, email or other communication is not sent during the recipient's normal business hours, such notice, email or communication shall be deemed to have been sent at the recipient's opening of business on the next Banking Day.

7.3 No Waiver; Remedies. No failure on the part of the Bank to exercise, and no delay in exercising, any right, remedy, power or privilege under this Agreement shall operate as a waiver thereof; nor shall any single or partial exercise of any right, remedy,

power or privilege hereunder preclude any other further exercise of any other right, remedy, power or privilege. The rights, remedies, powers and privileges herein provided are cumulative and not exclusive of any rights, remedies, powers and privileges provided by law.

7.4 No Fiduciary Relationship. The District acknowledges and agrees that their dealings with the Bank relate solely to the transactions occurring under this transaction and that in no event shall the Bank be considered to be a partner of, or joint venturer with, the District. Also, the District represents and warrants that it has independently evaluated the transactions contemplated by this Agreement and has not relied upon, nor will it rely upon, the expertise, advice or other comments or statements of the Bank (including agents of the Bank), if any, in deciding to pursue such undertaking. As the District is experienced in financial affairs (or has sought professional advice (other than from the Bank) concerning its financial affairs, in no event shall the Bank owe any fiduciary or similar obligations to it in connection with the subject transaction.

7.5 Successors and Assigns. This Agreement is a continuing obligation and shall be binding upon the Bank and the District, and their respective successors, transferees and assigns, and shall inure to the benefit of and be enforceable by the Bank and the District, and their respective successors, transferees and assigns; provided, however, that the District may not assign all or any part of this Agreement without the prior written consent of the Bank.

7.6 Liability of Bank. Neither the Bank nor any of its officers, directors, employees or representatives shall be liable or responsible for: (a) the use which may be made of any Advance; (b) the validity, sufficiency or genuineness of documents, or of any endorsement(s) thereon, even if such documents should in fact prove to be in any or all respects invalid, insufficient, fraudulent or forged; (c) payment by the Bank against presentation of documents which do not comply with the terms hereof, including failure of any documents to bear any reference or adequate reference to this Agreement; (d) the validity or sufficiency of any instrument transferring or assigning or purporting to transfer or assign this Agreement, or the rights or benefits under this Agreement, or proceeds of any Advance, in whole or in part, which may prove to be invalid or ineffective for any reason; (e) errors, omissions, interruptions, losses or delays in transmission or delivery of any messages by mail, cable, telex, telephone or otherwise; (f) any loss or delay in the transmission or otherwise of any document or draft required in order to make an Advance Notice hereunder; or (g) any other circumstances whatsoever in making or failing to make payment hereunder, except only that the District shall have a claim against the Bank, and the Bank shall be liable to the District, to the extent, but only to the extent, of any direct, as opposed to consequential, indirect or punitive damages suffered by the District that were caused by (i) the Bank's willful misconduct or gross negligence in determining whether documents presented hereunder comply with the terms hereof or (ii) the Bank's willful failure to pay hereunder after the presentation to it by the District of an Advance Notice strictly complying with the terms and conditions hereof. The District hereby waives any right to object to any payment made hereunder against an Advance Notice in the form provided for herein but varying in punctuation, capitalization, spelling or similar matters of form. IN NO EVENT SHALL THE BANK EVER BE LIABLE FOR CONSEQUENTIAL, INDIRECT OR PUNITIVE

DAMAGES, ANY RIGHT OR CLAIM THERETO BEING EXPRESSLY AND UNCONDITIONALLY WAIVED. In furtherance and not in limitation of the foregoing, the Bank may accept documents that appear on their face to be in order, without responsibility for further investigation, regardless of any notice or information to the contrary; provided, however, that if the Bank shall receive written notification from the District that sufficiently identifies (in the opinion of the Bank) documents to be presented to the Bank which are not to be honored, the Bank agrees that it will not honor such documents.

7.7 Severability. Any provision of this Agreement which is prohibited, unenforceable or not authorized in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such prohibition, unenforceability or nonauthorization without invalidating the remaining provisions hereof or affecting the validity, enforceability or legality of such provision in any other jurisdiction.

7.8 Governing Law. This Agreement shall be governed by, and construed and interpreted in accordance with, the law of the Commonwealth of Virginia.

7.9 Jurisdiction; Venue; Waiver of Jury Trial.

(a) Submission to Jurisdiction. THE DISTRICT IRREVOCABLY AND UNCONDITIONALLY AGREES THAT IT WILL NOT COMMENCE ANY ACTION, LITIGATION OR PROCEEDING OF ANY KIND OR DESCRIPTION, WHETHER IN LAW OR EQUITY, WHETHER IN CONTRACT OR IN TORT OR OTHERWISE, AGAINST THE BANK OR ANY RELATED PARTY OF THE BANK IN ANY WAY RELATING TO THIS AGREEMENT OR ANY OTHER RELATED DOCUMENT OR THE TRANSACTIONS RELATING HERETO OR THERETO, IN ANY FORUM OTHER THAN THE COURTS OF THE COMMONWEALTH OF VIRGINIA SITTING IN VIRGINIA BEACH, VIRGINIA, AND OF THE UNITED STATES DISTRICT COURT OF THE EASTERN DISTRICT OF VIRGINIA, AND ANY APPELLATE COURT FROM ANY THEREOF, AND EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY SUBMITS TO THE JURISDICTION OF SUCH COURTS AND AGREES THAT ALL CLAIMS IN RESPECT OF ANY SUCH ACTION, LITIGATION OR PROCEEDING MAY BE HEARD AND DETERMINED IN SUCH VIRGINIA STATE COURT. EACH OF THE PARTIES HERETO AGREES THAT A FINAL JUDGMENT IN ANY SUCH ACTION, LITIGATION OR PROCEEDING SHALL BE CONCLUSIVE AND MAY BE ENFORCED IN OTHER JURISDICTIONS BY SUIT ON THE JUDGMENT OR IN ANY OTHER MANNER PROVIDED BY LAW. NOTHING IN THIS AGREEMENT OR IN ANY OTHER RELATED DOCUMENT SHALL AFFECT ANY RIGHT THAT THE BANK MAY OTHERWISE HAVE TO BRING ANY ACTION OR PROCEEDING RELATING TO THIS AGREEMENT OR ANY OTHER RELATED DOCUMENT AGAINST THE DISTRICT OR ITS PROPERTIES IN THE COURTS OF ANY JURISDICTION.

(b) Waiver of Venue. THE DISTRICT IRREVOCABLY AND UNCONDITIONALLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY OBJECTION THAT IT MAY NOW OR HEREAFTER HAVE

TO THE LAYING OF VENUE OF ANY ACTION OR PROCEEDING ARISING OUT OF OR RELATING TO THIS AGREEMENT OR ANY OTHER RELATED DOCUMENT IN ANY COURT REFERRED TO IN PARAGRAPH (a) OF THIS SECTION. EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE DEFENSE OF AN INCONVENIENT FORUM TO THE MAINTENANCE OF SUCH ACTION OR PROCEEDING IN ANY SUCH COURT.

(c) Service of Process. EACH OF THE DISTRICT AND THE BANK HERETO IRREVOCABLY CONSENTS TO SERVICE OF PROCESS IN THE MANNER PROVIDED FOR NOTICES IN SECTION 7.2. NOTHING IN THIS AGREEMENT WILL AFFECT THE RIGHT OF ANY PARTY HERETO TO SERVE PROCESS IN ANY OTHER MANNER PERMITTED BY APPLICABLE LAW.

(d) Waiver of Jury Trial. EACH PARTY HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN ANY LEGAL PROCEEDING DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THIS AGREEMENT OR ANY OTHER RELATED DOCUMENTS OR THE TRANSACTIONS CONTEMPLATED HEREBY OR THEREBY (WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY). EACH PARTY HERETO (A) CERTIFIES THAT NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PERSON HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PERSON WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THE FOREGOING WAIVER AND (B) ACKNOWLEDGES THAT IT AND THE OTHER PARTIES HERETO HAVE BEEN INDUCED TO ENTER INTO THIS AGREEMENT AND THE OTHER RELATED DOCUMENTS BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION.

7.10 Headings. Section and subsection headings in this Agreement are included herein for convenience of reference only and shall not constitute a part of this Agreement for any other purpose.

7.11 Survival of Representations and Warranties. All representations and warranties made in any document, certificate or statement delivered pursuant hereto or thereto or in connection herewith shall survive the execution and delivery of this Agreement.

7.12 Rights Cumulative. All rights, powers and remedies herein given to the Bank or the District are cumulative and not alternative, and are in addition to all statutes or rules of law; any forbearance or delay by the Bank in exercising the same shall not be deemed to be a waiver thereof, and the exercise of any right or partial exercise thereof shall not preclude the further exercise thereof, and the same shall continue in full force and effect until specifically waived by an instrument in writing executed by the Bank.

7.13 Exhibits and Schedules. The Exhibits attached to this Agreement are an integral part hereof and are hereby made a part of this Agreement.

7.14 Entire Agreement. This Agreement constitutes the entire agreement between the Bank and the District and the written and executed form of this Agreement and shall completely and fully supersede all prior undertakings and agreements, both written and oral, between the District and the Bank, executed in anticipation of this Agreement.

7.15 Counterparts. This Agreement may be executed by the parties hereto in several counterparts, and each such counterpart shall be deemed to be an original and all of which constitute together but one and the same agreement. All recitals and statements made in this Agreement shall be deemed fully incorporated within the text of this Agreement and made a part hereof.

7.16 Interest Limitation. Notwithstanding anything to the contrary contained herein, the total liability of the District for payment of interest pursuant to this Agreement and pursuant to any Advances for any period for which interest is payable shall not exceed the maximum amount, if any, of such interest permitted by applicable law to be contracted for, charged or received (the "Maximum Rate"), and if any payments by the District, to the Bank include interest in excess of such a maximum amount, the Bank shall apply such excess to the reduction of the unpaid obligations of the District under this Agreement, as applicable, or if none is due, such excess shall be refunded to the District. Any such application or refund shall not cure or waive any Event of Default. Provided that, to the extent permitted by applicable law, in the event the interest is not collected, is applied to principal or is refunded pursuant to this Section, if the rate of interest payable hereunder shall exceed the Maximum Rate for any period for which interest is payable, then (i) interest at the Maximum Rate shall be due and payable with respect to such interest period and (ii) interest at the rate equal to the difference between (A) the rate of interest calculated in accordance with the terms hereof and (B) the Maximum Rate (the "Excess Interest"), shall be deferred until such date as the rate of interest calculated in accordance with the terms hereof ceases to exceed the Maximum Rate, at which time the District shall pay to the Bank with respect to amounts then payable to the Bank that are required to accrue interest hereunder, such portion of the deferred Excess Interest as will cause the rate of interest then paid to the Bank to equal the Maximum Rate, which payments of deferred Excess Interest shall continue to apply to such unpaid amounts hereunder until all deferred Excess Interest is fully paid to the Bank. Upon the termination of this Agreement, in consideration for the limitation of the rate of interest otherwise payable hereunder, the District shall pay to the Bank a fee equal to the amount of all unpaid deferred Excess Interest. In determining whether or not any interest payable under this Agreement or with respect to any Advance exceeds the highest rate permitted by law, any non-principal payment (except payments specifically stated in this Agreement to be "interest") shall be deemed, to the extent permitted by applicable law, to be an expense, fee, premium or penalty rather than interest.

7.17 Survival. So long as any of the Reimbursement Obligations remain outstanding or the Bank has any obligations under this Agreement or the District has any continuing obligations under this Agreement or Advances unless otherwise provided herein, all covenants, agreements, representations and warranties made herein shall survive the execution and delivery to the Bank of this Agreement and the making of Advances hereunder and shall continue in full force and effect. Notwithstanding the foregoing, Sections 7.2, 7.3, 7.4, 7.6, 7.8, 7.9 and 7.11 shall survive the termination of this Agreement and repayment of

all amounts payable under this Agreement and shall be deemed to continue in full force and effect.

7.18 No Recourse Against Members, Officers, or Employees of Commission or District. No recourse under, or upon, any statement, obligation, covenant, or agreement contained in this Agreement, or in the Tax-Exempt Note or the Taxable Note issued pursuant to this Agreement, or in any document or certification whatsoever, or under any judgment obtained against the Commission or the District or by the enforcement of any assessment or by any legal or equitable proceeding by virtue of any constitution or statute or otherwise or under any circumstances, shall be had against any member, officer or employee, as such, of the Commission or the District, either directly or through the Commission or the District, respectively, or otherwise, for the payment for or to, the Commission or the District or any receiver of either of them, or for, or to, the Bank or otherwise, of any sum that may be due and unpaid pursuant to this Agreement or upon the Tax-Exempt Note or the Taxable Note. Any and all personal liability of every nature, whether at common law or in equity or by statute or by constitution or otherwise, of any such member, officer or employee, as such, to respond by reason of any act or omission on his or her part or otherwise, for the payment for, or to, the Commission or the District or any receiver of either of them, or for, or to, the Bank or otherwise, of any sum that may remain due and unpaid pursuant to this Agreement or upon the Tax-Exempt Note or the Taxable Note, is hereby expressly waived and released as an express condition of, and in consideration for, the execution of this Agreement and the issuance of the Tax-Exempt Note and any Taxable Note.

7.19 QFC Provisions. To the extent that this Agreement or the Note and any other document pertaining to the transaction evidenced or secured thereby (collectively, the "Transaction Documents") provide support, through a guarantee or otherwise, for any swap contract or any other agreement or instrument that is a QFC (such support, "QFC Credit Support", and each such QFC, a "Supported QFC"), the parties acknowledge and agree as follows with respect to the resolution power of the Federal Deposit Insurance Corporation under the Federal Deposit Insurance Act and Title II of the Dodd-Frank Wall Street Reform and Consumer Protection Act (together with the regulations promulgated thereunder, the "U.S. Special Resolution Regimes") in respect of such Supported QFC and QFC Credit Support (with the provisions below applicable notwithstanding that the Transaction Documents and any Supported QFC may in fact be stated to be governed by the laws of the State of New York and/or of the United States or any other state of the United States):

(a) Acknowledgment Regarding Supported QFCs. In the event a Covered Entity that is party to a Supported QFC (each, a "Covered Party") becomes subject to a proceeding under a U.S. Special Resolution Regime, the transfer of such Supported QFC and the benefit of such QFC Credit Support (and any interest and obligation in or under such Supported QFC and such QFC Credit Support, and any rights in property securing such Supported QFC or such QFC Credit Support) from such Covered Party will be effective to the same extent as the transfer would be effective under the U.S. Special Resolution Regime if the Supported QFC and such QFC Credit Support (and any such interest, obligation and rights in property) were governed by the laws of the United States or a state of the United States. In the event a Covered Party or a BHC Act Affiliate of a Covered Party becomes subject to a proceeding under a U.S. Special Resolution Regime, Default Rights under the

Transaction Documents that might otherwise apply to such Supported QFC or any QFC Credit Support that may be exercised against such Covered Party are permitted to be exercised to no greater extent than such Default Rights could be exercised under the U.S. Special Resolution Regime if the Supported QFC and the Transaction Documents were governed by the laws of the United States or a state of the United States.

(b) Limitation on the Exercise of Certain Rights Related to Affiliate Insolvency Proceedings with Respect to Any Supported QFCs. Notwithstanding anything to the contrary in the Transaction Documents, but without prejudice to the requirements of the preceding paragraph (a), Default Rights under the Transaction Documents that might otherwise apply to a Supported QFC or any QFC Credit Support may not be exercised against a Covered Party if such Default Rights are related, directly or indirectly, to a BHC Act Affiliate of such Covered Party becoming subject to Insolvency Proceedings, except to the extent such exercise would be permitted under 12 C.F.R. § 252.84, 12 C.F.R. § 47.5, or 12 C.F.R. § 382.4, as applicable. After a BHC Act Affiliate of a Covered Party has become subject to Insolvency Proceedings, if any party to the Transaction Documents, any Supported QFC or any QFC Credit Support seeks to exercise any Default Right against such Covered Party with respect to such Supported QFC or such QFC Credit Support, the party seeking to exercise such Default Right shall have the burden of proof, by clear and convincing evidence, that the exercise of such Default Right is permitted hereunder.

(c) As used in this Section 7.19, the following terms have the following meanings:

"BHC Act Affiliate" of a party means an "affiliate" (as such term is defined under, and interpreted in accordance with, 12 U.S.C. 1841(k)) of such party.

"Covered Entity" means any of the following: (i) a "covered entity" as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 252.82(b); (ii) a "covered bank" as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 47.3(b); or (iii) a "covered FSI" as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 382.2(b).

"Default Right" has the meaning assigned to that term in, and shall be interpreted in accordance with, 12 C.F.R. §§ 252.81, 47.2 or 382.1, as applicable.

"Insolvency Proceeding" means a receivership, insolvency, liquidation, resolution, or similar proceeding.

"QFC" has the meaning assigned to the term "qualified financial contract" in, and shall be interpreted in accordance with, 12 U.S.C. 5390(c)(8)(D).

[Signature Page Follows]

[Signature Page to Second Amended and Restated Credit Agreement]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed and delivered as of the date first above written.

**HAMPTON ROADS SANITATION
DISTRICT**

By: _____
General Manager

BANK OF AMERICA, N.A.

By: _____
Senior Vice President

FORM OF REQUEST FOR ADVANCE

REQUEST FOR ADVANCE

Advance No. _____

Project No. _____

Kristy Moore
Public Sector Banking
Bank of America, N.A.
4242 Six Forks Road, Suite 1720, Raleigh, NC 27609
Mail Code NC9-400-17-03
Tel: 919-829-6950 | Fax: 866-503-5027
Email: kristy.moore@bofa.com

The undersigned District Representatives of Hampton Roads Sanitation District (the "District"), refers to the Second Amended and Restated Credit Agreement dated as of June 30, 2022 (as amended, restated, amended and restated, supplemented or otherwise modified from time to time, the "Agreement") between the District and Bank of America, N.A. (the "Bank"), and hereby requests on _____, pursuant to Section 2.1 of the Agreement, that the Bank make an Advance under the Agreement, and in that connection (i) certifies that (a) no Default has occurred and is continuing or would result from making such Advance and (b) the representations and warranties contained in Section 3.1 of the Agreement are true and correct in all material respects, and (ii) sets forth below the following information relating to such Advance:

1. The aggregate amount of the proposed Advance is \$_____.
2. The aggregate amount of the Advance shall be used solely to finance or refinance the costs of acquisition of a [Tax-Exempt][Taxable] Project, described on Attachment A to this notice, pursuant to the Agreement.
3. The funds for such Advance are to [pay costs of a Tax-Exempt Project][pay costs of a Taxable Project][repay an outstanding Advance].
4. [The Advance will bear interest at the BSBY Daily Floating Rate] [The BSBY Interest Rate Period at which such Advance shall bear interest is [1 month], [3 months], [6 months]] [select one].
5. The Maturity Date of the proposed Advance is _____ [insert date selected by the District which date must be either (i) the Scheduled Termination Date or (ii) the last day of a BSBY Interest Rate Period].

6. The proposed Advance shall be made by the Bank by direct deposit of immediately available funds to the account of the District at the Bank in accordance with the instructions set forth below:

[Account information]

IN WITNESS WHEREOF, this Certificate has been executed this _____ day of _____, 20__.

[NOTE: SIGNATURES OF TWO (2) DISTRICT REPRESENTATIVES ARE REQUIRED FOR ADVANCES PURSUANT TO SECTION 2.1 OF THE AGREEMENT.]

HAMPTON ROADS SANITATION DISTRICT

By: _____
Name: _____
Title: _____

By: _____
Name: _____
Title: _____

Attachment A

Attachment A-1

FORM OF BSBY INTEREST RATE PERIOD REQUEST

BSBY INTEREST RATE PERIOD REQUEST

Kristy Moore
Public Sector Banking
Bank of America, N.A.
4242 Six Forks Road, Suite 1720, Raleigh, NC 27609
Mail Code NC9-400-17-03
Tel: 919-829-6950 | Fax: 866-503-5027
Email: kristy.moore@bofa.com

The undersigned District Representative of the Hampton Roads Sanitation District (the "District"), refers to the Second Amended and Restated Credit Agreement dated as of June 30, 2022 (the "Agreement"), between the District and Bank of America, N.A. (the "Bank"), and hereby requests, that the Bank reset the BSBY Interest Rate Period for the Advance in the aggregate principal amount of \$_____ and initially received on _____, 20__ from the Bank under the Agreement, and in that connection sets forth below the following information relating to such Advance and its applicable BSBY Interest Rate Periods:

1. The applicable Advance was in the aggregate principal amount of \$_____ and initially received on _____ and shall be used to pay the costs of Projects (as defined in the Agreement).

2. The date the current BSBY Interest Rate Period expires is _____, 20__; and

3. The District requests that on, _____, 20__ the BSBY Interest Rate Period for such Advance be reset to a [one-month][three-month][six-month] BSBY Interest Rate Period which shall end on _____, 20__.

IN WITNESS WHEREOF, this Certificate has been executed as of _____, 20__.

HAMPTON ROADS SANITATION DISTRICT

By: _____
Name: _____
Title: _____

FORM OF NOTE

Date of Note: _____, 20__

Amount: As set forth on Attachment A hereto.

Interest Rate: As set forth on Attachment A hereto.

Interest Period: As set forth on Attachment A hereto.

FOR VALUE RECEIVED, HAMPTON ROADS SANITATION DISTRICT (the "District"), does hereby covenant and promise to pay to BANK OF AMERICA, N.A. (hereinafter with its successors or assigns being collectively termed the "Bank"), ON THE SCHEDULED TERMINATION DATE OR ANY ACCELERATION TO THE SCHEDULED TERMINATION DATE at its principal office at Norfolk, Virginia, or at such other place or places as the Bank may designate to the District in writing from time to time, in immediately available funds, the Amount of this Note, or so much of the Commitment as may be Advanced by the Bank (the "Principal Amount"), pursuant to the Credit Agreement (hereinafter defined) and the unpaid interest upon such Principal Amount until this Note is paid in full. This Note is being issued pursuant to and is further subject to the terms of that certain Second Amended and Restated Credit Agreement dated as of June 30, 2022 (together with any amendments or supplements thereto, the "Credit Agreement"), between the District and the Bank. Capitalized terms used and not otherwise defined herein have the meanings assigned to such terms in the Credit Agreement.

The District promises to pay interest on the unpaid Principal Amount of this Note on the dates and at the rates and times and in all cases in accordance with the Credit Agreement. All payments of principal and interest shall be made to the Bank in lawful money of the United States of America in immediately available funds. The Bank shall endorse its records relating to this Note with appropriate notations evidencing the Advances made for financing Tax-Exempt or Taxable Projects under the Credit Agreement and payments of principal hereunder as contemplated by the Credit Agreement.

This is a special obligation of the District payable solely from the amounts described in the Credit Agreement. This Note shall not be deemed to constitute a debt, or a pledge of the faith and credit, of the Commonwealth of Virginia or of any county, city, town or political subdivision thereof, other than the District. The issuance of this Note shall not directly or indirectly or contingently obligate the Commonwealth of Virginia or any political subdivision thereof (including the District) to levy or to pledge any form of taxation whatever therefor.

As provided in the Credit Agreement, this Note is subject to prepayment, in whole or in part upon the terms and conditions set forth in the Credit Agreement. In case an Event of Default (as defined in the Credit Agreement) shall occur and be continuing, the principal of and accrued interest on this Note may be declared due and payable in the manner and with the effect provided in the Credit Agreement.

Notwithstanding that the Bank may make demand for payment of the Principal Amount upon the occurrence of an Event of Default, the Bank may, at its option, thereafter make Advances under the Credit Agreement and all such Advances shall be evidenced by this Note regardless of whether or not the sums outstanding at the time of any such demand for payment have been paid.

All notices and other communications provided for under this Note shall be delivered and be deemed delivered to the addresses specified above and in the manner provided in Section 7.2 of the Credit Agreement; or, as to each, at such other address as shall be designated by such party in a written notice to the other party complying as to delivery with the terms of Section 7.2.

This Note may not be changed orally, but only by an agreement in writing and signed by the party against whom enforcement of any waiver, change, modification or discharge is sought.

All parties to this Note, whether the District, principal, surety, guarantor or endorser, hereby waive valuation and appraisal, demand, presentment for payment, notice of dishonor, protest and notice of protest of this Note.

This Note shall be construed and enforced in accordance with the laws of the Commonwealth of Virginia.

Signed and sealed as of [_____], 20_____.

HAMPTON ROADS SANITATION DISTRICT

[Seal]

By: _____
Name: _____
Title: _____

ADVANCES AND PAYMENTS OF PRINCIPAL

Date	Amount	Maturity Date	BSBY Interest Rate Period	Amount used to finance Project	Initial Advance for Project [y/n]	Amount used to refinance prior Advances	Amount of Principal Paid or Prepaid	Unpaid Principal Balance of Advance	Unpaid Principal Balance	Notation made By

FORM OF REQUEST FOR INCREASE/DECREASE IN COMMITMENT

[_____, 202__]

To: Bank of America, NA.

Reference is made to that certain Second Amended and Restated Credit Agreement, dated as of June 30, 2022 (as amended, restated, amended and restated, supplemented and/or otherwise modified from time to time, the "Agreement"), between Hampton Roads Sanitation District, a political subdivision of the Commonwealth of Virginia (the "Borrower"), and Bank of America, N.A. (the "Bank"). Capitalized terms used but not otherwise defined herein shall have the same meanings assigned to such terms in the Agreement.

1. This request for an [increase][decrease] in the aggregate Commitment is made pursuant to Section 2.11(b) of the Agreement.
2. The Borrower has [not previously made a][previously made only one] request for an increase or decrease in the aggregate Commitment during the preceding twelve (12) month period.
3. The amount of the [increase][decrease] in the aggregate Commitment being requested is [\$_____].¹
4. The Banking Day on which such [increase][decrease] in the aggregate Commitment is requested to be made effective is _____ [which date is not less than 30 days after this Request is delivered to the Bank].
5. The Borrower hereby certifies, represents and warrants, which certifications, representations and warranties shall be deemed remade as of the date the increase or decrease in the aggregate Commitment becomes effective, the following:
 - (a) No event has occurred and is now continuing which constitutes an Event of Default under the Agreement or which, with notice and/or the lapse of time, would constitute an Event of Default under the Agreement; and
 - (b) All representations and warranties made by the Borrower in Section III of the Agreement are true and correct in all material respects.²

¹ The amount of the increase or decrease in the aggregate Commitment being requested shall be (i) in an aggregate principal amount of not less than \$25,000,000, and (ii) at no time shall the aggregate Commitment exceed \$300,000,000.

² Note that for the increase in the aggregate Commitment to become effective the Bank must give its written approval thereof, an amendment to the Agreement must be executed, and the opinion of Bond Counsel required by Section 2.11 of the Agreement must have been received by the Bank.

[NOTE: SIGNATURES OF TWO (2) DISTRICT REPRESENTATIVES ARE REQUIRED TO INCREASE OR DECREASE THE COMMITMENT PURSUANT TO SECTION 2.11 OF THE AGREEMENT.]

HAMPTON ROADS SANITATION DISTRICT

By: _____
Name: _____
Title: _____

By: _____
Name: _____
Title: _____

AGENDA ITEM 6. – May 24, 2022

Subject: Expenditure of Tax-Exempt Bond Proceeds
Reimbursement Resolution for Fiscal Year (FY) 2023 - 2024

Recommended Action: Adopt reimbursement resolution.

Brief: Federal tax law requires that a government officially declare its intent to “reimburse” itself for capital expenditures occurring prior to the availability of tax-exempt debt proceeds used to eventually finance the improvements. The expenditures to be reimbursed cannot be more than 60 days prior to the date of the [resolution](#). The origin of this regulation is to avoid potential abuse of arbitrage motivated reimbursement transactions, whereby entities attempt to profit from price imbalances particularly due to the tax-exempt nature of municipal bonds.

For example: HRSD used cash to fund the \$25 million SWIFT Research Center on June 1, 2018. On October 1, 2018, the Commission adopts a Reimbursement Resolution to declare its intent to reimburse those original expenditures. On November 1, 2018, HRSD issues \$25 million in tax-exempt bonds and invests those funds in materially higher yielding investments. The reimbursement resolution would be considered “artificial” due to the untimely declaration of official intent.

The reimbursement resolution amount of \$570 million is based on the FY 2023-2032 Capital Improvement Program less amounts that HRSD intends to pay with cash and is a reasonable estimation of the maximum amount of debt proceeds that could be subject to reimbursement. HRSD was approved for a \$125 million Clean Water Revolving Loan Fund (VCWRLF) and will be seeking Commission approval this month, for a June closing, on a \$100 million Line of Credit with Bank of America which could be increased to \$300 million as needed. The line of credit will be structured so that it can be tax-exempt or taxable.

In FY-2023, staff is planning to initially use cash to fund Virginia Clean Water Revolving Loan Fund (VCWRLF) projects while we await invoice approval from the Department of Environmental Quality for reimbursement. When we receive these tax-exempt proceeds, we will reimburse our cash balance. Staff may also use cash to fund capital projects and seek reimbursement from our tax-exempt Line of Credit with Bank of America. An additional provision was added in case HRSD draws on the WIFIA loan, which is taxable, and decides to use tax-exempt proceeds to pay it off.

Hampton Roads Sanitation District
Resolution of
May 24, 2022

HAMPTON ROADS SANITATION DISTRICT COMMISSION

RESOLUTION OF THE HAMPTON ROADS SANITATION DISTRICT COMMISSION OF
HAMPTON ROADS SANITATION DISTRICT DECLARING ITS INTENTION TO
REIMBURSE ITSELF FROM THE PROCEEDS OF ONE OR MORE TAX-EXEMPT
FINANCINGS FOR CERTAIN EXPENDITURES MADE OR TO BE MADE IN
CONNECTION WITH THE ACQUISITION, CONSTRUCTION OR EQUIPPING OF
CERTAIN CAPITAL IMPROVEMENTS

Adopted May 24, 2022

RESOLUTION OF THE HAMPTON ROADS SANITATION DISTRICT COMMISSION OF
HAMPTON ROADS SANITATION DISTRICT DECLARING ITS INTENTION TO
REIMBURSE ITSELF FROM THE PROCEEDS OF ONE OR MORE TAX-EXEMPT
FINANCINGS FOR CERTAIN EXPENDITURES MADE OR TO BE MADE IN
CONNECTION WITH THE ACQUISITION, CONSTRUCTION OR EQUIPPING OF
CERTAIN CAPITAL IMPROVEMENTS

WHEREAS, Hampton Roads Sanitation District (the “District”) is a political subdivision organized and existing under the laws of the Commonwealth of Virginia; and

WHEREAS, the District prepares a Capital Improvement Program (“CIP”) each year for capital projects currently underway and proposed to be undertaken over the next 10 fiscal years (each, a “Fiscal Year” or “FY”) and a draft CIP is reviewed by the Hampton Roads Sanitation District Commission (the “Commission”) in late March or early April with a final CIP typically adopted in May; and

WHEREAS, in connection with the preparation of the annual CIP, the District prepares annual cash flow projections, setting forth the cash flow needs for capital projects and funding sources for such projects broken down into categories of (a) cash from the District’s operation of its facilities, (b) loans from the Virginia Clean Water Revolving Loan Program (such loans, “Clean Water Revolving Fund Loans”), which is administered by the Virginia Resources Authority (“VRA”), and (c) amounts expected to be raised from the issuance of bonds or other obligations (which, for purposes hereof, may include draws from the District’s Amended and Restated Credit Agreement by and between the District and Bank of America, N.A., dated as of April 21, 2021, as heretofore or hereinafter amended); and

WHEREAS, the District has paid, beginning on a date no more than 60 days prior to the date hereof, and will pay, on and after the date hereof, certain expenditures (the “Expenditures”) in connection with the acquisition, construction and/or equipping of the capital projects for FY2023 and FY2024, as listed in the District’s FY2023 – FY2032 CIP, which was adopted on the date hereof, and attached as Exhibit A hereto (the “Projects”); and

WHEREAS, the Commission has determined that those moneys previously advanced no more than 60 days prior to the date hereof and to be advanced on and after the date hereof to pay the Expenditures are available only for a temporary period and it is necessary to reimburse the District for the Expenditures from the proceeds of the Clean Water Revolving Fund Loans, or one or more issues of tax-exempt bonds (the “Bonds”);

NOW, THEREFORE, THE HAMPTON ROADS SANITATION DISTRICT COMMISSION DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. The Commission hereby declares the District’s intent to reimburse the District with the proceeds of the Bonds or Clean Water Revolving Fund Loans for the Expenditures with respect to the Projects made on or after March 25, 2022, which date is no more than 60 days prior to the date hereof. The District reasonably expects on the date hereof

that it will reimburse the Expenditures with the proceeds of the Bonds or Clean Water Revolving Fund Loans.

Section 2. Each Expenditure was and will be (a) of a type properly chargeable to capital account under general federal income tax principles (determined in each case as of the date of the Expenditure), (b) a cost of issuance with respect to the Clean Water Revolving Fund Loans or the Bonds, (c) an extraordinary nonrecurring item that is not customarily payable from current revenues, or (d) a grant to a party that is not related to or an agent of the District so long as such grant does not impose any obligation or condition (directly or indirectly) to repay any amount to or for the benefit of the District.

Section 3. The maximum principal amount of the Clean Water Revolving Fund Loans and Bonds expected to be issued for the Projects is \$570,000,000.

Section 4. The District will make a reimbursement allocation, which is a written allocation by the District that evidences the District's use of proceeds of the Clean Water Revolving Fund Loans or the Bonds to reimburse an Expenditure, no later than 18 months after the later of the date on which the Expenditure is paid or the related Projects are placed in service or abandoned, but in no event more than three years after the date on which the Expenditure is paid. The District recognizes that exceptions are available for certain "preliminary expenditures," costs of issuance, certain *de minimis* amounts, and expenditures for construction projects of at least five years.

Section 5. This resolution shall take effect immediately upon its passage.

[End of Resolution]

**RESOLUTION OF THE HAMPTON ROADS SANITATION DISTRICT
COMMISSION OF HAMPTON ROADS SANITATION DISTRICT DECLARING ITS
INTENTION TO REIMBURSE ITSELF FROM THE PROCEEDS OF ONE OR MORE
TAX-EXEMPT FINANCINGS FOR CERTAIN EXPENDITURES MADE OR TO BE
MADE IN CONNECTION WITH THE ACQUISITION, CONSTRUCTION OR
EQUIPPING OF CERTAIN CAPITAL IMPROVEMENTS**

PASSED AND ADOPTED this 24th day of May, 2022.

The undersigned further certifies that the foregoing has been properly approved and adopted in accordance with all applicable requirements of the Hampton Roads Sanitation District Commission.

Frederick N. Elofson, Chair

Exhibit A

Project Number	Project Name	Sub-Total	Contingency	Total with Continge
PR_AB010000	Army Base 24-Inch and 20-Inch Transmission Main Replacements	\$ 4,478,463	\$ 895,693	\$ 5,374,155
PR_AB010500	Section W Force Main Replacement	\$ 504,344	\$ 100,869	\$ 605,213
PR_AB011900	Army Base Treatment Plant Administration Building Renovation (2021)	\$ 963,168	\$ 192,634	\$ 1,155,802
PR_AB012000	Wards Corner Sanitary Sewer Pumping Station	\$ 1,450,000	\$ 290,000	\$ 1,740,000
PR_AD012500	Cybersecurity Practice & Procedure Initiative	\$ 4,895,488	\$ 979,098	\$ 5,874,585
PR_AD012600	Central Environmental Laboratory Expansion and Rehabilitation	\$ 2,620,723	\$ 524,145	\$ 3,144,868
PR_AT011520	Shipps Corner Pressure Reducing Station Modifications	\$ 954,204	\$ 190,841	\$ 1,145,045
PR_AT011900	Great Bridge Interceptor Extension 16-Inch Replacement	\$ 466,122	\$ 93,224	\$ 559,347
PR_AT012920	Atlantic Treatment Plant Access Road Extension	\$ 1,746,888	\$ 349,378	\$ 2,096,266
PR_AT013000	Washington District Pump Station Area Sanitary Sewer Improvements	\$ 1,637,260	\$ 327,452	\$ 1,964,712
PR_AT013010	Washington District Pump Station Replacement	\$ 1,402,424	\$ 280,485	\$ 1,682,909
PR_AT013110	South Norfolk Area Gravity Sewer Improvements, Phase II	\$ 3,395,748	\$ 679,150	\$ 4,074,897
PR_AT013700	Atlantic Trunk Interceptor Force Main Relocation (VDOT Laskin Road Betterment)	\$ 316,024	\$ 63,205	\$ 379,229
PR_AT014600	Kempsville Interceptor Force Main Replacement - Phase I	\$ 271,466	\$ 54,293	\$ 325,759
PR_AT014800	Atlantic Treatment Plant Electrical Workspace Renovation	\$ 411,048	\$ 82,210	\$ 493,258
PR_AT014900	Atlantic Treatment Plant Gravity Belt Thickener Expansion	\$ 3,280,772	\$ 656,154	\$ 3,936,927
PR_AT015000	Atlantic Treatment Plant Polymer System Replacement	\$ 1,459,952	\$ 291,990	\$ 1,751,942
PR_AT015100	Atlantic Treatment Plant Solids Storage Pad Improvements	\$ 846,840	\$ 169,368	\$ 1,016,208
PR_AT015200	Cedar Road Interceptor Force Main Replacement Phase I	\$ 265,603	\$ 53,121	\$ 318,723
PR_AT015400	Dozers Corner Pump Station Replacement	\$ 809,000	\$ 161,800	\$ 970,800
PR_AT015500	Atlantic Treatment Plant Secondary Clarifier Effluent Weir Replacement and Enhancements	\$ 824,000	\$ 164,800	\$ 988,800
PR_AT015600	Atlantic Treatment Plant Solids Handling Improvements and Odor Control Upgrades Phase I	\$ 2,428,571	\$ 485,714	\$ 2,914,286
PR_AT015700	Atlantic Plant Solids Handling Improvements Waste Gas Flare Replacement	\$ 414,286	\$ 82,857	\$ 497,143
PR_BH013020	Willard Avenue Pump Station Replacement	\$ 4,903,235	\$ 980,647	\$ 5,883,882
PR_BH014000	West Avenue and 35th Street Interceptor Force Main Replacement	\$ 2,602,500	\$ 520,500	\$ 3,123,000
PR_BH014220	Hampton Trunk Sewer Extension Divisions I and J Relocation Phase II	\$ 7,162,301	\$ 1,432,460	\$ 8,594,761
PR_BH014500	Ivy Home-Shell Road Sewer Extension Division I Replacement	\$ 102,573	\$ 20,515	\$ 123,088
PR_BH014600	46th Street Diversion Sewer Rehabilitation Replacement	\$ 3,095,839	\$ 619,168	\$ 3,715,007
PR_BH014900	Hampton Trunk Sewer Extension Division K Gravity Improvements	\$ 895,556	\$ 179,111	\$ 1,074,667
PR_BH015700	Boat Harbor Treatment Plant Pump Station Conversion	\$ 7,467,168	\$ 1,493,434	\$ 8,960,602
PR_BH015710	Boat Harbor Treatment Plant Transmission Force Main Section 1 (Subaqueous)	\$ 8,161,033	\$ 1,632,207	\$ 9,793,240
PR_BH015720	Boat Harbor Treatment Plant Transmission Force Main Section 2 (Land)	\$ 4,322,001	\$ 864,400	\$ 5,186,401
PR_BH015801	14th Street Offline Storage (BH-HPP-01A)	\$ 500,000	\$ 100,000	\$ 600,000
PR_BH015900	Bloxoms Corner Force Main Replacement	\$ 4,945,597	\$ 989,119	\$ 5,934,716
PR_CE011300	Birchwood Trunk 24-Inch and 30-Inch Force Main at Independence Boulevard Replacement Phase II	\$ 625,000	\$ 125,000	\$ 750,000
PR_CE011600	Poplar Hall Davis Corner Trunk 24-Inch Gravity Sewer Improvements	\$ 320,000	\$ 64,000	\$ 384,000
PR_CE011810	Chesapeake-Elizabeth Treatment Plant Decommissioning	\$ 2,284,411	\$ 456,882	\$ 2,741,293
PR_CE011827	Atlantic PRS Reliability Modifications	\$ 304,000	\$ 60,800	\$ 364,800
PR_CE011828	Kempsville PRS Reliability Modifications	\$ 94,000	\$ 18,800	\$ 112,800
PR_CE011850	Atlantic Service Area Automated Diversion Facilities Phase I	\$ 290,684	\$ 58,137	\$ 348,820
PR_CE012100	Witchduck Road Interceptor Force Main Improvements	\$ 90,000	\$ 18,000	\$ 108,000
PR_ES010100	Eastern Shore Infrastructure Improvements - Transmission Force Main Phase I	\$ 17,946,836	\$ 3,589,367	\$ 21,536,203
PR_ES010300	Onancock Treatment Plant Administration Building Upgrade	\$ 54,000	\$ 10,800	\$ 64,800

Project Number	Project Name	Sub-Total	Contingency	Total with Continge
PR_ES010500	Chincoteague Treatment Plant	\$ 2,900,000	\$ 580,000	\$ 3,480,000
PR_GN010730	Horizontal Valve Replacement Phase III	\$ 44,857	\$ 8,971	\$ 53,828
PR_GN013300	Treatment Plant Grease Handling Facilities	\$ 3,377,301	\$ 675,460	\$ 4,052,761
PR_GN014900	North Shore Gravity Sewer Improvements Phase I	\$ 4,340,343	\$ 868,069	\$ 5,208,411
PR_GN015000	South Shore Gravity Sewer Improvements Phase I	\$ 153,993	\$ 30,799	\$ 184,792
PR_GN015300	Interceptor System Valve Improvements Phase I	\$ 259,952	\$ 51,990	\$ 311,943
PR_GN015400	South Shore Aerial Crossing Improvements	\$ 244,804	\$ 48,961	\$ 293,765
PR_GN015800	North Shore Automated Diversion Facilities	\$ 1,814,048	\$ 362,810	\$ 2,176,857
PR_GN016320	Program Management of SWIFT Full Scale Implementation	\$ 6,273,053	\$ 1,254,611	\$ 7,527,663
PR_GN016346	Boat Harbor Transmission Force Main Land Acquisition	\$ 1,458,333	\$ 291,667	\$ 1,750,000
PR_GN016360	James River SWIFT Facility	\$ 70,249,562	\$ 14,049,912	\$ 84,299,475
PR_GN016361	James River Recharge Wells (On Site)	\$ 13,067,283	\$ 2,613,457	\$ 15,680,740
PR_GN016362	James River Recharge Wells (Off Site)	\$ 12,939,704	\$ 2,587,941	\$ 15,527,645
PR_GN016380	Nansemond SWIFT Facility	\$ 4,895,630	\$ 979,126	\$ 5,874,756
PR_GN016381	Nansemond Recharge Wells	\$ 940,275	\$ 188,055	\$ 1,128,330
PR_GN016392	VIP SWIFT Site Work	\$ 702,711	\$ 140,542	\$ 843,253
PR_GN016700	Treatment Plant Solids Handling Replacement Phase II	\$ 2,979,161	\$ 595,832	\$ 3,574,993
PR_GN017400	Treatment Plant Dewatering Replacement Phase III	\$ 472,000	\$ 94,400	\$ 566,400
PR_GN017900	Solids System Improvements for Army Base MHI Offline	\$ 2,696,667	\$ 539,333	\$ 3,236,000
PR_GN018900	Pump Station Motor Control Center Replacements - Phase I	\$ 830,000	\$ 166,000	\$ 996,000
PR_JR011730	Jefferson Avenue Interceptor Force Main Replacement Phase III	\$ 9,986,179	\$ 1,997,236	\$ 11,983,414
PR_JR013000	Morrison Pump Station Discharge Force Main Replacement & Capacity Enhancements	\$ 1,118,859	\$ 223,772	\$ 1,342,631
PR_JR013200	Lucas Creek-Woodhaven Interceptor Force Main Replacement Phase II	\$ 611,218	\$ 122,244	\$ 733,462
PR_JR013400	James River Treatment Plant Advanced Nutrient Reduction Improvements	\$ 71,450,860	\$ 14,290,172	\$ 85,741,032
PR_JR013500	Lucas Creek Pump Station Replacement	\$ 5,566,129	\$ 1,113,226	\$ 6,679,355
PR_JR013610	James River Treatment Plant Automation Improvements Phase I	\$ 1,792,357	\$ 358,471	\$ 2,150,829
PR_JR014000	Center Avenue Force Main Replacement	\$ 473,300	\$ 94,660	\$ 567,960
PR_MP013000	Small Communities Collection System Rehabilitation Phase I	\$ 42,426	\$ 8,485	\$ 50,911
PR_MP013020	Small Communities Collection System Rehabilitation Phase III	\$ 479,898	\$ 95,980	\$ 575,877
PR_MP013300	King William Treatment Plant Improvements Phase II	\$ 1,979,500	\$ 395,900	\$ 2,375,400
PR_MP013400	Small Communities Operation Center Parking and Laydown Area	\$ 173,730	\$ 34,746	\$ 208,476
PR_MP013730	Middlesex Interceptor System Program Phase II-Transmission Force Main	\$ 9,274,070	\$ 1,854,814	\$ 11,128,885
PR_MP013810	Middlesex Interceptor System Program Phase III	\$ 212,854	\$ 42,571	\$ 255,425
PR_MP013820	Middlesex Interceptor System Program Phase III (Topping)	\$ 128,767	\$ 25,753	\$ 154,520
PR_MP014700	Small Communities Rehabilitation Phase IV	\$ 1,714,992	\$ 342,998	\$ 2,057,990
PR_MP014800	Small Communities Rehabilitation Phase V	\$ 135,814	\$ 27,163	\$ 162,977
PR_MP014900	Middle Peninsula Operations Center Locker Room and Administrative Facilities	\$ 343,605	\$ 68,721	\$ 412,326
PR_MP015100	West Point Pump Station 4 (Thompson Avenue) Rehabilitation	\$ 527,772	\$ 105,554	\$ 633,326
PR_MP015300	King William Central Crossing Pump Station Rehabilitation	\$ 180,472	\$ 36,094	\$ 216,566
PR_MP015500	Small Communities Rehabilitation Phase VI	\$ 211,377	\$ 42,275	\$ 253,652
PR_MP015600	West Point Treatment Plant Final Effluent Pump Station Improvements	\$ 137,782	\$ 27,556	\$ 165,338
PR_MP015700	West Point Treatment Plant Secondary Clarifier Improvements	\$ 159,000	\$ 31,800	\$ 190,800
PR_MP015800	King William Main Pump Station Improvements	\$ 86,700	\$ 17,340	\$ 104,040

Project Number	Project Name	Sub-Total	Contingency	Total with Continge
PR_NP010620	Suffolk Pump Station Replacement	\$ 15,051	\$ 3,010	\$ 18,061
PR_NP012400	Western Branch Sewer System Gravity Improvements	\$ 468,667	\$ 93,733	\$ 562,400
PR_NP013000	Nansemond Treatment Plant Motor Control Center Replacements	\$ 1,286,632	\$ 257,326	\$ 1,543,958
PR_NP013820	Nansemond Treatment Plant Advanced Nutrient Reduction Improvements Ph II	\$ 38,109,445	\$ 7,621,889	\$ 45,731,333
PR_NP014000	Wilroy Pressure Reducing Station and Off-line Storage Facility	\$ 1,522,031	\$ 304,406	\$ 1,826,437
PR_NP014400	Nansemond Treatment Plant Influent Screen Replacement	\$ 22,750	\$ 4,550	\$ 27,300
PR_NP014500	Nansemond Treatment Plant Regional Residuals Facility Upgrade	\$ 60,955	\$ 12,191	\$ 73,146
PR_NP014700	Nansemond Treatment Plant Digester Capacity Upgrades	\$ 15,459,400	\$ 3,091,880	\$ 18,551,280
PR_NP014900	Nansemond Treatment Plant Interceptors Storage Yard	\$ 1,491,333	\$ 298,267	\$ 1,789,600
PR_NP015000	Shell Road Interceptor Force Main (SF-144) Segmental Replacement	\$ 575,250	\$ 115,050	\$ 690,300
PR_NP015100	Nansemond Treatment Plant Administration Building Replacement	\$ 148,571	\$ 29,714	\$ 178,286
PR_SU010200	Surry Hydraulic Improvements and Interceptor Force Main	\$ 4,819,445	\$ 963,889	\$ 5,783,334
PR_VP010920	Norview Estabrook Division I 18-Inch Force Main Replacement Phase II, Section 2	\$ 1,412,986	\$ 282,597	\$ 1,695,584
PR_VP014010	Ferebee Avenue Pump Station Replacement	\$ 2,583,515	\$ 516,703	\$ 3,100,217
PR_VP014022	Sanitary Sewer Replacement 1950 – Part 2	\$ 4,060,000	\$ 812,000	\$ 4,872,000
PR_VP014700	Ingleside Road Pump Station Replacement	\$ 1,837,981	\$ 367,596	\$ 2,205,577
PR_VP014800	Lee Avenue-Wesley Street Horizontal Valve Replacement	\$ 114,034	\$ 22,807	\$ 136,840
PR_VP015400	Lafayette Norview-Estabrook Pump Station Replacements	\$ 47,222	\$ 9,444	\$ 56,667
PR_VP015410	City Park Pump Station (PS 106) Replacement	\$ 1,383,684	\$ 276,737	\$ 1,660,421
PR_VP015420	Luxembourg Pump Station (PS 113) Replacement and Ashland Sewer Extension	\$ 2,156,364	\$ 431,273	\$ 2,587,636
PR_VP015430	Chesapeake Boulevard Pump Station (PS 105) Replacement and Norfolk Pump Station (PS 57) Rehabilitation	\$ 1,158,800	\$ 231,760	\$ 1,390,560
PR_VP016500	Norview-Estabrook Division I 12-Inch Force Main Replacement	\$ 795,388	\$ 159,078	\$ 954,465
PR_VP016700	Norview-Estabrook Division I 18-Inch Force Main Replacement Phase III	\$ 935,306	\$ 187,061	\$ 1,122,367
PR_VP017120	Central Norfolk Area Gravity Sewer Improvements Phase II	\$ 219,927	\$ 43,985	\$ 263,912
PR_VP017130	Central Norfolk Area Gravity Sewer Improvements Phase IIA	\$ 470,143	\$ 94,029	\$ 564,171
PR_VP018000	Park Avenue Pump Station Replacement	\$ 4,707,602	\$ 941,520	\$ 5,649,122
PR_VP018301	VIP Service Area I-I Reduction Phase I (PORTS)	\$ 738,867	\$ 147,773	\$ 886,640
PR_VP018303	VIP Service Area I-I Reduction Phase III (PORTS)	\$ 734,367	\$ 146,873	\$ 881,240
PR_VP018400	State Street Pressure Reducing Station and Offline Storage (VIP-HPP-05)	\$ 290,989	\$ 58,198	\$ 349,186
PR_VP018500	Elizabeth River Crossing Reliability Improvements	\$ 1,112,184	\$ 222,437	\$ 1,334,621
PR_VP018800	Virginia Initiative Plant Administration Building Renovation	\$ 1,977,928	\$ 395,586	\$ 2,373,513
PR_VP018900	Norchester Pump Station Screening Improvements	\$ 367,353	\$ 73,471	\$ 440,824
PR_VP019000	Colley Ave Pump Station Pump Replacement	\$ 349,480	\$ 69,896	\$ 419,376
PR_VP019100	Virginia Initiative Plant Incinerator Burner Replacement	\$ 2,960,667	\$ 592,133	\$ 3,552,800
PR_VP019200	Virginia Initiative Plant Motor Control Center Replacements	\$ 1,213,579	\$ 242,716	\$ 1,456,295
PR_WB012500	Lodge Road Pump Station Upgrades	\$ 44,075	\$ 8,815	\$ 52,890
PR_WB012600	Kingsmill Pump Station Piping Replacement and Wet Well Rehabilitation	\$ 1,619,069	\$ 323,814	\$ 1,942,882
PR_WB012900	Williamsburg Treatment Plant Administration Building Renovation	\$ 2,274,224	\$ 454,845	\$ 2,729,068
PR_WB013000	Williamsburg Treatment Plant Intermediate Clarifier Wet Weather System	\$ 138,824	\$ 27,765	\$ 166,588
PR_WB013100	Williamsburg Treatment Plant Outfall Flow Control System Repairs	\$ 292,320	\$ 58,464	\$ 350,784
PR_WB013300	Williamsburg Treatment Plant Motor Control Center Replacements	\$ 241,344	\$ 48,269	\$ 289,613
PR_YR010520	Magruder Mercury Interceptor Force Main Replacement - Section B	\$ 896,386	\$ 179,277	\$ 1,075,664
PR_YR010530	Magruder Mercury Interceptor Force Main Replacement - Section C	\$ 79,197	\$ 15,839	\$ 95,037

Project Number	Project Name	Sub-Total	Contingency	Total with Continge
PR_YR010900	Tabb Pressure Reducing Station and Offline Storage Facility	\$ 21,381,111	\$ 4,276,222	\$ 25,657,333
PR_YR011900	Bethel-Poquoson Force Main Part III Replacement	\$ 236,107	\$ 47,221	\$ 283,328
PR_YR013900	York River System Isolation Valve Installation and Replacement	\$ 3,556,871	\$ 711,374	\$ 4,268,246
PR_YR014000	York River Treatment Plant Administration Building Renovation	\$ 3,679,274	\$ 735,855	\$ 4,415,129
PR_YR014100	Coliseum Pressure Reducing Station Enhanced Storage	\$ 91,429	\$ 18,286	\$ 109,715
PR_YR014300	Bethel-Poquoson Force Main Phase II (Wythe Creek Road) Replacement	\$ 1,531,210	\$ 306,242	\$ 1,837,452
PR_YR014600	Bethel-Poquoson Force Main Part IV Replacement-Wythe Creek Exposed Crossing	\$ 693,995	\$ 138,799	\$ 832,794
PR_YR014700	Coliseum PRS Off-Line Storage Tank Odor Control Upgrades	\$ 404,444	\$ 80,889	\$ 485,333
PR_YR014800	York River Treatment Plant Primary Clarifier Influent and Effluent Pipe Rehabilitation	\$ 3,106,600	\$ 621,320	\$ 3,727,920
PR_YR014900	York River DEMON Upgrades	\$ 83,333	\$ 16,667	\$ 100,000
Total		\$ 475,394,172	\$ 95,078,834	\$ 570,473,006

AGENDA ITEM 7. – May 24, 2022

Subject: Anammox Biofilm – License Agreement
Commercialization

Recommended Action: Approve the terms and conditions of the exclusive license agreement with ARA Consult GmbH and NEWhub Holding Company for the commercialization of the Anammox Biofilm line of technologies as developed through four families of patents shown in the agreement, and authorize the General Manager to execute same, substantially as presented, together with such changes, modifications and deletions as the General Manager may deem necessary.

Brief: HRSD and DCWater have been working collaboratively on various projects related to treatment process development and improvement. This [license agreement](#) includes developments related to the application of sidestream and mainstream anammox, but the primary technologies commercialized here are related to mainstream partial denitrification-anammox (PdNA). The actual tradename for the suite of PdNA technologies will be made public within the next few months by ARA Consult GmbH and NEWhub Holding Company.

HRSD and DCWater's development and demonstration of partial denitrification-anammox (PdNA) has been quite promising ([see attached timeline and milestones](#)). Our development work goes back to the 2012 timeframe with pilot testing at the Chesapeake-Elizabeth Treatment Plant Biological Nutrient Removal Pilot Facility. Since 2019, this technology has been operating within the full-scale York River Treatment Plant denitrification filters, arguably the first plant in the world (and even now probably one of only two plants in the world) to be removing a significant portion of the influent ammonia load through the anammox pathway. In March, the first demonstration tank for PdNA in a moving media integrated fixed film activated sludge (MIFAS) configuration was placed in service at the James River Treatment Plant (JRTP). Methanol addition should begin in May following a few weeks of biofilm carrier wetting and troubleshooting construction and startup issues. Based on encouraging pilot testing results, we expect to observe evidence of anammox establishment on the biofilm carriers within 3-4 months and then continued increases in anammox activity over the subsequent year. Additional steps related to PdNA at JRTP include:

- One tank will be upgraded with fixed media IFAS. This is expected to be complete in July 2022.
- The remaining seven tanks are now being upgraded to MIFAS, and this is expected to be complete by September 2022.
- The full-scale SWIFT upgrade at JRTP includes a moving bed biofilm reactor (MBBR) that will be configured to do polishing PdNA. This is now in detailed design and part of the larger design-build project.

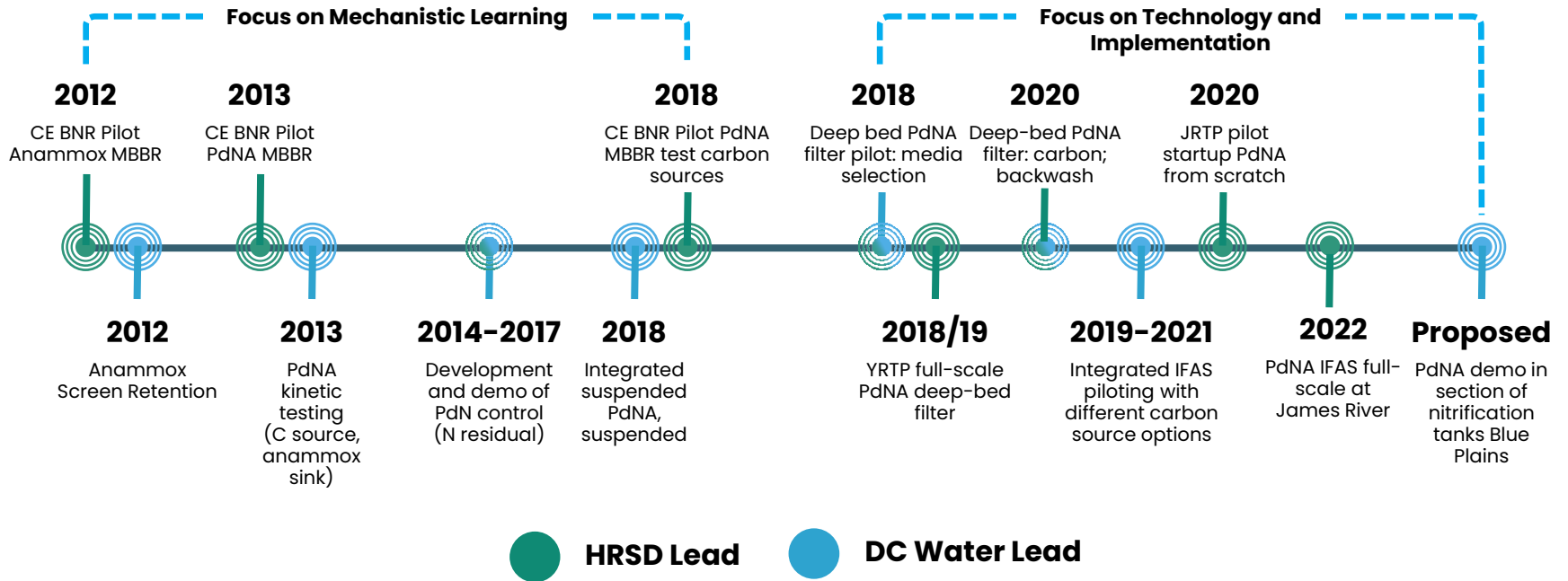
Other planning for PdNA at HRSD includes evaluation of the upgrade and expansion of Nansemond Treatment plant using the MIFAS approach, and this would represent both capital and operational cost savings compared to the currently scoped project.

ARA Consult GmbH and NEWhub Holding Company are authorized to develop partnerships to sublicense these technologies to a worldwide network of technology providers. For North America, the combined HRSD and DCWater portion of royalty payments will be directed to The Water Research Foundation to support research efforts on topics relevant to HRSD and DCWater. For royalties obtained from projects and technology providers outside of North America, as well as all sublicense consideration, the payments will be made directly to HRSD and DCWater. This approach is consistent with the previous commercialization of the AvN and inDENSE lines of technologies

The license agreement has been developed working with the HRSD Intellectual Property attorneys and purposely do not obligate HRSD in any way. The agreements also shield HRSD from liability associated with the technology not performing as expected.

For most applications of PdNA technologies, it is necessary to combine AvN control approach. The AvN suite of technologies and patents were already licensed to ARA Consult GmbH and NEWhub Holding Company.

Partial Denitrification/Anammox (PdNA) Development Timeline



ANAMMOX BIOFILM EXCLUSIVE PATENT LICENSE AGREEMENT

This Anammox Biofilm Exclusive Patent License Agreement (“**Agreement**”) is made and entered into effective as of May 24, 2022 (“**Effective Date**”) by and between ARA Consult GmbH (“**ARA**”), an Austrian company, NEWhub Holding Company (“**NEWhub**”), a Virginia corporation, the District of Columbia Water and Sewer Authority (“**DC Water**”), an independent authority of the District of Columbia Government, the Hampton Roads Sanitation District (“**HRSD**”), a political subdivision of the Commonwealth of Virginia, Bernhard Wett (“**Wett**”), an individual having an address at Dorfgasse 46, A-6020 Innsbruck, Austria, and Sudhir Murthy (“**Murthy**”), an individual having an address at 12602 Denmark Drive, Herndon, VA 20171-2716. ARA, NEWhub, DC Water, HRSD, Wett, and Murthy, each are referred to in this Agreement individually as a “**Party**” and collectively as the “**Parties**.”

RECITALS

WHEREAS, DC Water and HRSD desire to serve their industry through services and technologies for the benefit of water quality, future technology development, and global utility financial and resource sustainability;

WHEREAS, DC Water and HRSD have integrated research programs, joint intellectual property, and mutual interests defined in previous joint development agreements and ongoing joint research projects, as memorialized in that certain agreement between DC Water and HRSD, dated July 18, 2013 (the “**Partnership Agreement**”);

WHEREAS, DC Water and HRSD are the named assignees of the Patents (as defined below), and the ownership and all rights, title, and interest in and to the Patents, including the inventions described therein, have been assigned to DC Water and HRSD, except for the NRWCA Patents (defined below) which are co-owned by DC Water, HRSD, Wett and Murthy;

WHEREAS, Wett and Murthy, each an individual and a co-owner with DC Water and HRSD of the NRWCA Patents, desire to commercialize the Patents;

WHEREAS, DC Water and HRSD desire to have the Patents developed and commercialized to benefit the public and are willing to grant a license hereunder to the extent of the Field (as defined below) and the Territory (as defined below);

WHEREAS, ARA and NEWhub are each a provider of certain services and goods relating to design, development, construction, and operation of water and wastewater treatment plants, and ARA and NEWhub have represented to Licensors, to induce Licensors to enter into this Agreement, that ARA and NEWhub will each commit itself to a thorough, vigorous and diligent program of exploiting the Patents so that public and non-public utilization will result therefrom; and

WHEREAS, ARA and NEWhub each desire to obtain an exclusive license under the Patents upon the terms and conditions set forth herein.

NOW THEREFORE, in consideration of the foregoing and other good and valuable

consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties, intending to be legally bound, hereby agree as follows, wherein capitalized terms used herein, but not otherwise defined, will have the generally recognized meaning as set forth elsewhere.

ARTICLE ONE DEFINITIONS

1.1 Definitions. In this Agreement, the following terms have the meanings set forth below, which will be equally applicable to both the singular and the plural form, except where indicated otherwise:

- “Affiliate”** means, with respect to a Party, any corporation, firm, partnership or other entity that directly or indirectly controls, is controlled by, or is under common control with such Party. A business entity or Party will be regarded as in control of another business entity if it owns, or directly or indirectly controls at least fifty percent (50%) (or such lesser percentage which is the maximum allowed to be owned by a foreign entity in a particular jurisdiction) of the voting stock, income interest or other ownership interest of the other entity, or if it directly or indirectly possesses the power to direct or cause the direction of the management and policies of the other entity by any lawful means whatsoever.
- “Agreement”** has the meaning set forth in the introductory paragraph, and includes all exhibits, attachments, schedules, addenda and other appendices (all of which are incorporated herein by reference) and any amendments to any of the foregoing made as provided herein or therein.
- “ARA”** has the meaning set forth in the introductory paragraph.
- “Brownfield Installation”** means the installation of Licensed Product at facilities where an existing aeration tank and clarifier remain in service or are in service prior to installation of such Licensed Product. To the extent any installation is determined not to be a Greenfield Installation, such installation will be a Brownfield Installation.
- “Controller”** means a control program included in 1) a programmable logic controller (PLC) including and not limited to an Edge PLC device, 2) a gateway device that links between a sensor and a supervisory control and data acquisition (SCADA) system or distributed controller system (DCS) or a centralized control system (CCS), 3) and industrial computer (including a black box device containing it) or 4) the direct programming of code into a SCADA, DCS or CCS.
- “DC Water”** has the meaning set forth in the introductory paragraph.

- “Effective Date”** has the meaning set forth in the introductory paragraph.
- “Extra-Territory”** means the entire world except for and excluding Europe and North America.
- “Field”** means all processes and technologies for treating water and wastewater using anammox bacteria, including any fields (examples include SBR, CAS, IFAS, MBBR and MABR) that contain or employ anammox bacteria for any apparatus, method, system, process or reaction, including but not limited to deammonification, partial nitrification plus anammox or partial denitrification plus anammox for treating water or wastewater. The Field explicitly excludes any practice of U.S. Patent No. 9,902,635 in conjunction with Kruger’s ANITA Mox provided that such ANITA Mox incorporates HRSD’s basic control system or method that comprises sensing pH, ammonia-nitrogen, specific conductivity or alkalinity to make automated adjustments to dissolved oxygen or airflow in such ANITA Mox, which may include either a moving biofilm reactor (MBBR) process or integrated fixed-film activated sludge (IFAS) process.
- “Greenfield Installation”** means the installation of Licensed Product at facilities where new aeration tanks and clarifiers are constructed coincident with the installation of the Licensed Product.
- “HRSD”** has the meaning set forth in the introductory paragraph.
- “Indemnitees”** has the meaning set forth in Section 8.1.
- “Licensed Product”** means any and all devices, products and processes that fall within the Field and the Territory and that are covered by, used in, or include subject matter that (a) but for the license granted pursuant to this Agreement, would constitute a misappropriation, or infringe, or contribute to or induce the infringement of a claim of any issued, unexpired patent under the Patents, or (b) is covered by a claim in a pending patent application under the Patents. “Covered by a claim in a pending patent application” means that use, practice, manufacture, sale, or offer for sale or import into the Territory of a device, product, or process that would, but for the license granted pursuant to this Agreement, constitute infringement, contributory infringement, or inducement of infringement, of such claim if such claim were issued. “Licensed Product” includes Controllers.
- “Licensee”** means (i) both ARA and NEWhub as co-exclusive licensees in the Field and the Extra-Territory and (ii) ARA as exclusive licensee in the Field and all of Europe, and (iii) NEWhub as exclusive licensee in the Field and all of North America. The Extra-Territory will be

actively managed in a manner to allow either Licensee to license Licensed Product in the Extra-Territory in a manner that such Licensee may pursue and manage following written notification by such Licensee to the other Licensee.

- “Licensor”** means HRSD or DC Water.
- “Licensors”** means HRSD and DC Water, together.
- “Murthy”** has the meaning set forth in the introductory paragraph.
- “NEWhub”** has the meaning set forth in the introductory paragraph.
- “North America”** means the United States and its territories and Canada.
- “Notice Date”** has the meaning set forth in Section 13.3(a).
- “NRWCA Patent”** means U.S. patent applications, nos. 62/359,950, filed July 8, 2016, and 15/630,648, filed June 22, 2017, and international Patent Cooperation Treaty (PCT) application, no. PCT/US17/38826, filed June 22, 2017, entitled “Method and Apparatus for Nutrient Removal with Carbon Addition,” including all PCT national stages thereof.
- “Patent”** means the patents and applications for patents listed on Appendix A (titled “Anammox Biofilm Patents”), including all divisions, continuations, continuations-in-part, renewals, substitutes, extensions, reexaminations, and reissues thereof, and including all inventions and discoveries described therein. “Patent” includes the NRWCA Patent.
- “Patent Challenge”** means a challenge to the validity, patentability, enforceability or non-infringement of any of the Patents or otherwise opposing any of the Patents.
- “Partnership Agreement”** has the meaning set forth in the preamble.
- “Party”** has the meaning set forth in the introductory paragraph.
- “Parties”** has the meaning set forth in the introductory paragraph.
- “Person”** means an individual, corporation, partnership, joint venture, limited liability company, governmental authority, unincorporated organization, trust, association, or other entity.
- “Reimbursable Expenses”** has the meaning set forth in Article Four.
- “Remedy”** has the meaning set forth in Section 7.4.

- “Reporting Period”** means annually with the period of time beginning on January 1st of each calendar year and ending on December 31st of such calendar year.
- “Reserve Account”** has the meaning set forth in Article Four.
- “Reserve Amount”** has the meaning set forth in Article Four.
- “Royalties”** has the meaning set forth in Article Four.
- “Sell, Sale or Sold”** means any performance, service, maintenance, provision, transfer or other disposition of Licensed Product for which consideration is received by Licensee, Sublicensor or Sublicensee. A Sale will be deemed completed at the time such consideration is received by Licensee, Sublicensor or Sublicensee.
- “Sublicense Agreement”** means any agreement or arrangement pursuant to which Licensee or Sublicensor grants to any Person any rights to use any of the Patents or any other rights of licenses granted under this Agreement.
- “Sublicensee Breach”** has the meaning set forth in Section 2.3(f).
- “Sublicense Consideration”** means any revenue or payment, other than Royalties or Remedy, received by the Licensee from any Person in exchange for a sublicense under the Patents. For avoidance of doubt, Sublicense Consideration does not include any Royalties or Remedy, or revenue or payment received as consideration unrelated to any sublicense under the Patents.
- “Sublicense Term”** means the period of time during which a Sublicense Agreement is effective, beginning with the effective date and ending upon the date of termination of such Sublicense Agreement.
- “Sublicensee”** means any sublicensee of the rights granted Licensee under Section 2.1.
- “Sublicensor”** means a Sublicensee that is granted a right to grant to a Person further sublicenses under the Patents.
- “Term”** has the meaning set forth in Section 12.1.
- “Territory”** means (i) all of Europe for ARA alone, (ii) all of North America for NEWhub alone, and (iii) the Extra-Territory for ARA and NEWhub together.
- “Wett”** has the meaning set forth in the introductory paragraph.

“WRF” means The Water Research Foundation, a 501(c)(3) nonprofit research organization.

“WRF Fund” means that research fund or account established by Licensors and WRF pursuant to the Partnership Agreement.

ARTICLE TWO GRANT OF RIGHTS

2.1 License Grant. Subject to the terms of this Agreement, Licensors and Wett and Murthy hereby grant to:

- (a) ARA and NEWhub jointly, as co-exclusive licensees in the Field and to the extent of the Extra-Territory, a royalty-bearing license for the Term under the Patents to (i) make, have made, use, sell, offer to sell, and import Licensed Products, (ii) sue for present and future damages, and (iii) collect damages for infringement of the Patent; and
- (b) ARA, as exclusive licensee in Europe and to the extent of the Field, a royalty-bearing license for the Term under the Patents to (i) make, have made, use, sell, offer to sell, and import Licensed Products, (ii) sue for present and future damages, and (iii) collect damages for infringement of the Patents; and
- (c) NEWhub, as exclusive licensee in North America and to the extent of the Field, a royalty-bearing license for the Term under the Patents to (i) make, have made, use, sell, offer to sell, and import Licensed Products, (ii) sue for present and future damages, and (iii) collect damages for infringement of the Patents.

The license granted hereunder does not include the right to sue or collect for damages prior to the Effective Date.

2.2 Exclusivity. Except as otherwise provided for in this Agreement, the license granted to Licensee under the Patents in Section 2.1 is exclusive and nontransferable except to the extent permitted under Section 10.1.

2.3 Sublicenses. Licensee has the right to grant sublicenses (which right will include the right to grant further sublicenses through multiple tiers) under any or all of the rights and licenses granted in Section 2.1 to any Person; provided that any and all granted sublicenses and Sublicense Agreements under the Patents are consistent with the terms of this Agreement, and are subject to the following:

- (a) Each Sublicense Agreement will include a Sublicense Term and will include terms and conditions sufficient to enable Licensee to comply with this Agreement. Each Sublicense Agreement will require that in the event that any Person granted a sublicense under such Sublicense Agreement, or any Affiliate of such Person, brings

a Patent Challenge, or assists another party in bringing a Patent Challenge then Licensee may terminate such Sublicense Agreement. For the avoidance of doubt, no license or sublicense will exceed the scope of the rights and licenses granted to Licensee under Section 2.1 of the Agreement.

- (b) All sublicenses granted under the licenses granted to Licensee hereunder must be in writing and be subject to and consistent with the applicable terms and conditions of this Agreement. Any sublicense granted by a Sublicensor to any Person under this Section 2.3 will prohibit such Person from further sublicensing without the prior written consent of such Sublicensor.
- (c) Each Sublicense Agreement that grants to a Sublicensee a sublicense with the right to grant further sublicenses under the Patents will require such Sublicensee to provide to Licensee or Sublicensor, whichever is applicable under such Sublicense Agreement: (i) written notice prior to granting a sublicense under the Patents to any Person; and (ii) within fifteen (15) days of execution, a copy of the fully executed written Sublicense Agreement granting such sublicense to such Person(s).
- (d) Each Sublicense Agreement will set royalties, royalty fees or other payment requirements that, calculated on an equivalent or comparable basis, are not less than the Royalties in Article Four of this Agreement.
- (e) Licensee will keep Licensors informed of each sublicense granted to a Person, specifying the name of the sublicensee and the material terms (including duration) of the sublicense. At the request of Licensors, Licensee will provide, within thirty (30) days of such request, a fully executed, complete, and accurate copy written in the English language of each Sublicense Agreement. Receipt of such Sublicense Agreement by Licensors will not constitute a waiver of any of Licensors' rights or Licensee's obligations under this Agreement.
- (f) Notwithstanding any Sublicense Agreement, Licensee will remain primarily liable to Licensors for all of the Licensee's duties and obligations contained in this Agreement. Any act or omission of a Sublicensor or Sublicensee that would be a material breach of this Agreement if performed by Licensee will be deemed to be a material breach by Licensee of this Agreement. Each Sublicense Agreement will contain (i) a right of termination by Licensee or Sublicensor, as applicable, in the event that the sublicensee materially breaches the payment obligations under such Sublicense Agreement (a "**Sublicensee Breach**") and, (ii) in the event of a Sublicensee Breach, and if after a reasonable opportunity to cure as provided in any such Sublicense Agreement, such sublicensee fails to cure such Sublicensee Breach, then the Licensee or Sublicensor, as applicable, will terminate the Sublicense Agreement.

2.4 Retained Rights. Licensors reserve and retain the right (and the rights granted to Licensee in this Agreement will be limited accordingly), and Licensee hereby grants to Licensors a fully-paid-up royalty-free nonexclusive nontransferable nonassignable license, under the Patents to make, have made, import, have imported, use and have used Licensed Products (i) for operation of treatment plants belonging to, operated by, or operated under direct guidance of HRSD or DC

Water and (ii) to grant royalty-free nonexclusive nontransferable nonassignable licenses to any of the foregoing rights to educational and non-profit institutions for educational and research purposes, including without limitation, any sponsored research performed for or on behalf of commercial entities and including publication and other communication of any research results and (iii) to by HRSD or DC Water that existed on the Effective Date. Except for Royalties and Sublicense Consideration received under this Agreement, Licensors will not receive any payment or consideration for any license granted under the Patents.

2.5 Use of Licensor Name. In publicizing anything made, used, offered for sale, sold, or imported under this Agreement, Licensee may disclose that part of the sales proceeds will go to the WRF Fund to be used in support of clean water initiatives. Any other use of the names of HRSD or DC Water and references to any organization related to HRSD or DC Water require the prior written approval of Licensors.

2.6 No Additional Rights. Nothing in this Agreement will be construed to confer any rights upon Licensee by implication, estoppel, or otherwise as to any intellectual property (including, patents, trademarks, copyrights, trade secrets and know-how) of HRSD or DC Water other than the Patents.

ARTICLE THREE LICENSEE DILIGENCE OBLIGATIONS

3.1 Diligence Requirements. Licensee will use diligent efforts to develop and commercialize Licensed Products in the Territory. In order to induce Licensors to enter into this Agreement, Licensee represents and covenants to Licensors that it has the capacity and expertise to duly observe and perform its obligations under this Agreement. Licensee accepts its appointment as exclusive licensee under the Patents to the extent of the Field and the Territory and will observe all the terms, conditions and provisions, and perform all of the obligations contained in this Agreement. In the event that Licensors determine that Licensee has failed to fulfill any of the material obligations under this Section 3.1, then such failure may be treated as a material breach in accordance with Section 12.5(b).

ARTICLE FOUR SALES TARGET, ROYALTIES AND PAYMENT TERMS

This Agreement includes Appendix B (Royalties and Payment Terms), which is hereby incorporated herein in its entirety in this Article Four. The Parties will meet within twelve (12) months of the Effective Date and annually thereafter to review and assess sales targets, royalty rates, royalty base(s), and royalty structure and to determine whether to modify this Agreement, including Appendix B.

ARTICLE FIVE REPORTS AND RECORDS

5.1 Frequency of Reports.

- (a) Before First Commercial Sale. Prior to the first commercial Sale of any Licensed Product, Licensee will deliver reports to Licensors biannually, within thirty (30) days of the end of each Reporting Period, containing information concerning the immediately preceding Reporting Period.
- (b) Upon First Commercial Sale. Licensee will report to Licensors the date of first commercial Sale of a Licensed Product within thirty (30) days of occurrence in each country.
- (c) After First Commercial Sale. After the first commercial Sale of a Licensed Product, Licensee will deliver reports to Licensors within thirty (30) days of the end of each Reporting Period, containing information concerning the immediately preceding Reporting Period.

5.2 Content of Reports and Payments. Each report delivered by Licensee to Licensors will contain at least the following information for the immediately preceding Reporting Period:

- (a) the number of Licensed Products Sold in each country (including the total number of Licensed Products Sold by Licensee, Sublicensors and Sublicensees), and, if applicable, the number of Licensed Products used by Licensee, Sublicensors and Sublicensees in the provision of services in each country;
- (b) the gross surface area sold for each Licensed Product;
- (c) [RESERVED];
- (d) total Royalties payable on Sales for Licensed Products in U.S. dollars, together with the exchange rates used for conversion; and
- (e) [RESERVED];
- (f) the number of Sublicense Agreements entered into for the Patents and Licensed Products.

If no amounts are due to for any Reporting Period, the report will so state.

5.3 Records. Licensee will maintain, and will cause its Affiliates and Sublicensees to maintain, complete and accurate records relating to the rights and obligations under this Agreement and any amounts payable to Licensors in relation to this Agreement, which records will contain sufficient information to permit Licensors to confirm the accuracy of any reports delivered to Licensors and compliance in other respects with this Agreement. Licensee will retain such records for at least five (5) years following the end of the calendar year to which they pertain, during which

time any Licensor, or such Licensor's appointed agent(s), will have the right, at such Licensor's expense, to inspect such records during normal business hours to verify any reports and payments made or compliance in other respects under this Agreement. In the event that any audit performed under this Section 5.3 reveals an underpayment in excess of five percent (5%), Licensee will bear the full cost of such audit and will remit any amounts due to Licensor within thirty (30) days of receiving notice thereof from such Licensor.

ARTICLE SIX MANAGEMENT OF PATENTS

6.1 Prosecution of Patents. Licensors will have the sole and exclusive right to file, prosecute, and maintain the Patents, and to determine whether or not, and where, to file patent applications, to abandon the prosecution of any patents or patent applications, or to discontinue the maintenance of any patents or patent applications. Licensors will notify Licensee within sixty (60) days of any patent being granted that includes the Patents. Licensors will notify Licensee sixty (60) days prior to abandoning any patent application in the Patents or discontinuing the maintenance of any patent in the Patents. Licensee may, at Licensee's sole option and expense, choose to assume responsibility for maintaining and paying all expenses (including, but not limited to, all professional fees and costs, all government fees and costs, and all administrative costs) associated with prosecuting and maintaining such patent application or patent in the applicable Territory for the remaining duration of this Agreement; provided that Licensee gives Licensors written notice within fifteen (15) days of receiving notice of Licensors' intent to abandon such application or discontinue maintenance of such patent. All patent applications, patents and any future improvements associated with the Patents will be held in the names of Licensors. Licensors will have sole responsibility for retaining and instructing patent counsel.

6.2 Fees/Costs Related to Patents. Unless otherwise agreed to in writing, Licensors agree to pay patent counsel, including all reasonable expenses incurred in connection with searching, filing, prosecuting and maintaining U.S. and foreign patent applications and patents defined as Patents, as well as any continuations, continuations-in-part, divisions, reissues, reexaminations, renewals or substituted applications thereof. Licensors will pay all patent expenses associated with the Patents for those territories they have determined are economically reasonable to pursue patent protection, for as long as this Agreement is effective, regardless of whether such expenses are incurred with U.S. or with foreign patent filings.

ARTICLE SEVEN INFRINGEMENT

7.1 Notification of Infringement. Each Party agrees to provide written notice to the other parties promptly after becoming aware of any infringement of the Patents in the Field in the Territory.

7.2 Right to Prosecute Infringements.

- (a) Licensee Right to Prosecute. So long as Licensee is the exclusive licensee of the Patents in the Field in the Territory, Licensee, to the extent permitted

by law, will have the right, under its own control and at its own expense, to prosecute any infringement of the Patents in the Field in the Territory, subject to Section 7.4. For the avoidance of doubt, for purposes of this Article Seven, the retention or exercise of any rights by Licensors pursuant to Section 2.4 will not preclude Licensee from being considered an exclusive licensee. If required by law, Licensors and Wett and Murthy may permit any action under this Section 7.2 to be brought in their names, including being joined as party-plaintiffs, provided that Licensee will hold Licensors and Wett and Murthy harmless from, and indemnify Licensors and Wett and Murthy against, any costs, expenses, or liability that Licensors and Wett and Murthy incur in connection with such action. Licensee selection of counsel (to represent Licensee and Licensors and Wett and Murthy in such an action) will be subject to Licensors' approval, which will not be unreasonably withheld. Prior to commencing any such action, Licensee will consult with Licensors and will consider the views of Licensors regarding the advisability of the proposed action and its effect on the public interest.

- (b) L Licensor Right to Prosecute. In the event that Licensee is unsuccessful in persuading the alleged infringer to desist or fails to have initiated an infringement action within six (6) months after Licensee first becomes aware of the basis for such action, Licensors will have the right, and the Parties will grant all rights and licenses to Licensors necessary for Licensors to prosecute such infringement under the control and at the expense of the Licensors, and any recovery obtained will belong solely to Licensors.

7.3 Declaratory Judgment Actions. In the event that a Patent Challenge is brought against Licensors or any Affiliate of Licensors, or relating in any way to the Patents, by any Person, Licensors, at their option, will have the right within twenty (20) days after commencement of such action to take over the sole defense of the action at their own expense and the Parties will grant all rights and licenses to Licensors necessary to, at their sole discretion, carry out such defense under their sole control and at their sole expense, and any recovery obtained will belong solely to Licensors. If Licensors do not exercise this right, Licensee may take over the sole defense of the action at Licensee's sole expense as exclusive licensee of the Patents, subject to Section 7.4.

7.4 Recovery. Any recovery obtained in an action brought by Licensee under Section 7.2 or Section 7.3 ("**Remedy**") will be distributed as follows: (i) each Party will be reimbursed for any expenses incurred in the action, (ii) as to ordinary damages, Licensee will receive an amount equal to its lost profits or a reasonable royalty on the infringing sales, or whichever measure of damages the court will have applied, and Licensee will pay to Licensors based upon such amount a reasonable approximation of the Royalties and other amounts that Licensee would have paid under this Agreement if Licensee had sold the infringing products, processes and services rather than the infringer, and (iii) as to special or punitive damages, the Parties will share in any award according to the percentages set forth in the royalty distribution in Article Four.

7.5 Cooperation. For any action under this Article that is controlled by Licensors, Licensee agrees to cooperate with Licensors in such action, provided that Licensors reimburse

Licensee for any costs and expenses incurred by Licensee in connection with providing such assistance. For any action under this Article that is controlled by Licensee, Licensors agree to cooperate with Licensee in such action, provided Licensee reimburses Licensors for any costs and expenses incurred by Licensors with providing such assistance.

7.6 Right to Sublicense. So long as Licensee is the exclusive licensee of the Patents in the Field in the Territory, Licensee will have the right to sublicense any alleged infringer in the Field in the Territory for future use of the Patents in accordance with the terms and conditions of this Agreement relating to sublicenses. Any upfront fees and other revenues to Licensee pursuant to such sublicense will be treated as Sublicense Consideration under Article Four.

ARTICLE EIGHT INDEMNIFICATION

8.1 Indemnification by Licensee. Licensee will indemnify, defend, and hold harmless Licensors and Wett and Murthy and their officers, directors, agents, employees and Affiliates (the “**Indemnitees**”) at Licensee’s expense, from and against any and all claims, demands, actions, costs, expenses, liabilities, judgments, causes of action, proceedings, suits, losses and damages of any nature, which are threatened or brought against, or are suffered or incurred by Indemnitees or any such person resulting from any acts or omissions of Licensee, Licensee’s Affiliates or Sublicensees relating to this Agreement.

8.2 Procedures. Licensors agree to provide Licensee with written notice of any claim, suit, action, demand, or judgment for which indemnification is sought under this Agreement. Licensee agrees, at its own expense, to provide attorneys reasonably acceptable to Licensors to defend against any such claim. The Indemnitees will cooperate fully with Licensee in such defense and will permit Licensee to conduct and control such defense and the disposition of such claim, suit, or action (including all decisions relative to litigation, appeal, and settlement); provided, however, that any Indemnitee will have the right to retain its own counsel, at the expense of Licensee, if representation of such Indemnitee by the counsel retained by Licensee would be inappropriate because of actual or potential differences in the interests of such Indemnitee and any other party represented by such counsel. Licensee agrees to keep Licensors informed of the progress in the defense and disposition of such claim and to consult with Licensors with regard to any proposed settlement.

ARTICLE NINE REPRESENTATIONS AND WARRANTIES

9.1 LICENSORS AND WETT AND MURTHY MAKE NO REPRESENTATIONS OR WARRANTIES OF ANY KIND CONCERNING THE PATENTS OR THE LICENSED PRODUCTS OR THE LICENSED PROCESSES, AND HEREBY DISCLAIM ALL REPRESENTATIONS AND WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF LICENSORS OR THIRD PARTIES, VALIDITY, ENFORCEABILITY AND

SCOPE OF PATENTS, WHETHER ISSUED OR PENDING, AND THE ABSENCE OF LATENT OR OTHER DEFECTS, WHETHER OR NOT DISCOVERABLE.

9.2 IN NO EVENT WILL LICENSORS, WETT, OR MURTHY, OR THEIR OFFICERS, DIRECTORS, AGENTS, EMPLOYEES, OR AFFILIATES BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING ECONOMIC DAMAGES OR INJURY TO PROPERTY AND LOST PROFITS, REGARDLESS OF WHETHER LICENSORS, WETT, OR MURTHY WILL BE ADVISED, SHALL HAVE OTHER REASON TO KNOW, OR IN FACT WILL KNOW OF THE POSSIBILITY OF THE FOREGOING.

ARTICLE TEN ASSIGNMENT

10.1 This Agreement is personal to Licensee and no rights or obligations may be assigned by Licensee without the prior written consent of Licensors. Licensee may not assign or otherwise transfer this Agreement or the licenses granted to Licensee herein, except to Licensee's Affiliates. Licensee may not delegate any of its rights, duties, or obligations under this Agreement, including any transfer due to the merger, consolidation, or sale of substantially all of its assets, to any party without the prior written consent of Licensors, which will not be unreasonably withheld. Any attempted or purported assignment or other transfer not complying with the foregoing will be null and void. This Agreement will inure to the benefit of the successors and assigns of Licensors and any successors and permitted assigns of Licensee, and will be binding upon the successors and assigns of the Parties.

ARTICLE ELEVEN GENERAL COMPLIANCE WITH LAWS

11.1 Compliance with Laws. Licensee will use reasonable commercial efforts to comply with all commercially material local, state, federal, and international laws and regulations relating to the development, manufacture, use, and sale of Licensed Products.

11.2 Patent Marking. To the extent commercially feasible and consistent with prevailing business practices, Licensee will mark, and will cause its Affiliates and Sublicensees to mark, all Licensed Products that are manufactured or sold under this Agreement with the number of each issued patent under the Patents that applies to such Licensed Product.

11.3 Governmental Approval or Registration. If this Agreement or any associated transaction is required by the law of any nation to be either approved or registered with any governmental agency, Licensee will assume all legal obligations to do so. Licensee will notify Licensors if Licensee becomes aware that this Agreement is subject to a United States or foreign government reporting or approval requirement. Licensee will make all necessary filings and pay all costs, including fees, penalties, and all other out-of-pocket costs, associated with such reporting or approval process.

ARTICLE TWELVE TERM AND TERMINATION

12.1 Term. This Agreement will be effective on the Effective Date and will continue and remain in effect until the expiration or abandonment of all issued patents and filed patent applications within the Patents, unless earlier terminated in accordance with the provisions of this Agreement (the “**Term**”).

12.2 [RESERVED].

12.3 Cessation of Business. If Licensee ceases to carry on its business related to this Agreement, Licensors will have the right to terminate this Agreement immediately upon written notice to Licensee; provided that all Sublicense Agreements will be assigned to and assumed by Licensors.

12.4 Termination upon Bankruptcy. Upon the filing of a petition in bankruptcy, insolvency or reorganization against or by Licensee, or Licensee making an assignment for the benefit of its creditors, or Licensee going into receivership or otherwise becoming insolvent, this Agreement may be terminated by Licensors by giving written notice of termination to Licensee, such termination immediately effective upon the giving of such notice of termination; provided that all Sublicense Agreements will be assigned to and assumed by Licensors.

12.5 Termination for Default.

- (a) Nonpayment. In the event Licensee fails to pay any amounts due and payable to Licensors hereunder, and fails to make such payments within thirty (30) days after receiving written notice of such failure, Licensors may terminate this Agreement immediately upon written notice to Licensee.
- (b) Material Breach. In the event Licensee commits material breach of its obligations under this Agreement, except for breach as described in Section 12.6(a), and fails to cure that breach within thirty (30) days after receiving written notice thereof, Licensors may terminate this Agreement immediately upon written notice to Licensee.

12.6 Termination as a Consequence of Patent Challenge.

- (a) By Licensee. If Licensee or any of its Affiliates brings a Patent Challenge or assists others in bringing a Patent Challenge, then Licensors may immediately terminate this Agreement.
- (b) By Sublicensee. If a Sublicensee brings a Patent Challenge or assists another party in bringing a Patent Challenge, then Licensors may send a written demand to Licensee to terminate such sublicense. If such Patent Challenge is not terminated, or if Licensee fails to so terminate such sublicense within thirty (30) days after Licensors’ demand, Licensors may immediately terminate this Agreement.

12.7 Disputes regarding Termination. If Licensee disputes any termination by Licensors under this Article Twelve, Licensee must notify Licensors in writing of the nature of such dispute and the proposed manner in which to resolve the dispute within ten (10) days of receipt of notification of breach or notification of termination by Licensors, whichever is sooner. If the parties do not resolve such dispute within ten (10) days of such notification, then Licensee will be required to initiate the dispute resolution procedures outlined in Section 13.3 immediately. If it does not do so, Licensee will be considered to have waived its rights to dispute the termination.

12.8 Effect of Termination.

- (a) Survival. Expiration or termination of this Agreement will not relieve the Parties of any obligations accruing before the effective date of expiration or termination. Any right, obligation, or required performance of the Parties under this Agreement that by its express terms or nature and context is intended to survive expiration or termination of this Agreement will survive any such expiration or termination, including the rights, obligations or required performance of the Parties set forth in the following provisions of the Agreement:
- Article 1 (“Definitions”);
 - Article 8 (“Indemnification”);
 - Article 9 (“Representations and Warranties”);
 - Article 13 (“Dispute Resolution”);
 - Article 14 (“Miscellaneous”);
 - Section 5.2 (“Content of Reports and Payments”);
 - Section 5.3 (“Records”);
 - Section 11.1 (“Compliance With Laws”);
 - Section 12.7 (“Disputes regarding Termination”); and
 - Section 12.8 (“Effect of Termination”).
- (b) Pre-termination Obligations. In no event will termination of this Agreement release Licensee, its Affiliates or Sublicensees from the obligation to pay any amounts that became due on or before the effective date of termination.
- (c) Reversion of rights. In case of termination of this Agreement the Patents will revert to the Licensors, including all rights, titles and interests, except for NRWCA Patents which will revert to Licensors and Wett and Murthy.
- (d) Reserve Amount Distribution. Upon termination of this Agreement the Reserve Amount together with all interest will be paid to Licensors, within twelve months, pursuant to the royalty distribution in Article Four.
- (e) Disposition of Licensed Products upon Termination. Termination of this Agreement will be without prejudice to any rights or obligations that accrued to the benefit of any Party prior to such termination. Upon

termination of this Agreement, and for a period of twelve months after such termination, Licensee may complete the making of any partially made Licensed Products and may sell, offer to sell, import, or export any Licensed Products that were in possession of Licensee or a sublicensee on the effective date of such termination; provided that all Sales will be subject to the terms of this Agreement including, but not limited to, the payment of Royalties and Sublicense Consideration.

ARTICLE THIRTEEN DISPUTE RESOLUTION

13.1 Mandatory Procedures. Any dispute arising out of or relating to this Agreement will be resolved solely by means of the procedures set forth in this Article Thirteen, and such procedures constitute legally binding obligations on the Parties. If any Party fails to observe the procedures of this Article, as may be modified by the Parties' written agreement, the other parties may bring an action for specific performance of these procedures in any court of competent jurisdiction.

13.2 Equitable Remedies. Although the procedures specified in this Article Thirteen are the sole and exclusive procedures for the resolution of disputes arising out of or relating to this Agreement, a Party may seek a preliminary injunction or other provisional equitable relief if, in its reasonable judgment, such action is necessary to avoid irreparable harm to itself or to preserve its rights under this Agreement.

13.3 Dispute Resolution Procedures.

- (a) Mediation. In the event of any dispute arising out of or relating to this Agreement, any Party may initiate mediation upon written notice to the other parties ("**Notice Date**"), whereupon all Parties will be obligated to engage in a mediation proceeding. The mediation will commence within forty-five (45) days of the Notice Date. The mediation will be conducted by a single mediator in Richmond, Virginia. The Party requesting mediation will designate two (2) or more nominees for mediator in its notice. The other parties may accept one of the nominees or may designate their own nominees by notice addressed to the American Arbitration Association (AAA) and copied to the requesting party. If within, fifteen (15) days following the request for mediation, the Parties have not selected an unanimously acceptable mediator, a mediator will be appointed by the AAA according to the Commercial Mediation Rules. The mediator will attempt to facilitate a negotiated settlement of the dispute, but will have no authority to impose any settlement terms on the Parties. The expenses of the mediation will be borne equally by all Parties, but each Party will be responsible for its own counsel fees and expenses.
- (b) Good Faith Efforts to Resolve Disputes. Upon the appointment of mediator, the Parties will make good faith efforts to resolve any claim, dispute or

controversy between the Parties arising out of or relating to this Agreement, including but not limited to those arising out of or related to the breach, termination, or invalidity of this Agreement.

- (c) Trial Without Jury. If the dispute is not resolved by mediation within forty-five (45) days after commencement of mediation, each Party will have the right to pursue any other remedies legally available to resolve the dispute, provided, however, that the Parties expressly waive any right to a jury trial in any legal proceeding under this Article.

13.4 Performance to Continue. Each Party will continue to perform its undisputed obligations under this Agreement pending final resolution of any dispute arising out of or relating to this Agreement; provided, however, that a Party may suspend performance of its undisputed obligations during any period in which the other parties fail or refuse to perform their undisputed obligations. Nothing in this Article Thirteen is intended to relieve Licensee from its obligation to make undisputed payments pursuant to this Agreement.

13.5 Statute of Limitations. The Parties agree that all applicable statutes of limitation and time-based defenses (including, but not limited to, estoppel and laches) will be tolled while the procedures set forth in Sections 13.3(a) are pending. The Parties will cooperate in taking any actions necessary to achieve this result.

ARTICLE FOURTEEN MISCELLANEOUS

14.1 Notice. Any notices required or permitted under this Agreement will be in writing, will specifically refer to this Agreement, and will be sent by hand, recognized national overnight courier, confirmed facsimile transmission, confirmed electronic mail, or registered or certified mail, postage prepaid, return receipt requested, to the following addresses or facsimile numbers of the Parties:

If to ARA (Licensee):	ARA Consult GmbH Unterbergerstr.1, A-6020 Innsbruck Attn: Bernhard Wett, CEO Email: Bernhard.wett@araconsult.at
If to NEWhub (Licensee):	NEWhub Holding Company 12602 Denmark Dr. Oak Hill, VA 20171 Attn: Maureen O'Shaughnessy Email: maureen@oshaughnessywater.com
If to HRSD (Licensor):	Hampton Roads Sanitation District 1434 Air Rail Avenue Virginia Beach, VA 23455 Attn: Jay Bernas, General Manager

Email: jbernas@hrsd.com

If to DC Water (Licensor): District of Columbia Water and Sewer Authority
1385 Canal Street, S.E.
Washington, DC 20003
Attn: David L. Gadis, CEO & General Manager
Email: David.Gadis@dewater.com

If to Wett: Bernhard Wett
Dorfgasse 46
A-6020 Innsbruck, Austria
Email: wett@araconsult.at

If to Murthy: Sudhir Murthy
12602 Denmark Drive
Herndon, VA 20171-2716
Email: sudhir@murthy.technology

All such notices, consents, waivers and other communications will (i) if delivered personally in the manner and to the address provided in this Section, be deemed given upon delivery, (ii) if delivered by facsimile transmission or electronic mail in the manner and to the facsimile number or e-mail address provided in this Section, be deemed given on the earlier of receipt or the first business day after transmission, (iii) if delivered by mail in the manner, and to the address provided in this Section, be deemed given on the earlier of the fourth business day following mailing or upon receipt, and (iv) if delivered by overnight courier in the manner and to the address provided in this Section, be deemed given on the earlier of receipt or the first business day following the date sent by such overnight courier.

14.2 Governing Law; Venue. The Parties hereto agree that this Agreement, and any controversy arising pursuant to this Agreement, will be governed by the laws of the Commonwealth of Virginia. Subject to Article Thirteen (Dispute Resolution), the Parties hereto irrevocably and unconditionally submit to the exclusive jurisdiction of the federal or state courts in Virginia. The Parties hereto irrevocably and unconditionally waive any objection to the laying of venue of any such suit, action or proceeding brought in any such court and any claim that such suit, action or proceeding brought in any such court has been brought in an inconvenient forum.

14.3 Force Majeure. No Party will be liable to the other parties for delays in any performance or failure to render any performance when such delay or failure is beyond the reasonable control of, and without intentional wrongdoing or bad faith of, the Party asserting the claim of force majeure, including but not limited to acts of God, strikes, terrorist attacks, lockouts or other labor disputes, industrial or civil disturbances, material shortages, and acts, directives or binding orders of any court or government authority or agencies.

14.4 Waiver. Any waiver of any rights or failure to act in a specific instance will relate only to such instance and will not be construed as an agreement to waive any rights or fail to act in any other instance, whether or not similar. Except as provided in this Agreement, no delay or failure on the part of a Party in exercising any right, power, or privilege hereunder will operate as

a waiver thereof, nor will any waiver on the part of any Party of any such right, power, or privilege, nor any single or partial exercise thereof, preclude any other or further exercise thereof or the exercise of any other right, power, or privilege hereunder.

14.5 Severability. In the event that any provision of this Agreement will be held invalid or unenforceable for any reason, such invalidity or unenforceability will not affect any other provision of this Agreement, and the Parties will negotiate in good faith to modify this Agreement to preserve (to the extent possible) their original intent. If the Parties fail to reach a modified agreement within thirty (30) days after the relevant provision is held invalid or unenforceable, then the dispute will be resolved in accordance with the procedures set forth in Article Thirteen (Dispute Resolution). While the dispute is pending resolution, this Agreement will be construed as if such provision were deleted by agreement of the Parties.

14.6 Binding Effect. This Agreement will be binding upon and inure to the benefit of the Parties and their respective permitted successors and assigns.

14.7 Third-Party Beneficiaries. There will be no third-party beneficiaries.

14.8 Entire Agreement. This Agreement constitutes and contains the complete and final understanding and agreement of the Parties relating to the subject matter of this Agreement. Any and all prior negotiations, correspondence, understandings and agreements, whether oral or written, between the Parties respecting the subject matter hereof will henceforth not be binding on any Party except to the extent expressly set forth in this Agreement. Nothing in this Agreement, express or implied, is intended to confer upon any party, other than the Parties and their respective successors and assigns, any rights, remedies, obligations or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement. This Agreement may not be amended, modified or supplemented except by a writing executed by all Parties.

14.9 Further Assurances. The Parties hereto will do and perform or cause to be done and performed all such further acts and things and will execute and deliver all such other documents as any Party may reasonably request from time to time in order to carry out the intent and purpose of this Agreement contemplated hereby. No Party will voluntarily undertake any course of action inconsistent with satisfaction of the requirements applicable to them set forth in this Agreement and each Party will promptly do all such acts and take all such measures as may be appropriate to enable them to perform as early as practicable the obligations herein required to be performed by them.

14.10 Facsimile; Counterparts. This Agreement may be executed in one or more counterpart copies, each of which will be deemed to be an original copy of this Agreement and all of which, when taken together, will be deemed to constitute one and the same agreement. The exchange of copies of this Agreement and of signature pages by facsimile, email, or other electronic transmission will constitute effective execution and delivery of this Agreement as to the Parties and may be used in lieu of the original Agreement for all purposes. Signatures of the parties transmitted by facsimile or electronic transmission will be deemed to be their original signatures for all purposes.

14.11 Relationship of Parties. Nothing in this Agreement will be deemed to constitute any Party a partner, joint venturer, co-owner or employee of the other parties. No Party is, or will represent itself to be, an agent or legal representative of any of the other parties. No Party will have the authority to bind the other parties or to assume or create any liability or obligation, express or implied, on behalf of the other parties.

14.12 Captions; Rules of Construction. The titles to the Articles and Sections of this Agreement are solely for the convenience of the Parties and will not be used to explain, modify, simplify or aid in the interpretation of the provisions of this Agreement. Any reference in this Agreement to any Article or Section refers to the corresponding Article or Section of this Agreement. Any reference in this Agreement to any Appendix refers to the corresponding Appendix attached to this Agreement and all such Appendices are incorporated herein by reference. The word “including” in this Agreement means “including without limitation.” This Agreement will be construed as if drafted by all of the Parties and no presumption or burden of proof will arise favoring or disfavoring any Party by virtue of the authorship of any provision in this Agreement.

[Signature Page Follows]

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their duly authorized representatives as of the Effective Date.

ARA CONSULT GmbH

By: _____
Name: Bernhard Wett
Title: CEO
Date: _____, 2022

NEWHUB Holding Company

By: _____
Name: Maureen O'Shaughnessy
Title: President
Date: _____, 2022

HAMPTON ROADS SANITATION DISTRICT

By: _____
Name: Jay Bernas
Title: General Manager
Date: _____, 2022

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

By: _____
Name: David L. Gadis
Title: CEO & General Manager
Date: _____, 2022

BERNHARD WETT

By: _____
Name: Bernhard Wett
Date: _____, 2022

SUDHIR MURTHY

By: _____
Name: Sudhir Murthy
Date: _____, 2022

[Signature Page]

APPENDIX A
ANAMMOX PATENTS

<u>Country</u>	<u>Application No.</u>	<u>Filing Date</u>	<u>Patent / Pub. No.</u>	<u>Grant Date</u>
US	61/700,717	September 13, 2012	N/A	N/A
US	61/708,498	October 1, 2012	N/A	N/A
US	61/783,232	March 14, 2013	N/A	N/A
US	14/026,339	September 13, 2013	9,340,439	May 17, 2016
US	14/026,569	September 13, 2013	9,346,694	May 24, 2016
US	14/043,130	October 1, 2013	9,469,558	October 18, 2016
US	14/210,816	March 14, 2014	9,352,990	May 31, 2016
US	15/150,842	May 10, 2016	US2016/0257589	September 8, 2016
US	15/155,225	May 16, 2016	10,005,683	June 26, 2018
US	15/156,968	May 17, 2016	US2016/0257590	September 8, 2016
US	15/202,117	July 5, 2016	US2016/0311713	October 27, 2016
WO	PCT/US2013/059775	September 13, 2013	WO2014/043547	March 20, 2014
WO	PCT/US2014/28069	March 14, 2014	WO2014/152872	September 25, 2014
AU	2013315133	September 13, 2013	2013315133B2	February 1, 2018
AU	2014236539	March 14, 2014	2014236539	August 20, 2015

BR	112015005607A2	September 13, 2013	112015005607A2	December 17, 2019
BR	112015021491	March 14, 2014	112015021491	July 18, 2017
CN	201480014545A	March 14, 2014	105283424	January 27, 2016
CA	2884713A	September 13, 2013	2884713A1	March 20, 2014
CA	2902197A	March 14, 2014	2902197A1	September 25, 2014
CN	201380058150A	September 13, 2013	105189368B	December 23, 2015
CN	201480014545A	March 14, 2014	105283424A	January 27, 2016
CN	201710322412A	September 13, 2013	107200397B	October 1, 2021
EP	14769473A	March 14, 2014	2969978A1	January 20, 2016
EP	13837547A	September 13, 2013	2895430A1	July 22, 2015
HK	16108636A	July 20, 2016	1220678A1	May 12, 2017
HK	16100657A	January 21, 2016	1212669A1	June 17, 2016
IL	23760615A	March 8, 2015	237606A	August 29, 2019
IL	24035015A	August 4, 2015	240350A	January 31, 2019
IL	26374118A	December 16, 2018	263741A	January 31, 2021
IN	2021IN-18042605	September 20, 2021	202118042605A	February 11, 2022
IN	2021IN-18042604	September 20, 2021	202118042604A	February 11, 2022

IN	2015IN-DN02271	March 19, 2015	IN377816B	September 24, 2021
IN	2015IN-DN09617	October 14, 2015	IN9617/DELNP/2015A	February 26, 2016
JP	2015532099A	September 13, 2013	2015531683A	November 5, 2015
JP	2015532099A	September 13, 2013	6230032B2	November 15, 2017
JP	2017170928A	September 6, 2017	6469193B2	February 13, 2019
JP	2017170928A	September 6, 2017	2018001163A	January 11, 2018
JP	2016-0502697	March 14, 2014	2016512169A	April 25, 2016
KR	20157009473A	September 13, 2013	20150080493A	July 9, 2015
KR	20157026159A	March 14, 2014	20160008502A	January 22, 2016
KR	20157009473A	September 13, 2013	102369453B1	March 2, 2022
KR	2021-7033565	March 14, 2014	10-2021-0129743 A	October 28, 2021
MX	2015011828	March 14, 2014	2015011828	January 8, 2016
MX	2015003358	September 13, 2013	2015003358	October 26, 2015
MX	2015003358A	September 13, 2013	360501B	November 5, 2018
RU	2015113376	September 13, 2013	2015113376	November 10, 2016
RU	2015143998	March 14, 2014	2015143998	April 26, 2017
RU	2015113376A	September 13, 2013	2640767	January 11, 2018

RU	2015143998A	March 14, 2014	2671729	November 6, 2018
SG	11201507216R	March 14, 2014	11201507216R	October 29, 2015
SG	10201901121QA	September 13, 2013	10201901121QA	March 28, 2019
SG	10201914003SA	September 13, 2013	10201914003SA	March 30, 2020
SG	11201501891TA	September 13, 2013	11201501891TA	April 29, 2015
ZA	201501672A	March 11, 2015	201501672B	January 27, 2016
ZA	ZA201505581A	August 3, 2015	201505581B	March 29, 2017
US	62/028,185	July 23, 2014	N/A	N/A
US	62/085,959	December 1, 2014	N/A	N/A
US	14/806,524	July 22, 2015	9,902,635	February 27, 2018
WO	PCT/US2015/41622	July 22, 2015	WO2016/014723	January 28, 2016
US	63/160,467	March 12, 2021	N/A	N/A
US	63/267,029	January 21, 2022	N/A	N/A
US	17/654,796	March 14, 2022	N/A	N/A
WO	PCT/US22/20266	March 14, 2022	N/A	N/A
US	62/359,950	July 8, 2016	N/A	N/A
US	15/630,648	June 22, 2017	US2018/0009687A1	January 11, 2018

AU	2017292627	June 22, 2017	AU2017292627A1	February 7, 2019
CN	201780053630.7	June 22, 2017	CN 109996766 A	July 9, 2019
EP	17824699.7	June 22, 2017	3481779	May 15, 2019
IN	201917003959	June 22, 2017	201917003959A	June 7, 2019
MX	MX/a/2019/000176	June 22, 2017	MX/a/2019/000176	January 14, 2020
HK	62020001140.6	June 22, 2017	40011279A	July 10, 2020
WO	PCT/US2017/038826	June 22, 2017	WO2018/009348 A1	January 11, 2018

AGENDA ITEM 8. – May 24, 2022

Subject: Atlantic Treatment Plant Thermal Hydrolysis Process (THP) and
Atlantic Treatment Plant Fats, Oils and Grease (FOG) Receiving Station
Additional Appropriation

Recommended Action: Appropriate additional funding in the amount of \$156,358 (\$142,805 for AT013500 and \$13,553 for AT012910).

CIP Project: AT013500

Regulatory Requirement: None

Budget	\$63,193,588
Previous Expenditures and Encumbrances	(\$62,986,906)
Available Balance	<u>\$206,682</u>
Proposed Change Order No. 8 to Crowder	(\$324,487)
Proposed Contingency	(\$25,000)
Project Shortage/Requested Additional Funding	<u>(\$142,805)</u>
Revised Total Project Authorized Funding	<u><u>\$63,336,393</u></u>

CIP Project: AT012910

Regulatory Requirement: None

Budget	\$6,848,646
Previous Expenditures and Encumbrances	(\$6,823,645)
Available Balance	<u>\$25,001</u>
Proposed Change Order No. 8 to Crowder	(\$36,054)
Proposed Contingency	(\$2,500)
Project Shortage/Requested Additional Funding	<u>(\$13,553)</u>
Revised Total Project Authorized Funding	<u><u>\$6,862,199</u></u>

Project Description: The purpose of implementing the THP and FOG Receiving Station at the Atlantic Treatment Plant is to improve cake dewaterability and produce a Class A biosolids product by processing through the Cambi THP System, which will provide the following:

- Flexibility – prepare for FOG and Biosolids Receiving
- Expandability – increased load
- Economy – resource efficiency, use existing infrastructure
- Integrate seamlessly into plant
- Odor neutrality

The attached [map](#) depicts the project location.

Funding Description: These two CIP projects are related and are being constructed by Crowder Construction Company (Crowder). In wrapping up the construction project, there were some credits given to HRSD from Crowder and there were some additional costs to the construction project that were not anticipated. The additional costs include: concrete crack repair on digester No. 5, lightning protection, FOG seal water lines heat tracing, and 4-inch digester gas by-pass. A change order for

the additional work was prepared by Crowder and reviewed and recommended by HDR. This request includes a \$27,500 contingency to accommodate any additional unforeseen conditions.

Schedule: Project Completion September 2022

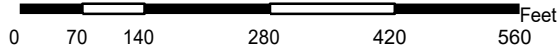


AT012910

- 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



AT012910

**Atlantic Treatment Plant
FOG Receiving Station**

AT013500

**Atlantic Treatment Plant Thermal
Hydrolysis Process**



CIP Location



General

AGENDA ITEM 9. – May 24, 2022

Subject: Boat Harbor Transmission Force Main Land Acquisition
Initial Appropriation

Recommended Action: Appropriate total project funding in the amount of \$3,000,000.

CIP Project: GN016346

Regulatory Requirement: Integrated Plan – SWIFT

Project Description: A transmission force main connecting the new Boat Harbor Pump Station and Nansemond Treatment Plant (NTP) will be constructed under a separate capital project. Additionally, SWIFT Water piping and recharge well locations will be defined along the transmission force main route. This project will fund the purchase of land and easements that are needed to construct the transmission force main, SWIFT Water piping, well buildings, and associated utilities.

The attached [map](#) depicts the project location.

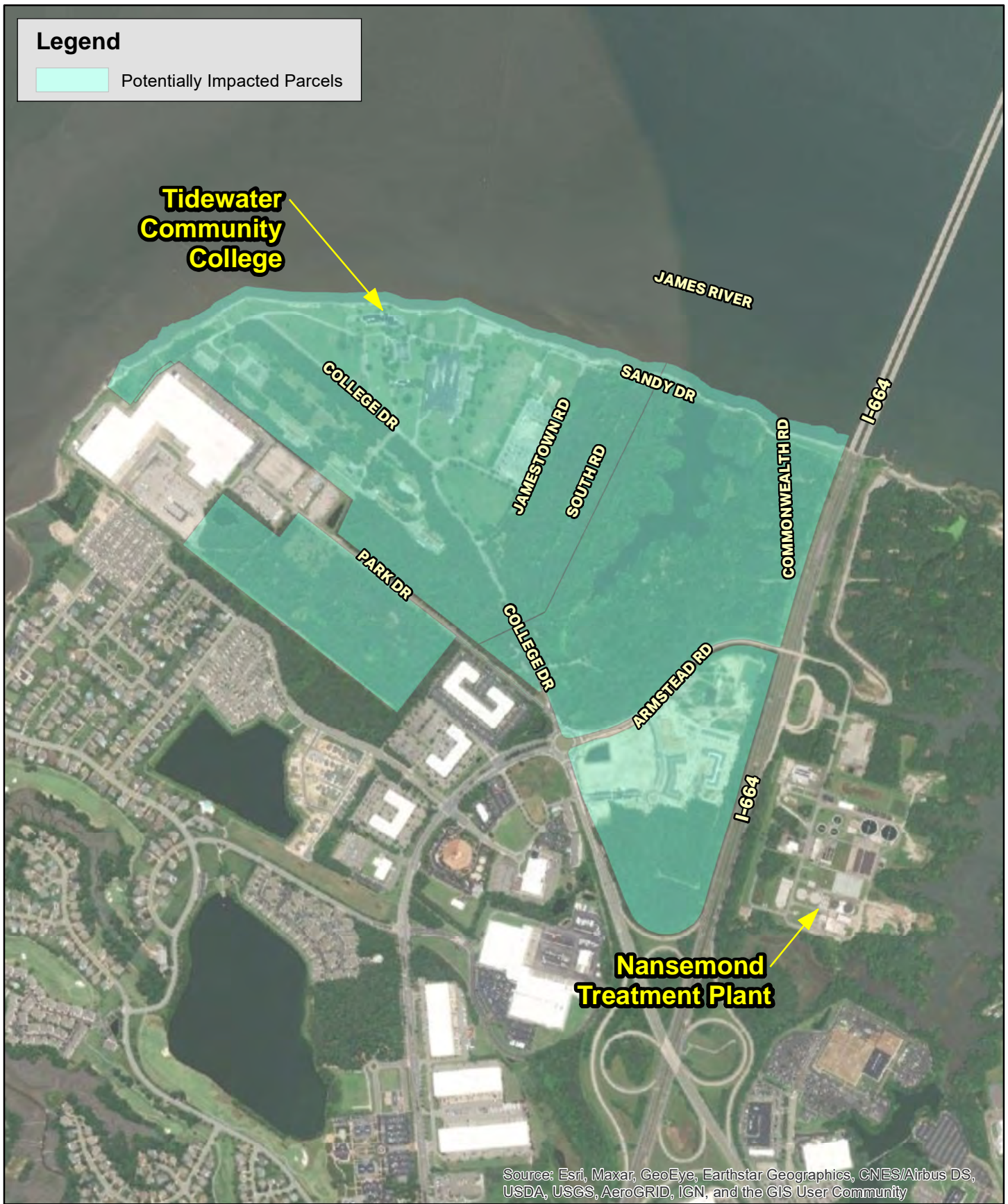
Project Justification: An easement across private property is required to install the force main from the south shore of the James River to the NTP, which is required to implement projects Boat Harbor Treatment Plant (BHTP) Pump Station Conversion (BH015700), BHTP Transmission Force Main Section 1 (Subaqueous) (BH0157100), and BHTP Transmission Force Main Section 2 (Land) (BH015720). Acquiring property on the west side of Interstate 664 for recharge wells is required because there is insufficient space on the HRSD Nansemond property to accommodate the needed spacing between recharge wells.

Funding Description: The total estimated cost for the land acquisition was \$3,000,000 established in 2020 and was based on previous sales in the area and the estimated areas required for the planned infrastructure.

<u>Schedule:</u>	Design	June 2022
	Project Completion	June 2023


Legend

 Potentially Impacted Parcels



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



600 300 0 600 Feet


**BOAT HARBOR TRANSMISSION
FORCE MAIN LAND ACQUISITION
(CIP GN016346)**

May 2022



AGENDA ITEM 10. – May 24, 2022

Subject: Bowers Hill Interceptor Force Main Section I Emergency Repair
New CIP and Initial Appropriation

Recommended Actions:

- a. Approve a new CIP project.
- b. Appropriate total project funding in the amount of \$500,000

CIP Project: NP015200

Regulatory Requirement: None

Budget	\$500,000
Previous Expenditures and Encumbrances	(0)
Available Balance	\$500,000

Project Description: This emergency repair of the [Bowers Hill Interceptor Force Main Section I](#) is still under construction after declaration of emergency on May 3, 2022. Work is being accomplished with funds from the Operations Department Fiscal Year (FY) 2022 Operating Budget. This work is appropriately capitalized at year-end but in the interim creates significant stress on the FY 2022 Operations Department Budget. This proposed Commission action creates and fully funds a new CIP project that will allow all future costs as well as all costs already incurred against the Operations Department Budget for this emergency to be charged to this CIP project restoring the FY 2022 Operations Department Budget balance for use as planned for the remainder of FY 2022.

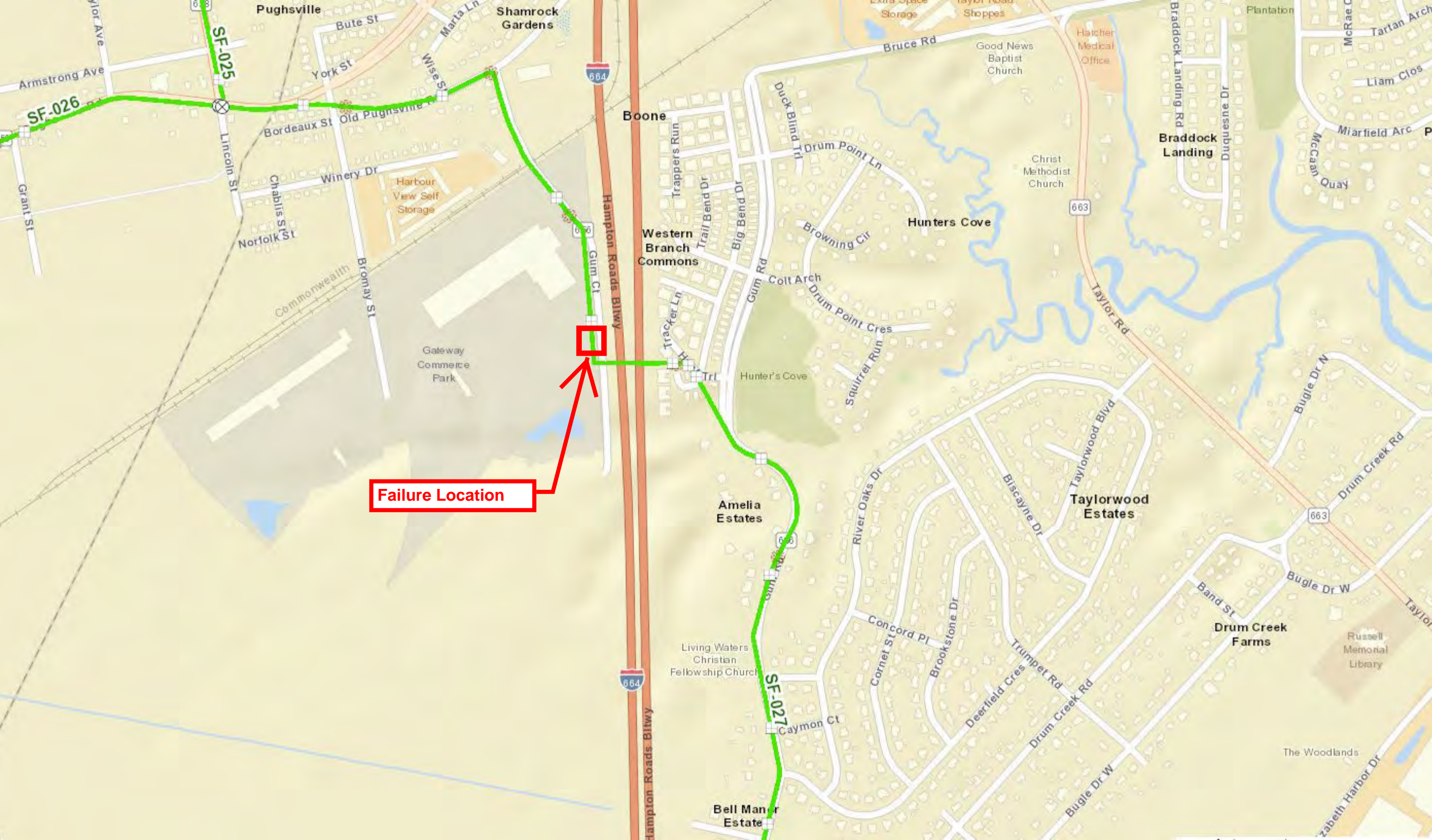
On April 23, a 36-inch ductile iron force main failed on Gum Court in Chesapeake. Because of the location in the system, isolating and diverting the flow was not possible. After much effort, a contractor found a four-inch hole in the bottom of the pipe that was caused by external corrosion. The contractor installed a full circle clamp and restored the impacted area. The failure leaked approximately 452,000 gallons into stormwater ditches that drain to Drum Point Creek, a tributary of the Elizabeth River. The contractor performed further condition assessment immediately adjacent to the failure and found additional external corrosion on the pipe. As a result, the contractor installed appurtenances for a bypass near the failure to facilitate future pipeline replacement.

Staff used the Prompt Repair On-Call Services contractor, Bridgeman Civil, Inc., to prepare the area, complete repairs on the force main, and restore the area impacted by the failure and construction. Bridgeman Civil, Inc. also excavated upstream and downstream of the repair to complete further condition assessment and additional connections and appurtenances were installed for future pipeline replacement. Staff also utilized the On-Call General Engineering consultant, Hazen and Sawyer, to provide construction administration and inspection while Bridgeman Civil, Inc. completed the repair.

Funding Description: The total cost for this project is estimated at \$500,000 based on a Class 5 cost estimate and a 10 percent contingency included in the requested appropriation. The scope of this cost estimate includes costs for the force main repairs, condition assessment, restoration, and construction administration and inspection. These estimates have been reviewed by staff and are considered reasonable.

Analysis of Cost: The cost for this emergency project is based on engineer review and negotiated cost and is in agreement with other similar efforts from firms.

<u>Schedule:</u>	Emergency Declaration	May 2022
	Construction	May-June 2022
	Project Completion	June 2022



Failure Location

AGENDA ITEM 11. – May 24, 2022

Subject: Chesapeake-Elizabeth Treatment Plant Influent Force Main Modifications
Additional Appropriation

Recommended Action: Appropriate additional funding in the amount of \$16,251.

CIP Project: CE012400

Regulatory Requirement: None

Budget	\$600,000
Previous Expenditures and Encumbrances	(\$571,105)
Available Balance	<u>\$28,895</u>
Project Shortage/Requested Additional Funding	(\$16,252)
Revised Total Project Authorized Funding	<u><u>\$616,252</u></u>

Project Description: Install additional piping and appurtenances on the influent piping to CETP.

Project Justification: The existing CETP influent piping and valving configuration does not allow for proper City of Virginia Beach and private pump station operation during wet weather.

Funding Description: Revenue Bond

This work is in accordance with the Procurement Commission Adopted Policy.

AGENDA ITEM 12. – May 24, 2022

Subject: Eastern Shore Infrastructure Improvements - Interim Plant Improvements
(Onancock Treatment Plant Solids Handling Upgrade)
New CIP and Initial Appropriation

Recommended Actions:

- a. Approve a new CIP project.
- b. Appropriate total project funding in the amount of \$1,200,000.

CIP Project: ES010000

Regulatory Requirement: None

Project Description: This project will provide for treatment plant improvements to existing facilities on the Eastern Shore. Currently, there is need for improvements to the Onancock Treatment Plant Solid Handlings and the packaged plants located in the Town of Chincoteague.

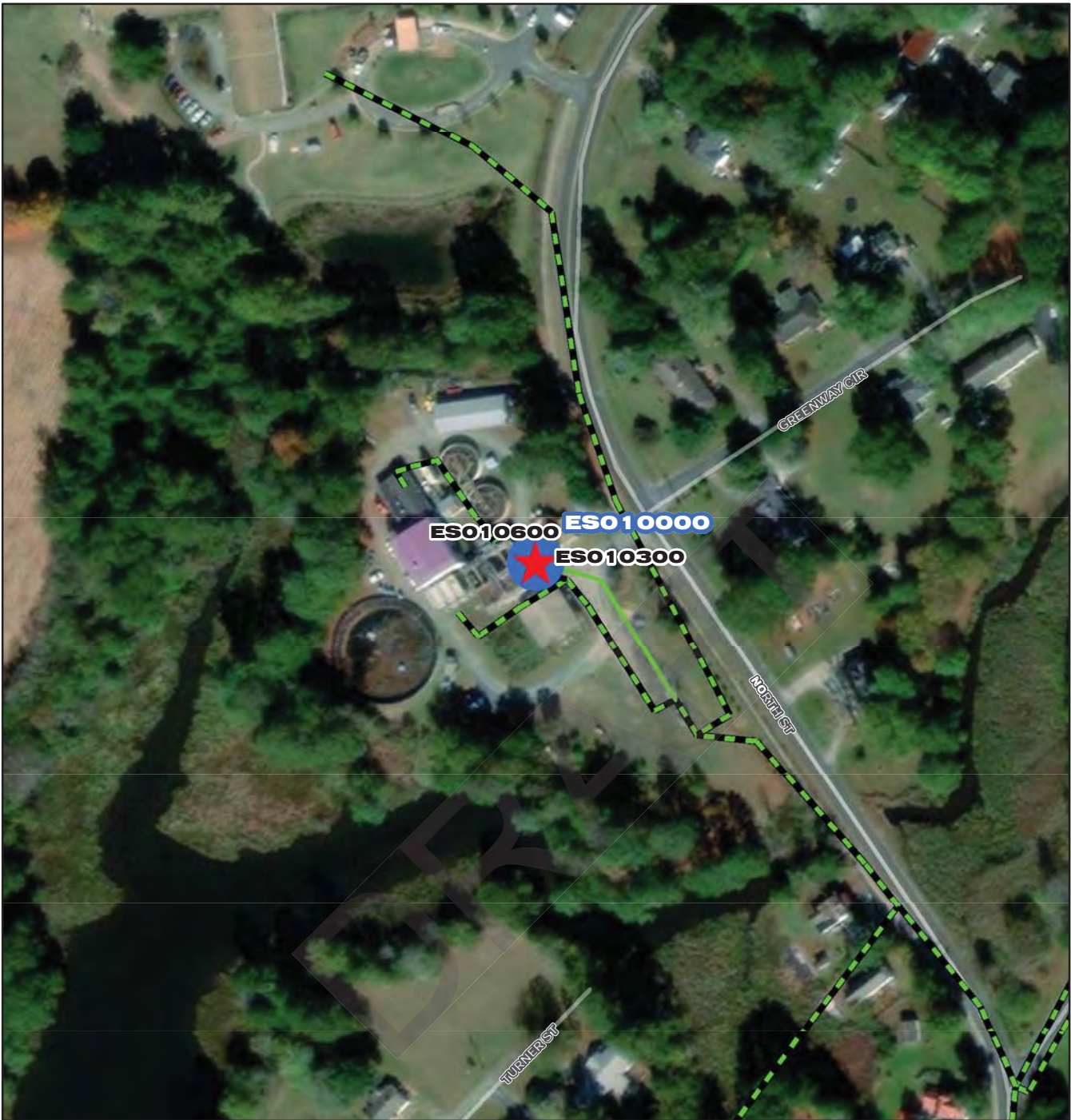
The attached [map](#) depicts the project location.

Project Justification: This task includes design and construction to perform needed solids handling upgrades at the Onancock Treatment Plant. The existing belt filter press and polymer feed system are nearing the point of being disfunction and beyond repair. The existing solids handling building is in disrepair. The existing digester tanks are in poor condition without the ability to decant. Solids handling represents a significant bottleneck for the plant, and the short-term solution is bringing in a contractor to remove and dewater solids on an emergency basis. This project will address these problems and includes:

- New aerobic digester tanks with diffusers and blowers.
- New belt filter press dewatering equipment, feed pump, polymer feed system, and cake loadout.
- New dewatering building including dewatering equipment, cake storage, odor control, and covered vehicle and maintenance storage.
- Improvements to the currently defunct surface wasting system to minimize foaming and associated odor.

Funding Description: The estimated total project cost is \$1,200,000. The preliminary engineering report (PER) including a cost estimate will be provided by Hazen & Sawyer, P.C. through the existing General Engineering Services contract and the initial task order is below the \$200,000 Commission approval threshold.

<u>Schedule:</u>	PER	September 2022
	Design	January 2023
	Bid	March 2023
	Construction	December 2023
	Project Completion	February 2024



- ESO10000**
- 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



ESO 1 0 0 0 0

Eastern Shore Infrastructure Improvements - Interim Plant Improvements



AGENDA ITEM 13. – May 24, 2022

Subject: Hampton Trunk Sewer Extension Divisions I and J Relocation Phase II Agreement – Cost Sharing

Recommended Action: Approve the terms and conditions of the cost sharing agreement with the City of Hampton for the construction of the Sanitary Sewer Line at West County Street, Frissell Street to Fulton Street project, reimbursement of construction costs and authorize the General Manager to execute same, substantially as presented, together with such changes, modifications and deletions as the General Manager may deem necessary.

CIP Project: BH014220

Regulatory Requirement: None

Budget	\$17,747,295
Previous Expenditures and Encumbrances	(\$17,009,175)
Available Balance	\$738,120

Project Description: This project includes the replacement of 7,500 linear feet of 30-inch force main from the new Willard Avenue Pump Station at the intersection of Downes Street and Willard Avenue in Hampton, with 9,000 linear feet of new 24- inch and 30-inch force main. The new force main will originate from the new Willard Avenue Pump Station to the connection at East Queen Street and Eaton Street. The following ancillary work will be required as part of this project: a 600 linear feet extension of the 10-inch force main from City of Hampton (PS 003); a 1,000 linear feet relocation of the 4-inch force main from the privately owned Hampton Harbor Pump Station; and 1,200 linear feet of 12-inch force main extension of the Hampton University Pump Station. The [map](#) included in the attached agreement depicts the project location.

Project Justification: This project will address critical areas within the City of Hampton with significant wet weather capacity issues. The existing Willard Avenue Pump Station 30-inch discharge force main was originally installed in the 1945-1946 timeframe, with a portion of the main relocated in 1956 as part of the Interstate 64 (I-64) project. Given the age of this line, the documented failure near the I-64 sound wall, limited diversion options, it's depth in the vicinity of the interstate off ramp, and Hampton University's request for HRSD to abandon this pipe, replacement is necessary.

Agreement Description: The [attached agreement](#) between HRSD and the City of Hampton is for the installation of 338 linear feet of 8-inch, PVC, sanitary sewer gravity main and one associated manhole along West County Street in Hampton. The agreement has been reviewed by HRSD legal counsel.

Analysis of Cost: The reimbursable cost for this agreement is based on actual bids received.

Schedule:	Construction	February 2022
	Project Completion	September 2024

AGREEMENT FOR COST SHARING

OF THE

**HAMPTON ROADS SANITATION DISTRICT
HAMPTON TRUNK SEWER EXTENSION DIVISIONS I & J PHASE II
(BH014220)**

AND

**CITY OF HAMPTON
SANITARY SEWER LINE AT W. COUNTY STREET, FRISSELL ST. TO FULTON ST.**

THIS AGREEMENT FOR COST SHARING (the "Agreement"), between the CITY OF HAMPTON ("CITY") and the HAMPTON ROADS SANITATION DISTRICT ("HRSD"), is entered into this _____ day of _____, 2022 (the "Effective Date").

RECITALS

R:1. HRSD is constructing its HAMPTON TRUNK SEWER EXTENSION DIVISIONS I & J PHASE II Project as shown on **Exhibit 1** (the "HRSD Facilities"); and

R:2. CITY is constructing its own SANITARY SEWER LINE AT W. COUNTY STREET, FRISSELL ST. TO FULTON ST. as shown on **Exhibit 2** (the "CITY Facilities") as part of CITY's maintenance program; and

R:3. The construction of the HRSD Facilities and CITY Facilities (collectively referred to as the "Improvements") will necessitate the design, construction, realignment, rehabilitation, bypassing, and replacement of existing force main, gravity sewers and laterals; and

R:4. HRSD and CITY agree that it is in the best interest of the parties to have the Improvements constructed together; and

R:5. HRSD agrees to include the design and construction of CITY Facilities as part of the design and construction of the HRSD Facilities, in accordance with the approved plans and specifications; and

R:6. CITY agrees to reimburse HRSD for that portion of the costs of the construction of the Improvements attributable to CITY Facilities under the terms and conditions set forth herein.

TERMS

NOW THEREFORE, in consideration of the above provisions and agreements set forth herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

I. DESIGN OF IMPROVEMENTS

A. Plans and Specifications

1. HRSD will employ KIMLEY HORN AND ASSOCIATES (ENGINEER), to prepare plans and specifications for the HRSD Facilities. A location map of the HRSD Facilities is shown on Exhibit 1.
2. CITY will prepare design plans for CITY Facilities. A location map of CITY Facilities is shown on Exhibit 2.
3. HRSD and CITY will meet to coordinate, review, and approve a final set of construction documents incorporating both parties' plans and specifications (the "Final Plans and Specifications") for the Improvements.

B. Payment of the Design Costs

1. HRSD will compensate ENGINEER for all engineering design costs and any amendments related to the HRSD Facilities.
2. CITY will bear all engineering design costs design costs and any amendments related to CITY Facilities.

C. Compliance

All design work shall comply with HRSD's Design and Construction Standards, latest edition, the Hampton Roads Planning District Commission Regional Construction Standards, latest edition, and CITY, Utility Policy and Design and Construction Standards, latest edition. Any changes to the Final Plans and Specifications shall be approved by HRSD and CITY.

II. CONSTRUCTION OF IMPROVEMENTS

A. Cost of Construction

1. The total cost of the Improvements, as more particularly defined by the Final Plans and Specifications, prepared by ENGINEER for HRSD and CITY (the "Improvements Costs") shall include:
 - a. Cost of construction of the Improvements;
 - b. Cost of advertising for bids;
 - c. Cost of approvals and permits required for the construction of the Improvements;
 - d. Costs for construction contract administration and inspection;
 - e. Costs of services rendered by ENGINEER;
 - f. Costs for all temporary or permanent easements and fee simple land acquisitions; and
 - g. Any related miscellaneous essential expenses.
2. The current estimated cost of the construction of the HRSD Facilities is \$15,941,000 and the estimated cost of the construction of the CITY Facilities is \$230,000.

B. Approval of Final Plans and Specifications; Contractors; Change Orders

1. HRSD and CITY agree that before any construction work is to begin under this Agreement, HRSD and CITY will jointly review and approve the Final Plans and Specifications. This approval shall be in writing.
2. HRSD shall acquire all necessary plan approvals and property acquisitions related to HRSD Facilities prior to the award of the construction contract.
3. CITY shall acquire all necessary plan approvals and property acquisitions related to CITY Facilities prior to the award of the construction contract.

4. HRSD and CITY shall review and agree upon the Contractors and any Subcontractors qualifications prior to bidding the project and confirm that the construction contract is awarded to a firm that meets the stated requirements pursuant to the requirements of Section IV, B.2 herein.
5. Contractors shall be responsible for all necessary permits and approvals necessary for the Improvements.
6. HRSD and CITY will review and approve shop drawings related to the HRSD and CITY Facilities.
7. HRSD and CITY will review and approve scope of work and fee for the construction contract administration and inspections related to the HRSD and CITY Facilities.
8. HRSD will review and approve change orders related to the HRSD Facilities. CITY will review and approve change orders related to the CITY Facilities.

C. Payment of Improvement Costs

1. The Improvement Costs shall be apportioned among the parties as follows:
 - a. HRSD will administer and be responsible for bearing one hundred percent (100%) of the cost of the HRSD Facilities.
 - b. CITY will be responsible for bearing one hundred percent (100%) of the cost of CITY Facilities.
 - c. Costs associated with any change to the initial construction cost ("Change Order") shall be as follows:
 - (1) HRSD shall be solely responsible for costs due to a Change Order requested by HRSD; and
 - (2) CITY shall be solely responsible for costs due to a Change Order requested by CITY.

- (3) Change Orders related to design errors, omissions or changed field conditions shall be the responsibility of the entity impacted by the change. If the Change Order impacts the work of both HRSD and CITY, the responsibility shall be proportionally shared.
 2. During the course of construction, HRSD shall compensate the Contractors and other individuals and entities providing materials and/or services related to the Improvements for all Improvement Costs, including those for which CITY is responsible. CITY shall reimburse HRSD for all such payments made on its behalf. CITY shall reimburse HRSD at the 50% and Final project completion phases for CITY Facilities (as determined by HRSD and CITY). HRSD shall provide CITY with invoices detailing costs of CITY Facilities. Within thirty (30) days of its receipt of such invoice, CITY shall reimburse HRSD for costs of CITY Facilities as detailed in the invoice.
 3. In conjunction with the above, and for additional clarity, it is agreed that CITY shall reimburse HRSD for construction administration and construction inspection costs (the "CA and CI costs") at the 50% and Final project completion phases for CITY Facilities (as determined by HRSD and CITY). HRSD shall provide CITY with invoices detailing the CA and CI costs for the CITY Facilities. Within thirty (30) days of its receipt of such invoice, CITY shall reimburse HRSD for CA and CI costs of CITY Facilities as detailed in the invoice.
- D. Operation and Maintenance of the Improvements during and after Construction
 1. HRSD shall be responsible for operation and maintenance of the HRSD Facilities during and after construction.
 2. CITY shall be responsible for operation and maintenance of CITY Facilities during and after construction.

III. SCHEDULE

The construction is anticipated to begin by March 2022 and be complete by July 2024. If the construction dates listed herein are substantially delayed, HRSD or CITY reserves the right to terminate this Agreement.

IV. OBLIGATIONS OF HRSD AND THE CITY

A. Public Hearing or Meeting

HRSD and CITY will be responsible for holding a public hearing or meeting if required. HRSD and CITY will coordinate and reserve the location if such public hearing is needed.

B. Bidding of the Improvements

1. HRSD agrees to issue bidding documents for construction of the Improvements. CITY agrees to provide administrative support during the bidding phase. In particular, CITY shall:
 - a. Attend the preconstruction meeting.
 - b. Provide timely responses to the ENGINEER for any questions, requests for clarification, or addenda during the bidding phase.
 - c. Provide miscellaneous support to HRSD as required during the bidding phase.
2. HRSD will receive bids for construction of the Improvements. All bids received will be reviewed and approved by CITY and HRSD prior to award of the construction contract. CITY and HRSD shall negotiate in good faith to resolve financial matters with regards to bidding the Improvements. The bidding procedure shall be conducted in accordance with the Virginia public Procurement Act and the HRSD Procurement Policy.

C. Administration

HRSD shall provide contract administration of the Improvements. CITY shall reimburse HRSD for the contract administration cost of CITY Facilities.

D. Inspection

HRSD shall provide full-time inspection for the Improvements. CITY shall reimburse HRSD for the inspection costs of CITY Facilities. The inspector(s) shall have the authority to assure the Improvements are constructed in accordance with the Final Plans and Specifications.

E. Deeds and Easements

1. HRSD shall obtain any and all necessary fee simple deeds and/or deeds of easement needed for the HRSD Facilities.
2. CITY shall obtain any and all necessary fee simple deeds and/or deeds of easements for CITY Facilities.

F. Correction of Construction Defects in the Improvements

HRSD shall require the Contractors to provide a performance and payment bond for the full amount of the construction of the Improvements to HRSD and the CITY as obligees. The construction contract shall also provide for a warranty of the Contractor's work against construction defects in the Improvements and shall require the Contractor to correct such defects that are reported by HRSD or CITY within one (1) year of the final acceptance of the Improvements.

G. Construction Record Drawings

ENGINEER shall provide HRSD and CITY approved construction record drawings in accordance with HRSD's Design and Construction Standards, latest edition, Hampton Roads Planning District Commission Regional Construction Standards, latest edition, and City's Utility Policy and Design and Construction Standards, latest edition.

V. GOVERNING LAW

This Agreement shall be deemed to be a Virginia Contract and shall be governed as to all matters whether of validity, interpretations, obligations, performance or otherwise exclusively by the laws of the Commonwealth of Virginia, and all questions arising with respect thereto shall be determined in accordance with such laws. Regardless of where actually delivered and accepted, this contract shall be deemed to have been delivered and accepted by the parties in the Commonwealth of Virginia.

VI. TERMINATION

Anything herein or elsewhere to the contrary notwithstanding, this Agreement and the obligations of the parties hereunder may be terminated by CITY or HRSD in the event that the other party breaches or violates any material provision of this Agreement or fails to perform any material covenant or agreement to be performed by either party under the terms of this Agreement and such breach, violation or failure is not cured within sixty (60) days of the defaulting party's receipt of written notice of such breach from the non-defaulting party; or by mutual agreement of CITY and HRSD.

VII. NOTICE

Any notice, communication or request under this Agreement shall be provided in writing by either (a) certified mail, return receipt requested, postage prepaid, or (b) a nationally recognized overnight delivery service (next business day service), or (c) hand-delivery, if the receipt of the same is evidenced by the signature of the addressee or authorized agent, and addressed to the following:

For: HRSD

If by U.S. Postal Service:
General Manager
P. O. Box 5911
Virginia Beach, VA 23471-0911

If by Overnight Mail:
General Manager
1434 Air Rail Avenue
Virginia Beach, VA 23455

With Copy to:

Conway H. Sheild, III
Jones, Blechman, Woltz and Kelly
701 Town Center Drive, Suite 200
Newport News, VA 23606
Telephone: 757-873-8056

For: City of Hampton
Mary Bunting, City Manager
City of Hampton, Virginia
8th Floor, City Hall
22 Lincoln St. Hampton, VA 23669
Telephone: 757-727-6392

With Copy to:
Cheran Cordell Ivery, City Attorney
8th Floor, City Hall
22 Lincoln St. Hampton, VA 23669
Telephone: 757-727-6127

VIII. ASSIGNMENT

No party may assign its rights in this Agreement without the prior written consent of the other party.

IX. AMENDMENT

This Agreement may be amended only by a written instrument duly executed by the parties.

X. SEVERABILITY

If any provision of this Agreement or the application thereof to any circumstance shall be determined to be invalid, illegal or unenforceable to any extent, the remainder of this Agreement and the application thereof shall not be affected and shall continue to be valid, in effect and enforceable to the fullest extent permitted by law.

XI. DAMAGES

If by omission that constitutes gross negligence or willful misconduct or failure to abide by engineering standards or failure to abide by the Final Plans and Specifications described herein, the negligent party shall be responsible for the payments for damages to any other party to this Agreement. No provision, covenant or statement contained in this Agreement shall be deemed, in any manner, to be a waiver of the sovereign immunity and/or other available government immunities of the CITY and HRSD, from tort or other liability.

XII. INSURANCE

HRSD and CITY have the right to review and approve insurance coverage in the various insurance categories that HRSD and CITY deem necessary to be carried by the Contractor, Subcontractor or any other parties to this Agreement. Proof of insurance shall be provided at the request of HRSD or CITY and the insurance coverage shall be maintained during the term of this Agreement. CITY and HRSD shall be named as additional insureds for any requirement insurance coverage. Both HRSD and CITY waive the right of subrogation against each other for damages and personal injury to the extent allowed by law.

XIII. TERM OF AGREEMENT

The term of the Agreement will commence on the date the Agreement is entered into and be completed when each party has completely performed its obligations hereunder.

XIV. FORCE MAJEURE

In the event of enforced delay in the performance of such obligations due to unforeseeable causes beyond the control of CITY or HRSD or the Contractor and without their fault or negligence, including, but not restricted to, acts of God or of the public enemy, acts of the government, fires, floods, epidemics, quarantine restrictions, strikes, freight embargos, and unusually severe weather or delays of subcontractors due to such causes; it being the purpose and intent of this provision that in the event of the occurrence of any such enforced delay, the time or times for performance of the obligations of the parties shall be extended for the period of the enforced delay.

XV. INDEPENDENT CONTRACTOR

If the Contractor(s) hire subcontractors or independent contractors, HRSD and CITY have the right to approve them by reviewing their requisite experience and knowledge to complete the work assigned and to determine if they carry insurance in accordance with Article XII herewith.

XVI. SUBCONTRACTOR

If any Contractors or subcontractors are selected by any party to this Agreement for completion of the work contemplated herein, HRSD and CITY has the right to approve the same and to determine if they carry insurance in accordance with Article XII herewith.

XVII. WAIVER

No waiver of breach of any term or provision of this Agreement shall be construed to be, or shall constitute, a waiver of any other breach of this Agreement. No waiver shall be binding unless in writing and signed by the parties waiving the breach.

The failure of any party to seek redress for violation of or to insist upon the strict performance of any covenant or condition of this Agreement shall not prevent a subsequent act, which would have originally constituted a violation, from having the effect of an original violation.

The rights and remedies provided by this Agreement are cumulative and the use of any one right or remedy by any party shall not preclude or waive the right to use any or all other remedies. Such rights and remedies are given in addition to any other rights the parties may have by law, statute, ordinance or otherwise.

XVIII. INTEGRATION

This Agreement constitutes the entire understanding among the parties. No provision of this Agreement may be waived, modified or amended except by an instrument signed by the party against whom the enforcement of such waiver, modification or amendment is sought. No waiver by either party of any failure or refusal by the other party to comply with its obligations hereunder shall be deemed a waiver of any other or subsequent failure or refusal to comply.

Signature pages follow

IN WITNESS WHEREOF, the Hampton Roads Sanitation District (HRSD) Commission has caused this Agreement to be signed on its behalf by its General Manager in accordance with authorization granted at its regular meeting held on _____, 2022.

HAMPTON ROADS SANITATION DISTRICT

By _____
Jay Bernas, P.E., General Manager

COMMONWEALTH OF VIRGINIA,
CITY OF VIRGINIA BEACH, to-wit:

The foregoing Agreement was acknowledged before me this _____ day of _____, 2022, by Jay Bernas, HRSD General Manager.

Notary Public

My commission expires:

Registration No.:

Agreement for Cost Sharing of the HRSD HAMPTON TRUNK SEWER EXTENSION DIVISIONS I & J
PHASE II (BH014220) and
W COUNTY STREET GRAVITY SEWER REPLACEMENT

IN WITNESS WHEREOF, the City of Hampton (CITY) has caused this Agreement to be signed by the City Manager or her designee on its behalf.

CITY OF HAMPTON

By: [Signature]
Name: Mary B Bunting
Title: City Manager

ATTEST:

[Signature]
Clerk of Council or designee

COMMONWEALTH OF VIRGINIA,
CITY or COUNTY OF Hampton, to-wit:

The foregoing Agreement was acknowledged before me this 15th day of April, 2022, by Mary B Bunting [Name], City Manager [Title], City of Hampton, Virginia.

[Signature]
Notary Public

My commission expires: 9/30/2023

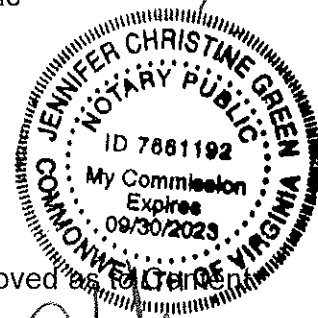
Registration No.: 7661192

Approved as to Form:

[Signature]
City Attorney or designee

Approved as to Content:

[Signature]
Director of Public Works or designee



Agreement for Cost Sharing of the HRSD HAMPTON TRUNK SEWER EXTENSION DIVISIONS I & J
PHASE II (BH014220) and
W COUNTY STREET GRAVITY SEWER REPLACEMENT

Exhibit 1 - HRSD Facilities Location Map

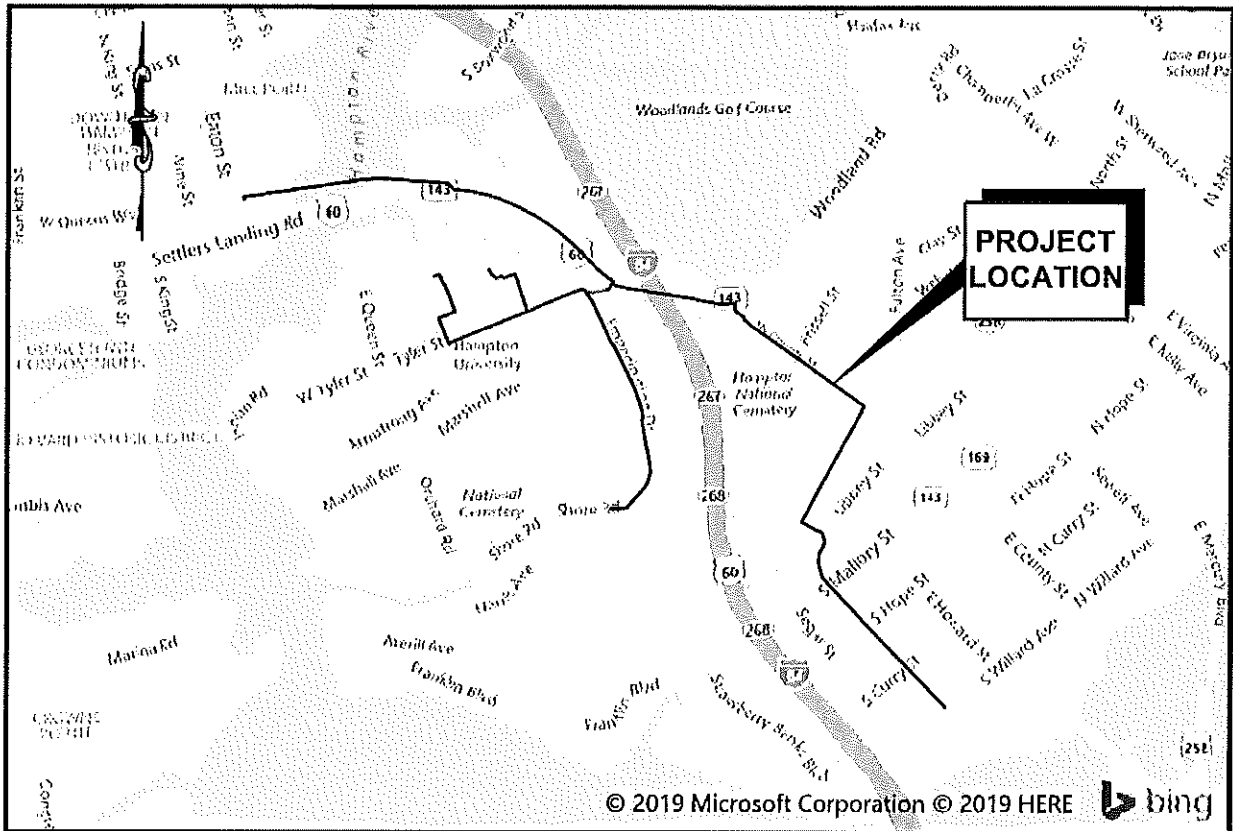
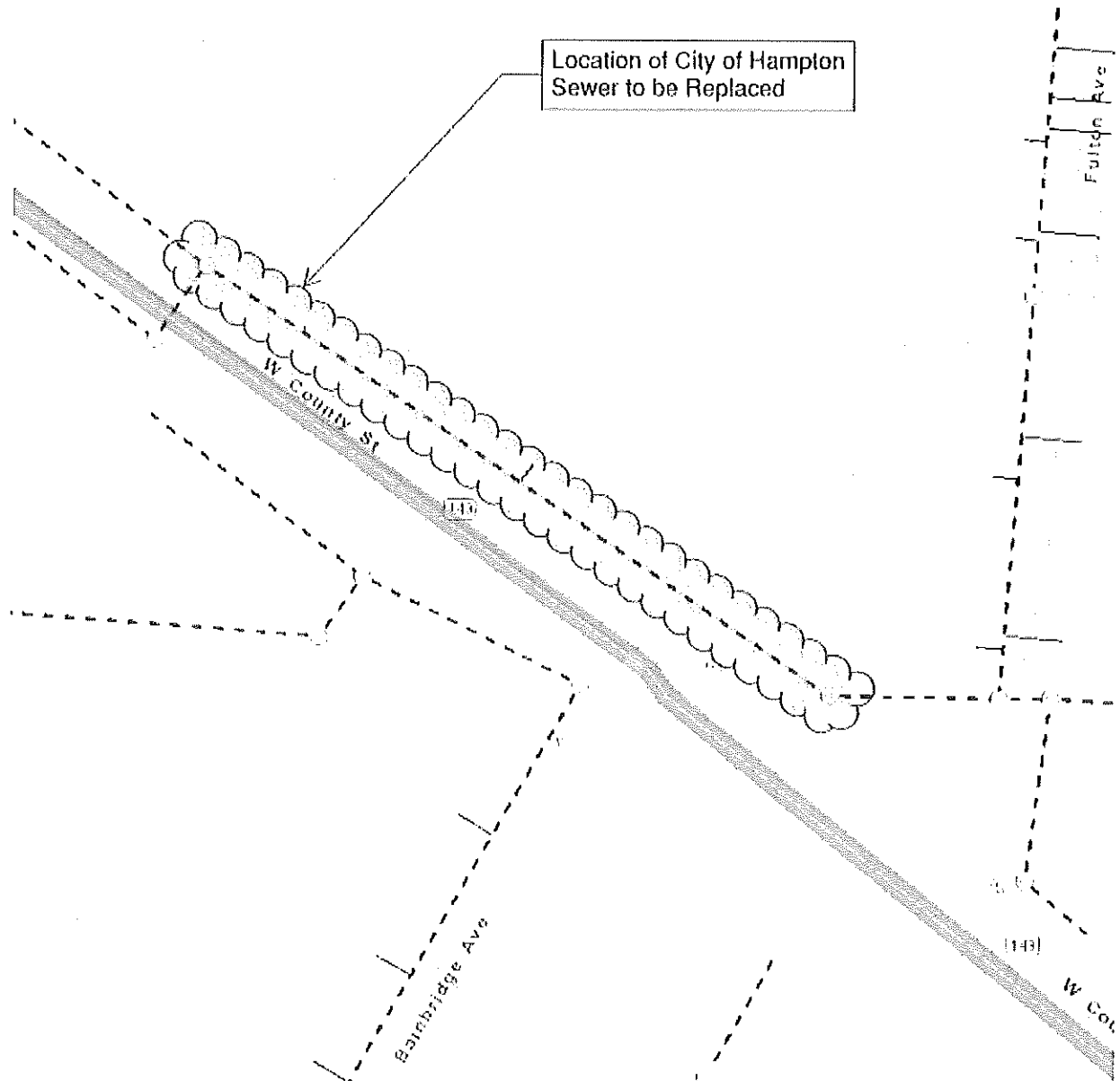


Exhibit 2 - CITY Facilities Location Map



AGENDA ITEM 14. – May 24, 2022

Subject: James River SWIFT Facility and James River Treatment Plant Advanced Nutrient Reduction Improvements
Additional Appropriation and Approval of Stipulated Price

Recommended Actions:

- a. Appropriate additional funding in the amount of \$35,086,355 to the James River SWIFT Facility project (GN016360).
- b. Appropriate additional funding in the amount of \$41,923,326 to the James River Treatment Plant Advanced Nutrient Reduction Improvements project (JR013400).
- c. Approve a Stipulated Price of \$534,098,839 to the Comprehensive Agreement with Ulliman Schutte-Alberici Joint Venture Team (US-A).

CIP Project: GN016360**Regulatory Requirement:** Integrated Plan – SWIFT

Budget	\$270,613,184
Previous Expenditures and Encumbrances	(\$257,161,230)
Available Balance	\$13,451,954
Proposed Change Order No. 2 to US-A for the Stipulated Price	(\$32,401,689)
Proposed Contingency	(\$14,248,790)
Furniture, Fixtures and Equipment (FFE), Landscaping, Ops Relocation	(\$1,887,830)
Project Shortage/Requested Additional Funding	(\$35,086,355)
Revised Total Project Authorized Funding	\$305,699,539

Contract Status with Change Orders:	Amount	Cumulative % of Contract
Original Contract for US-A	\$251,710,621	
Total Value of Previous Change Orders	\$863,531	0.3%
Requested Change Order	\$32,401,689	
Total Value of All Change Orders	\$33,265,220	13%
Revised Contract Value	\$284,975,841	

Time (Additional Calendar Days)	79 days
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CIP Project: JR013400**Regulatory Requirement:** Integrated Plan – SWIFT

Budget	\$231,764,106
Previous Expenditures and Encumbrances	(\$223,833,572)
Available Balance	\$7,930,534
Proposed Change Order No. 3 to US-A for the Stipulated Price	(\$31,114,407)
Proposed Contingency	(\$17,116,733)
FFE, Landscaping, Ops Relocation	(\$1,622,720)
Project Shortage/Requested Additional Funding	(\$41,923,326)

Contract Status with Change Orders:	Amount	Cumulative % of Contract
Original Contract for Contractor Name	\$216,362,418	
Total Value of Previous Change Orders	\$1,646,173	0.8%
Requested Change Order	\$31,114,407	
Total Value of All Change Orders	\$32,760,580	15%
Revised Contract Value	\$249,122,998	

Time (Additional Calendar Days)		79 days
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Project Description: The project consisting of two HRSD capital projects: The James River SWIFT Facility (GN016360) project will include design, construction, and commissioning of new facilities that will apply advanced water treatment to highly treated wastewater from the James River Treatment Plant (JRTP). The resulting SWIFT Water will meet drinking water quality standards and be compatible with the Potomac Aquifer. The proposed facility is expected to have an advanced treatment capacity of 16 million gallons per day (MGD). The James River Treatment Plant Advanced Nutrient Reduction Improvements (JR013400) project will include the design, construction, and commissioning of improvements to the secondary treatment process at the JRTP, including new secondary clarifiers.

The attached [map](#) depicts the project location.

Project Justification: The GN016360 project, the SWIFT 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 JR013400 project, the advanced secondary treatment improvements, including nutrient reduction measures, will be required to provide stable source water quality that meets the influent requirements of the full-scale SWIFT Facility at the JRTP.

Stipulated Price Description and Analysis of Cost: This project is being procured through the Design-Build delivery method. On January 26, 2021, Commission approved a Comprehensive Agreement with US-A with a Contract Cost Limit (CCL) of \$468,073,039. Having completed the schematic design and conducted detailed negotiations with all the regulatory agencies that must approve this project, a Stipulated Price has been negotiated with US-A.

The CCL price was based on the Basis of Design Report (BODR) and Proposal Amendment, which has since been revised. The changes to the project have resulted in approximately \$23.6M of impact of the project and include:

1. Addition of a facility for storage and pump methanol to the secondary treatment process.
2. Reduction of the size and complexity of the Moving Bed Bioreactor (MBBR) facility and relocation of the SWIFT Equalization Tank.
3. Relocation of the existing 36-inch HRSD force main from its location within the middle of the SWIFT area to the edge of this area.
4. Modifications of the Administration Building.
5. Modifications to the Recycled Activated Sludge (RAS) pumping station.
6. Deletion of the proposed Outfall Distribution Structure.
7. Numerous other project modifications (>40 items have been negotiated).

In addition to the negotiated changes in scope, US-A requested consideration of the escalation experienced between the initial CCL, which was provided in October 2020, and the current market conditions in May 2022. US-A provided quote-to-quote differences for 23 items that will be purchased for project completion and provided an estimate of the escalation experienced on bulk materials during the period between February and May 2022. The impact of escalation on this project is \$39.9M of the total proposed Change Order.

The costs were prepared by US-A and reviewed with HRSD and HRSD's Owner's Consultant, AECOM. A breakdown of the costs was provided. Staff agrees and recommends the Comprehensive Agreement be amended to include the new Stipulated Price.

Funding Description: The additional appropriations requested include the funds required to issue the proposed Change Order and a five percent Owner allowance to accommodate any additional unforeseen conditions. The request also includes funding for coordination with Dominion Energy and \$3,510,550 for FFE, Landscaping and relocation of Operations staff into temporary facilities (not included in the Comprehensive Agreement). The Program Manager, AECOM, will provide Owner's Consultant services under the SWIFT Program Management (GN016320) project during the construction phase of the Comprehensive Agreement. The task order for these services is currently under negotiation and will be submitted for Commission consideration separately.

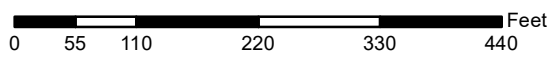
These projects are currently included in the Water Infrastructure Finance and Innovation Act (WIFIA) programmatic loan and HRSD's programmatic loan under the Virginia Clean Water Revolving Loan Fund (CWRLF). Additionally, the elements associated with nutrient reduction will be submitted for grant funding under the Water Quality Improvement Fund (WQIF).

Staff will provide a briefing during the meeting.

<u>Schedule:</u>	Stipulated Price	May 2022
	Substantial Completion	April 2026
	Project Completion	October 2026



- GNO16360**
- 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



GNO 1 6360

James River SWIFT Facility



Newport News

AGENDA ITEM 15. – May 24, 2022

Subject: Nansemond Treatment Plant Struvite Recovery Facility Improvements and Nansemond Treatment Plant Digester Capacity Upgrade
Additional Appropriation, Contract Award (>200,000), and Task Order (>200,000)

Recommended Actions:

- a. Appropriate additional funding in the amount of \$60,113,374 (\$35,099,511 for NP013700 and \$25,013,863 for NP014700).
- b. Award a contract to MEB General Contractors, Inc. in the amount of \$59,773,000 (\$29,043,990 for NP013700 and \$30,729,010 for NP014700).
- c. Approve a task order with HDR, Inc. in the amount of \$3,657,815 (\$1,944,755 for NP013700 and \$1,713,060 for NP014700).

Regulatory Requirement: None

CIP Project: NP013700

Budget	\$6,628,400
Previous Expenditures and Encumbrances	(\$6,382,567)
Available Balance	\$245,833
Proposed Contract Award to Contractor	(\$29,043,990)
Requested Task Order	(\$1,944,755)
Proposed Contingency	(\$4,356,599)
Project Shortage/Requested Additional Funding	(\$35,099,511)
Revised Total Project Authorized Funding	<u>\$41,727,911</u>

Contract Status with Task Orders	Amount
Original Contract with Engineer	\$70,255
Total Value of Previous Task Orders	\$2,308,590
Requested Task Order	\$1,944,755
Total Value of All Task Orders	4,253,345
Revised Contract Value	\$4,323,600
Engineering Services as a % of Construction	15%

CIP Project: NP014700

Budget	\$10,500,000
Previous Expenditures and Encumbrances	(\$1,535,342)
Available Balance	\$8,964,658
Proposed Contract Award to Contractor	(\$30,729,010)
Requested Task Order	(\$1,713,060)
Proposed Contingency	(\$1,536,451)
Project Shortage/Requested Additional Funding	(\$25,013,863)
Revised Total Project Authorized Funding	\$35,513,863

Contract Status with Task Orders:	Amount
Original Contract with Engineer	\$199,423
Total Value of Previous Task Orders	\$1,416,362
Requested Task Order	\$1,713,060
Total Value of All Task Orders	\$3,129,422
Revised Contract Value	\$3,328,845
Engineering Services as a % of Construction	11%

Type of Procurement: Competitive Bid

In accordance with HRSD's competitive sealed bidding procedures, the Engineering Department advertised and solicited bids directly from potential bidders. The project was advertised on February 24, 2022, and two bids were received on April 26, 2022. The bids received are listed below:

Bidder	Bid Amount
MEB General Contractors, Inc	\$59,773,000
Clark Construction, LLC	\$63,713,265

Engineer Estimate: \$50,195,323

The design engineer evaluated the bids based upon the requirements in the invitation for bid and recommends award to the lowest responsive and responsible bidder MEB General Contractors, Inc. in the amount of \$59,773,000.

Project Description: This project combines several previous CIPs into one integrated effort to expand and adapt most of the solids handling parts of Nansemond Plant to accommodate flow from Boat Harbor Treatment Plant (BHTP). Implementation of the WASSTRIP® (Waste Activated Sludge Stripping to Remove Internal Phosphorous) process and improvements to the Struvite Recovery Facility (SRF) are included. The process consists of the storage of thickened waste activated sludge 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 will be transferred to the SRF reactors along with the existing centrate stream. The SRF upgrade includes improvement of the chemical system, additional reactor capacity, and upgrades to the ancillary equipment.

This project will also improve and replace peripheral equipment associated with the Nansemond Treatment Plant (NTP) anaerobic digester process in advance of receiving consolidated wastewater from BHTP. The following equipment will be upgraded or replaced to meet projected FY2026 loading: digester mixing pumps and piping; centrifuge feed pumps; process boilers; sludge heat exchangers; digester gas collection, metering, and waste gas burners; deammonification, digestion process instrumentation and controls; and Digestion process electrical systems.

The attached [maps](#) depict the project location

Project Justification: This project will achieve the following upgrades for the Nansemond Treatment Plant (NTP): improve biological phosphorus removal reliability and decrease effluent phosphorus concentrations to decrease 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 double facility production of Crystal Green which increases operating revenue; 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 struvite recovery facility

Wastewater from the BHTP service area will be diverted and combined with existing NTP primary influent beginning in 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 systems 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. Implementation of the WASSTRIP process provides pre-dewatering facilities needed to make beneficial use of the capacity enhancements provided under this project.

Funding Description: Additional appropriation is requested to construct this project, which is necessary to facilitate adequate biological phosphorus removal and digestion in advance of receiving BHTP flows at NTP. When this project was initiated in 2018 the scale of the effort was much smaller, but with the decision to treat BHTP flow at NTP the planning, design, and construction of the project has become much more complex for reasons mentioned in the project justification. The reason for the 15% contingency proposed for NP013700 is that the SRF chemical system design still needs to be finalized and is dependent on results from an ongoing pilot study. The proposed contingency for the NP014700 project is 5%.

Task Order Description: This task order will provide construction phase services. A total fee of \$3,657,815 was negotiated with HDR including \$1,944,755 for NP013700 and \$1,713,060 for NP014700, Inc. The fees are 7% and 6% of the construction projects respectively which are comparable to other projects of similar size and complexity.

<u>Schedule:</u>	Construction	July 2022
	Project Completion	October 2024



HAMPTON ROADS BLTWY

HAMPTON ROADS BLTWY

NP013700

WTP

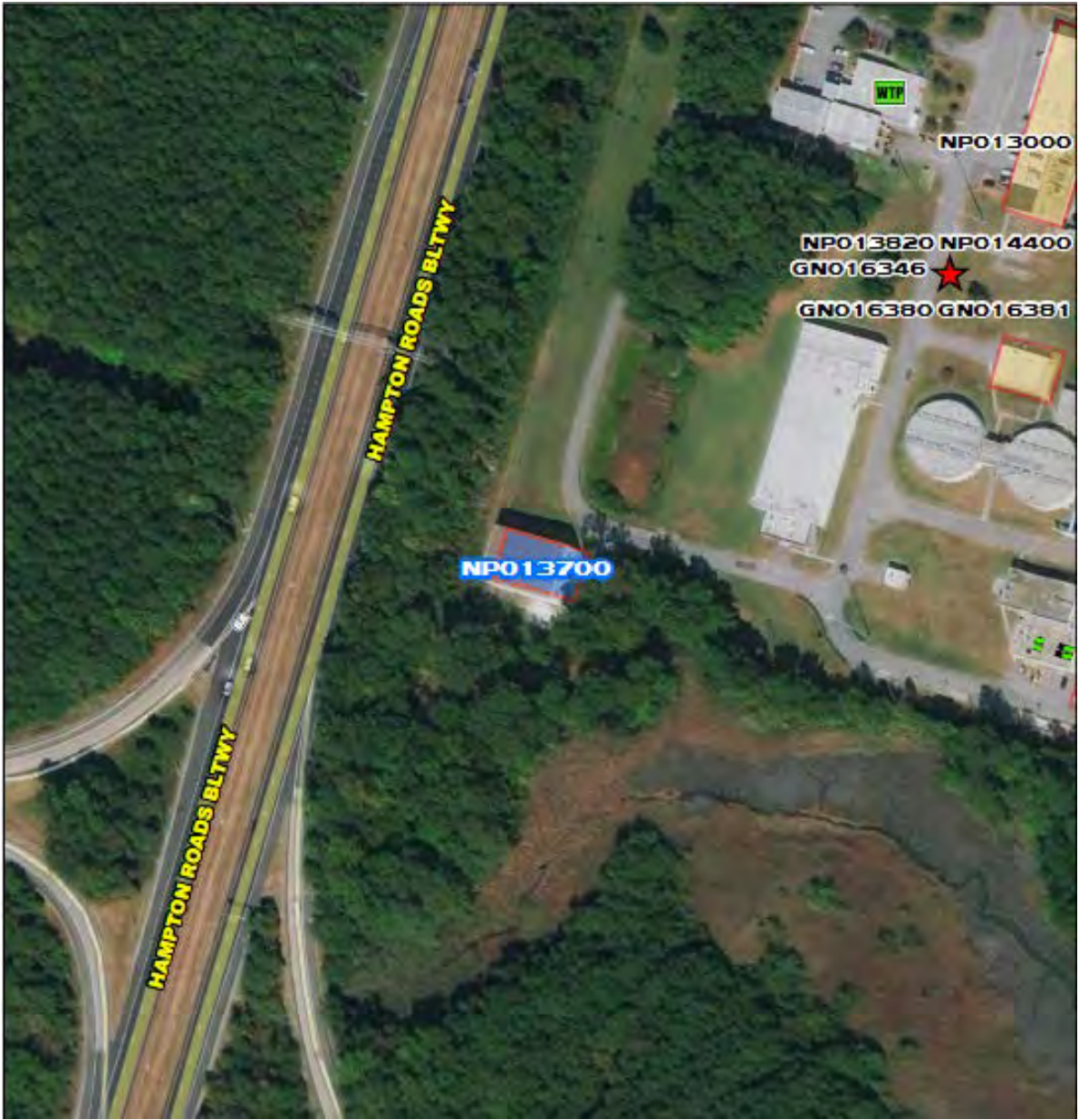
NP013000

NP013820 NP014400

GNO16346



GNO16380 GNO16381



AGENDA ITEM 16. – May 24, 2022

Subject: Park Avenue Pump Station Replacement
Additional Appropriation, Contract Award (>\$200,000) and Task Order (>\$200,000)

Recommended Actions:

- a. Appropriate additional funding in the amount of \$9,411,307.
- b. Award a contract to Shaw Construction Corporation in the amount of \$11,414,000.
- c. Approve a task order with Gannett Fleming, Inc. in the amount of \$1,612,650.

CIP Project: VP018000

Regulatory Requirement: Rehab Action Plan Phase 2 (2025 completion date)

Budget	\$5,955,271
Previous Expenditures and Encumbrances	(\$1,198,528)
Available Balance	\$4,756,743
Proposed Contract to Shaw	(\$11,414,000)
Proposed Task Order to Gannett Fleming	(\$1,612,650)
Proposed Contingency	(\$1,141,400)
Project Shortage/Requested Additional Funding	(\$9,411,307)
Revised Total Project Authorized Funding	\$15,366,578

Type of Procurement: Competitive Bid

In accordance with HRSD's competitive sealed bidding procedures, the Engineering Department advertised and solicited bids directly from potential bidders. The project was advertised on March 14, 2022, and six bids were received on April 21, 2022.

Bidder	Bid Amount
Shaw Construction Corporation	\$11,414,000
Bridgeman Civil, Inc.	\$11,500,000
American Contracting and Environmental Services, Inc.	\$11,783,000
MEB General Contractors, Inc.	\$12,973,850
Kevcor Contracting Corporation	\$15,285,000
Trident Civil, Inc.	\$15,867,344

HRSD/Engineer Estimate: \$13,232,996

The design engineer, Gannett Fleming, evaluated the bids based upon the requirements in the invitation for bid and recommends award to the lowest responsive and responsible bidder, Shaw Construction Corporation, in the amount of \$11,414,000.

Contract Status with Task Orders:	Amount
Original Contract with Gannett Fleming	\$177,355
Total Value of Previous Task Orders	\$805,852
Requested Task Order	\$1,612,650
Total Value of All Task Orders	\$2,418,502
Revised Contract Value	\$2,595,857
Engineering Services as % of Construction (CACI)	11%

Project Description: This project will construct a replacement pump station for the existing Park Avenue Pump Station which was built in 1922. The attached [map](#) depicts the project location.

Project Justification: The existing facility was inspected as part of the Condition Assessment Program and was recommended for replacement due to operational issues related to aging equipment and infrastructure. The project is included in HRSD's EPA Rehabilitation Action Plan Phase Two and needs to be completed by May 2025.

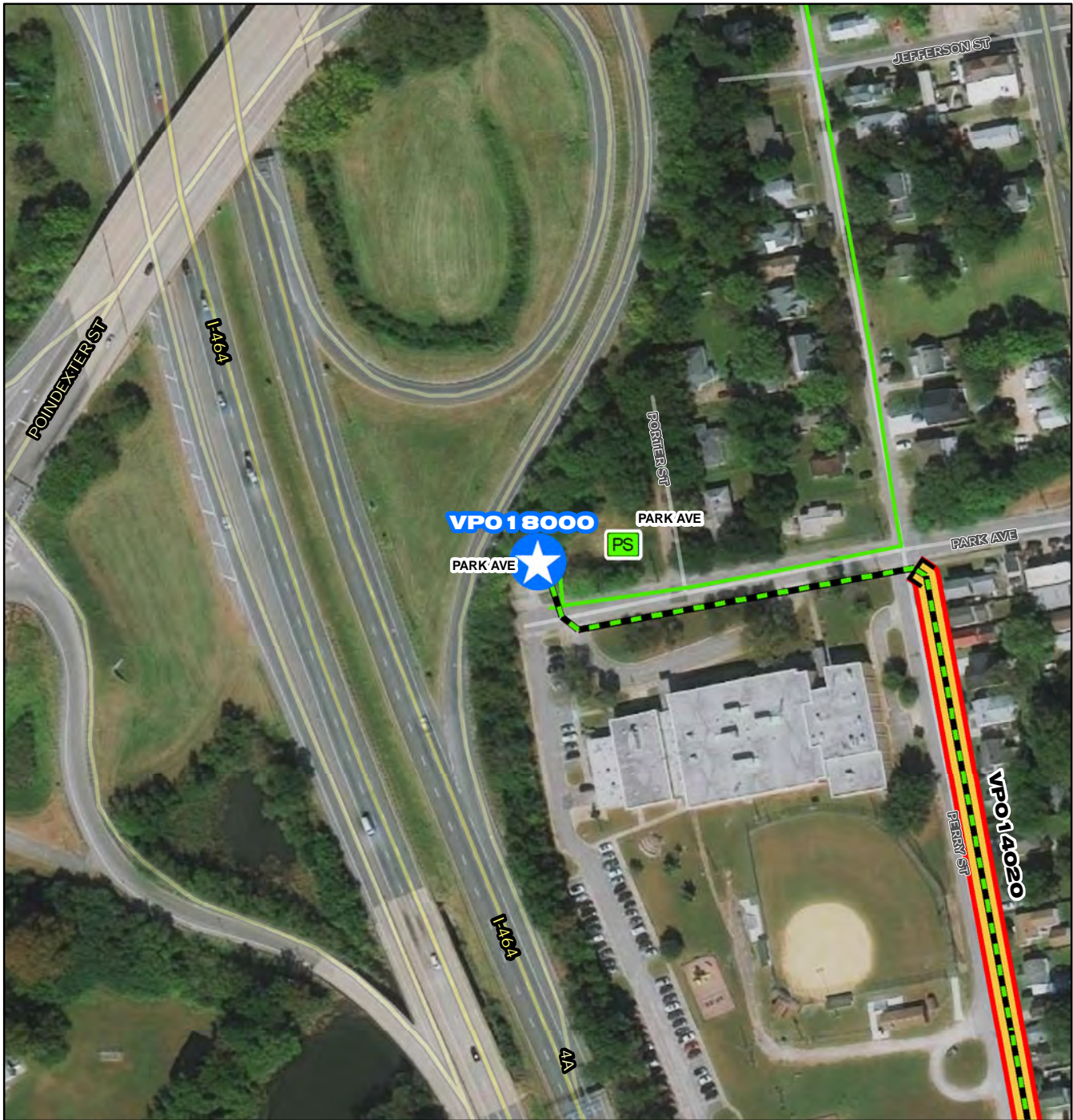
Task Order Description: This task order will provide additional design services that were not included in the original scope, preconstruction services, and services during construction including contract administration and field engineering and inspection. A meeting was held to discuss the project and scope of services. A fee of \$1,612,650 was negotiated based upon anticipated hours required for this effort. The cost for construction phase services is approximately 11 percent of the total construction cost and is within the range of comparable projects.

Funding Description: The original CIP project estimate was based on lower flows. However, during design the capacity of the pump station was significantly increased to handle larger flows. Also, the recent trend in the construction market has seen a substantial increase in construction cost due to inflation and demand for construction materials. The lowest responsive and responsible bid amount of \$11,414,000 exceeds the current balance available for the CIP project. This request includes a 10% contingency to accommodate any additional unforeseen conditions.

Analysis of Cost: The task order for Gannett Fleming has been reviewed and is reasonable. The fee for Contract Administration is approximately 5.74% of construction cost. Field Engineering and Inspection is 5.43%. Both rates are on par with comparable projects of similar size and complexity.

Schedule:

Bid	March 2022
Construction	June 2022
Project Completion	September 2024



VPO 18000

- 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

VPO 18000

Park Avenue Pump Station Replacement

N
W — E
S

CIP Location

Chesapeake

AGENDA ITEM 17. – May 24, 2022

Subject: West Avenue and 35th Street Interceptor Force Main Replacement
Contract Award (>\$200,000) and Task Order (>\$200,000)

Recommended Actions:

- a. Award a contract to Tidewater Utility Construction, Inc. (TUC) in the amount of \$2,084,213.
- b. Approve a task order with Kimley Horn and Associates (KHA) in the amount of \$337,806.

CIP Project: BH014000

Regulatory Requirement: Rehab Action Plan Phase 2 (2025 completion)

Budget	\$4,404,011
Previous Expenditures and Encumbrances	(\$396,936)
Available Balance	\$4,007,075

Contract Status with Task Orders:	Amount
Original Contract with Engineer	\$98,100
Total Value of Previous Task Orders	\$223,238
Requested Task Order	\$337,806
Total Value of All Task Orders	\$561,044
Revised Contract Value	\$659,144
Engineering Services as % of Construction	31.6%

Type of Procurement: Competitive Bid

In accordance with HRSD's competitive sealed bidding procedures, the Engineering Department advertised and solicited bids directly from potential bidders. The project was advertised on March 16, 2022, and 4 bids were received on April 20, 2022. The bids received are listed below:

Bidder	Bid Amount
Tidewater Utility Construction, Inc.	\$2,084,213
Basic Construction Company, LLC	\$2,236,508
Bridgeman Civil, Inc.	\$2,278,004
Gaston Brothers Utilities, LLC	\$2,349,999

HRSD/Engineer Estimate: \$1,998,858

The design engineer, Kimley Horn and Associates, evaluated the bids based upon the requirements in the invitation for bid and recommends award to the lowest responsive and responsible bidder, Tidewater Utility Construction, Inc., in the amount of \$2,084,213.

Project Description: This project will replace approximately 2,600 linear feet of cast iron force main, primarily along West Avenue in the City of Newport News.

The attached [map](#) depicts the project location.

Project Justification: North Shore Operations has experienced six breaks on this line due to a variety of reasons including stress fractures and circumferential cracks. Additionally, this force main is cast iron and was installed in the 1940's and is therefore a brittle material that is susceptible to soil settlement and local loading that could lead to localized longitudinal fractures.

Task Order Description: This task order will provide the required construction phase services. A fee of \$337,806 was negotiated with Kimley Horn and Associates and is comparable to other projects of similar size and complexity.

Analysis of Cost: In accordance with HRSD's competitive sealed bidding procedures, the Engineering Department advertised and solicited bids directly from potential bidders. Four bids were received and evaluated based upon the requirements of the Invitation for Bid. TUC is the apparent low bidder with a bid amount of \$2,084,213. The Engineer's Estimate is within 4.1% of the lowest responsive and responsible bid amount. The cost for the negotiated task order with Kimley Horn and Associates is 16.2% of the low bid amount. This percentage is higher than anticipated; however, the level of effort is appropriate and covers VCWRLF requirements, and 24-hour inspections for certain components of the work.

<u>Schedule:</u>	Construction	July 2022
	Project Completion	June 2023



31st St

31st St

HDD

30th St

29th St

28th St

Stormwater Relocation

HRSD 25th St. PS

30th St

29th St

28th St

27th St

26th St

25th St

25th St

24th St

Washington Ave

60

AGENDA ITEM 18. – May 24, 2022

Subject: Willard Avenue Pump Station Replacement (BH013020) and Hampton Trunk Sewer Extension Division K Gravity Improvements (BH014900)
Additional Appropriation, Contract Award (>\$200,000) and Task Order (>200,000)

Recommended Actions:

- a. Appropriate additional funding in the amount of \$7,812,822 for CIP Project BH013020.
- b. Award a contract to Kiewit Infrastructure South, Company in the amount of \$16,171,776 (\$14,422,138 for BH013020 and \$1,749,638 for BH014900).
- c. Approve a task order with RK&K, LLP in the amount of \$1,237,670.

CIP Project: BH013020 and BH014900

Regulatory Requirement: Rehab Action Plan Phase 2 for BH014900 only (2025 completion)

CIP Project: BH013020

Budget	\$10,000,000
Previous Expenditures and Encumbrances	(\$1,431,904)
Available Balance	\$8,568,096
Proposed Contract Award to Contractor	(\$14,422,138)
Requested Task Order	(\$1,237,670)
Proposed Contingency	(\$721,110)
Project Shortage/Requested Additional Funding	(\$7,812,822)
Revised Total Project Authorized Funding	\$17,812,822

Contract Status with Task Orders:	Amount
Original Contract with Engineer	\$107,410
Total Value of Previous Task Orders	\$614,319
Requested Task Order	\$1,237,670
Total Value of All Task Orders	\$1,851,989
Revised Contract Value	\$1,959,399
Engineering Services as % of Construction	13.6%

CIP Project: BH014900

Budget	\$4,644,400
Previous Expenditures and Encumbrances	(\$442,204)
Available Balance	\$4,202,196

Type of Procurement: Competitive Bid

In accordance with HRSD's competitive sealed bidding procedures, the Engineering Department advertised and solicited bids directly from potential bidders. The project was advertised on April 1, 2022, and 4 bids were received on May 3, 2022. The bids received are listed below:

Bidder	Bid Amount
Kiewit Infrastructure South, Co.	\$16,171,776*
Trident Civil, Inc.	\$16,615,941
MEB General Contractors, Inc.	\$19,073,000
Bridgeman Civil, Inc.	\$21,520,344

*Note: The bid price includes a math error on a line item for a unit price allowance that does not affect the order of the award or contract price.

HRSD/Engineer Estimate: \$18,646,912

The design engineer, RK&K, LLP, evaluated the bids based upon the requirements in the invitation for bid and recommends award to the lowest responsive and responsible bidder, Kiewit Infrastructure South, Co., in the amount of \$16,171,776.

Project Description: The Willard Avenue Pump Station Replacement project includes the replacement of the existing Willard Avenue Pump Station to address conditional issues and improve pump station capacity for a growing service area while reducing operational and maintenance demands. The proposed replacement will also include new gravity sewer piping from the existing pump station and a new force main connection to tie into the new force main being installed under a separate CIP.

The Hampton Trunk Sewer Extension Division K Gravity Improvements project will rehabilitate and/or replace 3,700 linear feet of 30-inch diameter gravity sewer pipeline and associated manholes.

The attached [map](#) depicts the project location.

Project Justification: The Willard Avenue Pump Station Replacement project will improve pump station capacity for the service area and reduce operational and maintenance demands. Additionally, a new pump station will accommodate a wide range of wet weather flows as well as offer operational flexibility during dry weather periods. The existing Willard Avenue Pump Station is located at 219 National Avenue in Hampton, Virginia and was constructed in 1944. The existing pump station parcel is only 0.14 acres, which does not allow for any expansion and does not meet current design standards for new pump station sites.

The Hampton Trunk Sewer Extension Division K Gravity Improvements project is required due to condition assessment activities indicating that these assets present a material risk of failure due to inflow and infiltration.

Task Order Description and Analysis of Cost: This task order will provide construction phase services. A fee of \$1,387,707 was negotiated with RK&K, LLP, and is 8.58% of the construction cost. Of this proposed fee, \$1,237,670 is allocated for BH013020 and \$150,038 is allocated for BH014900. The fee proposal is comparable to other projects of similar size and complexity.

Funding Description: The original CIP project estimate for BH013020 did not foresee the current market conditions as they relate to inflation, labor shortages and long lead times for materials. This

request includes a 5% contingency to accommodate any unforeseen conditions. Additional appropriation is being requested for construction contract award and construction administration and inspection services. The amount for this work exceeds the balance available for this CIP project by \$7,812,822.

No additional funding is being requested for BH014900 at this time.

<u>Schedule:</u>	Construction	July 2022
	Project Completion	December 2024



New FM provided under separate CIP to convey flow from new Willard Avenue PS (BH013020)

BH013020 New Willard Ave Pump Station

Existing Willard Ave Pump Station

BH014900 Manhole replacement and point repair

AGENDA ITEM 19. – May 24, 2022

Subject: Wilroy Pressure Reducing Station and Off-line Storage
Alternative Project Delivery

Recommended Action: Approve the Construction Management project delivery method for the Wilroy Pressure Reducing Station (PRS) and Off-line Storage project.

CIP Project: NP014000

Regulatory Requirement: Integrated Plan - HPP1 (2030 completion)

Project Description: This project will install a new pressure reducing station and a 3-million gallon storage tank in Suffolk along the Wilroy Road corridor. This project is one of the High Priority Regional Wet Weather Management Plan (RWWMP) projects that must be constructed by the end of 2030. The project completion date should also coincide closely with the completion of the proposed Suffolk Pump Station project.

The attached [map](#) depicts the project location.

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 investment will reduce Sanitary Sewer Overflow (SSO) volume at the 5-year level of service by 47%.

Brief: The award of an engineering design contract to the firm of Brown & Caldwell was approved at the December 2021 Commission meeting for preliminary engineering report (PER) development. HRSD stakeholders utilized a project delivery decision matrix to determine that the Construction Management delivery method would be a valuable method for this project. This project meets the Code of Virginia's "complex project" requirement to accommodate an accelerated schedule, difficult site location, and intricate phasing.

A Construction Management delivery process is more advantageous than a sealed competitive bid for this project for the following reasons:

1. The Construction Management delivery method can be utilized to better control project schedule, an important feature because adjacent capital projects have been designed to assume that the tank and PRS are in service;
2. The Construction Management delivery will allow for contractor input during the design, which will be beneficial for the complex and impactful construction on a potentially small site, restricted by wetlands and utilities;
3. The Construction Management delivery method will facilitate a single responsible construction entity to carefully manage the diverse and numerous subcontractors required to perform the work, to remain adaptable to changes in construction activities by external entities, both on-site and off-site, and to coordinate design changes resulting from neighboring projects;
4. The Construction Management delivery method will allow for the early and best value selection of subcontractors and equipment and to identify risks early related to limited resources;
5. The Construction Management delivery method will allow the contractor to consider the cost saving alternatives during the design and to provide a guaranteed maximum price during the final design stage.

The Virginia Public Procurement Act states that for Construction Management project delivery, the Construction Manager is to be procured and under contract no later than the completion of the schematic phase of design. The desired advertisement of the Request for Qualifications (RFQ) is June 2022 to align with the availability of the draft PER to share with the short-listed Construction Management firms.

<u>Schedule:</u>	Begin RFQ/RFP process	June 2022
	PER/Conceptual Design Complete	September 2022
	Selection of Construction Management Firm	October 2022
	90% Design Development/Guaranteed Maximum Price (GMP)	March 2024
	Construction Completion	October 2026



Flow from Windsor, Isle of Wight

To Nansemond Treatment Plant

Flow from Downtown Suffolk



AGENDA ITEM 20. – May 26, 2022

Subject: Norview Estabrook Division I, 18-Inch Force Main Replacement Phase II, Section 2
Acquisition of Real Property for a Public Purpose
3310 Cromwell Drive, Norfolk, VA

Recommended Action: Approve the purchase of property located at 3310 Cromwell Drive, Norfolk, Virginia, GPIN: 1448-06-4728 and associated acquisition costs of \$290,000 in accordance with the terms and conditions of the Purchase Agreement with K3W2L, LLC, (Seller) and authorize the General Manager to execute same and related acquisition documents in accordance with those terms and conditions substantially as presented, together with such changes, modifications and deletions as the General Manager may deem necessary and as approved by counsel.

CIP Project: VP010920

Regulatory Requirement: Rehab Action Plan Phase 2 (2025 completion date)

Project Description: This project will replace approximately 900 linear feet of 18-inch force main between Cromwell Drive and Robin Hood Road along Chesapeake Boulevard. One railroad crossing, under multiple Norfolk Southern tracks, is required. The pipe material and age are similar to other portions of the interceptor system in which HRSD has experienced multiple failures due to the tendency of cast iron to lose integrity with age. The project is included in Phase 2 of the U.S. EPA Consent Decree Rehabilitation Action Plan and must be complete by May 5, 2025.

Agreement Description: The [Purchase Agreement](#) is attached and upon approval and closing, the conveyance Deed will be recorded. The Deed will be reviewed by HRSD staff and legal counsel before execution. A [map](#) is provided for clarification purposes.

Analysis of Cost: The acquisition cost of \$290,000 reflects sales of commercial properties in the area as well as a negotiated purchase price with the owner.

GPIN NO.: 1448-06-4728
ACCT#: 0091-1644
KPCTA FILE:
PROJECT: Norview Estabrook Force Main
ROUTE/STREET: 3310 Cromwell Drive
CITY/COUNTY: Norfolk VA 23509

PURCHASE AND SALE AGREEMENT

21ST THIS PURCHASE AND SALE AGREEMENT (this "Agreement") made this day of April, 2022, by and between), K3W2L, LLC, a Virginia limited liability company, whose mailing address is 125 86th Street, Virginia Beach, VA 23451 ("Landowner/Seller"), and HAMPTON ROADS SANITATION DISTRICT ("HRSD"), a political subdivision of the Commonwealth of Virginia, located at 1434 Air Rail Avenue, Virginia Beach, Virginia 23455, the ("Buyer"). Collectively, Buyer and Seller shall be referred to as the "Parties."

RECITALS

- A. Seller is the owner in fee simple absolute of a certain parcel of property described as Lot Y, 27,447 sq. ft or (0.6301 acres), Account# 0091-1644, located at 3310 Cromwell Drive in the City of Norfolk, Virginia such property being more particularly described in Exhibit A and shown on Exhibit B, both of which are attached to and made a part of this Agreement (the "Property").
- B. HRSD desires to purchase the Property from the Seller for the purpose of the Norview Estabrook Division 1, 18-inch Force Main Replacement Phase 11, Section 2 (CIP# VP010920).
- C. Seller is willing to sell the Property to HRSD subject to the terms and conditions set forth in this Agreement.
- D. These recitals are incorporated by this reference into this Agreement.

NOW, THEREFORE, in consideration of the purchase price and the mutual promises contained in this Agreement, the parties agree as follows:

1. SALE. Seller agrees to sell and HRSD agrees to purchase the Property, together with all rights and appurtenances thereto, including all right, title and interest of Seller in and to any land lying in the bed of any highway, street, road, or avenue, open or proposed, in front of or abutting, or adjoining such tract or piece of land and any riparian rights, if any, and any

rights, easements, and appurtenances pertaining thereto, and any building and other property situated thereon, including all personal property, attached or appurtenant to, located in or on, or used in connection with the real property, if any. The real property and the personal property are called "the Property".

2. PURCHASE PRICE. The purchase price (the Purchase Price) for the Property is **TWO HUNDRED, NINETY THOUSAND AND 00/100 DOLLARS (\$290,000)**, and the Purchase Price shall be paid to the Seller by certified check or wired funds at closing.
3. CONVEYANCE.
 - a. At the Closing, Seller shall convey title to the Property in fee simple, by general warranty deed, free and clear of any and all liens, mortgages, deeds of trust, security interests, leases, covenants, conditions, restrictions, easements, rights-of-way, licenses, encroachments, judgments or encumbrances of any kind, except for the following permitted exceptions: (a) the lien of real estate taxes not yet due and payable; (b) zoning and building restrictions and other laws, ordinances, and regulations of governmental bodies having jurisdiction over the Property; and (c) matters of record affecting title to the property, as reviewed and approved (or deemed approved) by HRSD in accordance with this Agreement. Except as expressly stated in this Agreement, the Property shall be conveyed in "AS IS" condition.
 - b. Title to the Property shall be good and marketable and, if HRSD chooses to obtain title insurance, insurable by a nationally recognized ALTA title insurance company of HRSD's choice at or below normal rates. In the event that a title examination discloses defects of title or other matters unsatisfactory to HRSD at HRSD's sole determination, HRSD shall notify Seller in writing (an "Objection Notice"), within 90 days of the Effective Date of such title defects or other matters to which HRSD objects. Seller covenants that it shall cure all monetary encumbrances and all title objections which may be cured by execution of a document requiring the signature of no party other than Seller (including any affidavits which may reasonably be required by the title insurer). Seller may notify HRSD in writing (an "Objection Response"), within ten (10) business days after receiving an Objection Notice if it believes that the Objection Notice makes reference to any title defect or other matter that Seller cannot or elects not to cure. Upon receipt of an Objection Response from Seller, HRSD shall have the option either to (i) terminate this Agreement by notice to Seller given within ten

- (10) business days of the Objection Response or (ii) accept the defects, exceptions or other matters referenced in such Objection Response and proceed to Closing hereunder with no reduction of the Purchase Price. Seller shall have the period until the Closing date within which to correct all defects, exceptions or other matters that it is required or elects to cure. Seller shall provide such documents (including evidence of authority), affidavits, and other instruments that may be reasonably required for the issuance of a title insurance policy to HRSD.
- c. Possession of the Property will be given to HRSD at Closing, except that HRSD will have access to the Property for the purposes specified herein.
 - d. Seller agrees to pay proration of real estate taxes and storm water fees and agrees to deliver possession of the Property to HRSD at settlement. HRSD will pay all other fees charged in connection with preparation and recordation of the deed, including grantor's tax.
 - e. Seller and HRSD agree that the attorney selected by HRSD shall act as the Settlement Agent at HRSD's expense. The Settlement Agent shall prepare the settlement statement, update and record the deed, collect and disburse settlement funds in accordance with this Agreement and the settlement statement, and file any required state and federal tax forms or other certifications.
4. RIGHT OF ENTRY. HRSD and HRSD's authorized representatives may at any reasonable time and after giving reasonable notice to Seller, enter upon the Property for the purpose of making inspections, appraisals, surveys, including but not limited to the cutting of survey lines and putting up markers and driving stubs and stakes, site analysis, engineering studies, core sampling for engineering reports, and locating existing rights of way, easements, and utilities. HRSD will exercise this right of entry in such a way so as to not cause unreasonable damage to the Property. HRSD agrees to indemnify and save harmless the Seller from all claims of liability for any personal injury or property damage or otherwise to any person or property caused by any action or omission of HRSD or its agents on the Property before or after Closing.
5. CONDITIONS AND CONTINGENCIES.
- a. HRSD's obligations are expressly conditioned upon the waiver or satisfaction of each of the following conditions in the sole determination of HRSD. If any one of the following conditions

cannot be met within 30 days after the Effective Date (the Effective Date being defined as the date the contract is endorsed by both HRSD and Seller), HRSD may unilaterally terminate this Agreement:

- i. Receipt of a satisfactory title commitment with all unacceptable title exceptions, encumbrances, and conditions as deemed by HRSD removed or cured at Seller's cost; however, if Seller chooses not to remove or cure any such title exception, HRSD's sole remedy shall be to terminate this Agreement;
 - ii. Receipt of a Phase I Environmental Assessment and Report (Phase I Report) conducted and prepared by an environmental engineering and inspection company selected by HRSD at HRSD's expense and such other testing and reports as may be reasonably required by HRSD or recommended in the Phase I Report;
 - iii. Seller's compliance of all of its obligations under this Agreement.
- b. This Agreement is expressly conditioned upon the completion of all title and environmental "due diligence" by HRSD and notification to the Seller in writing of any conditions that are unsatisfactory to HRSD within the 30 day period. In the event HRSD fails to notify the Seller in writing within such 30 day period, any objection to such conditions shall be deemed waived by HRSD and the parties shall proceed to closing; provided, however, in no event shall any mortgage, deed of trust, security agreement or monetary lien against the Property be deemed waived objections and the Seller agrees that the same shall be removed and released as liens on the Property on or before Closing.
- c. This Agreement is contingent on the review and approval of the purchase by the Hampton Roads Sanitation District Commission and upon such Commission granting authorization to the General Manager to proceed under the terms of this Agreement.

6. ENVIRONMENTAL AND RELATED MATTERS.

- a. As a condition precedent to HRSD's obligation to purchase, HRSD, at HRSD's expense, may have a Phase I Environmental Assessment of the Property performed by a qualified environmental consultant (the Consultant) selected by HRSD and reasonably

acceptable to Seller, conducted in accordance with standard commercial practice at the time of the assessment. A copy of the Phase I Environmental Assessment will be made available to Seller, together with copies of any supplemental reports or assessments.

- b. If the Consultant recommends soil, water, or structural remediation or further assessment activity after or as a result of performing a Phase I Environmental Assessment or if HRSD otherwise determines, in its reasonable judgment, that further assessment activity (including, but not limited to, a Phase II Environmental Assessment) is desirable, HRSD may at its option:
- (i) Terminate this Agreement; or
 - (ii) Extend the time for closing for an additional period of sixty (60) days in order to perform any such additional assessment at HRSD's expense; or
 - (iii) Waive the environmental defect and proceed to Closing.

In the event HRSD chooses to perform any additional assessment, such as a Phase II, and determines that the results of such assessment are not satisfactory, HRSD may at its option:

- (i) Terminate this Agreement; or
- (ii) Waive the environmental defect and proceed to Closing.

7. REPRESENTATIONS AND WARRANTIES BY SELLER. Seller represents and warrants as of the date of this Agreement and as of the date of Closing that: Seller has the right, title, and authority to enter into this Agreement and to perform its obligations hereunder.

Seller further represents and warrants and shall deliver to HRSD at or prior to the Settlement, an Affidavit prepared by HRSD evidencing the following facts:

- (i) Other than this Agreement, there are no other contracts for sale or options involving the Property now in effect;
- (ii) To the best of Seller's knowledge, no other party has any right, title or interest in the Property;
- (iii) There are no unrecorded leases, options, licenses or easements existing in connection with the property to which the Seller has knowledge;

- (iv) There are no adverse government notifications or proceedings and there is no pending or threatened litigation or any other potentially adverse claims affecting the property to which the Seller has knowledge.
 - (v) Foreign Status. Seller is not a foreign corporation, person or entity and is a "United States Corporations, Person or Entity" as such terms is defined in Section 1445 and in Section 7701 (a)(30) of the Internal Revenue Code of 1986, as amended (the "Code") and shall deliver to HRSD at or prior to the Settlement an Affidavit prepared by HRSD evidencing such fact and such other documents as may be required under the Code.
 - (vi) From and after the date of this Agreement, Seller shall not transfer any interest in, or grant any easements or enter into any contractual agreement or understanding, written or oral, with respect to the Property or any portion thereof or make any changes at all that require recordation and therefore modifications to title, without the prior written consent of HRSD.
 - (vii) The Seller warrants that to the best of his knowledge there are no wetlands or hazardous wastes, which would prevent HRSD's intended use of the land. To the best of the Seller's knowledge: (i) none of the Property has been excavated (except for standard grading related to site development); (ii) no hazardous materials, toxic chemicals, or similar substances, as defined by 42 U.S.C. §1251, et seq. or 42 U.S.C. §6901, et seq. or 42 U.S.C. §9601, et seq., or 33 U.S.C. §1317(1), or 15 U.S.C. §2606(f), or 49 U.S.C. §1801, et seq., or regulations adopted pursuant thereto, or any similar provision of any applicable state, Federal, or local law (collectively "Hazardous Materials"), are or were stored or used on or under or otherwise were or are in existence or were in any way dealt with on or under the Property; and (iii) no owner or occupant of the Property has received any notice from any governmental agency with regard to such Hazardous Materials.
8. NOTICES. All notices to the parties hereto will be delivered by hand, via certified mail return receipt requested, or via facsimile and all be deemed effective upon delivery if by hand and upon confirmation of receipt if by other means, to the following address until the address is changed by notice in writing to the other party:

HRSD: Jay Bernas, P.E.
General Manager
P.O. Box 5911
Virginia Beach, Virginia 23471-0911

Copy to: Janice Pickrell Anderson, Esq.
Kellam, Pickrell, Cox & Anderson, PC
403 Boush Street, Suite 300
Norfolk, VA 23510

Seller: K3W2L, LLC
125 86th Street
Virginia Beach, VA 23451

9. CLOSING. Unless this Agreement is terminated pursuant to its terms or by mutual agreement of the parties, Closing will be made at the offices of the Settlement Agent on or about May 26, 2022.
10. SURVIVAL. The provisions contained in this Agreement will be true as of the date of this Agreement and as of the date of Closing.
11. PRORATIONS. All rents, interest, taxes, insurance premiums, utility bills, and fuel oil, if any, will be prorated as of the date of Closing.
12. RISK OF LOSS. All risk of loss or damage to the Property by fire, windstorm, casualty, or other cause is assumed by Seller until Closing. In the event of substantial loss or damage to the Property before Closing, HRSD will have the option of either:
 - a. Terminating this Agreement, or
 - b. Affirming this Agreement and proceeding to Closing.
13. FUTURE SALE BY HRSD. In the event that HRSD shall determine to sell all or a portion of the property for private development within two (2) years of the Settlement Date, it agrees to notify Seller and give Seller first opportunity to purchase the property on such terms as the parties shall mutually agree. Such notice shall be writing addressed in accordance with the provisions of Section 8 herein or such other address provided to HRSD by the Seller and shall provide Seller with at least thirty (30) calendar days to present HRSD with an offer to purchase the property.

14. BROKERS. Seller and HRSD both represent and warrant to the other that it has not hired, engaged, or consulted with any broker or agent in regard to this transaction. Each party agrees to indemnify and hold harmless the other from any and all costs, expenses, or damages resulting from any claim for brokerage fees or other similar forms of compensation made by any real estate broker or other person or entity with whom a party has dealt, and who is not expressly named herein.
15. CONDEMNATION. Seller covenants and warrants that Seller has not heretofore received any notice of any condemnation proceeding or other proceeding in the nature of eminent domain in connection with the Property. If prior to Settlement any such proceeding is commenced or any change is made, or proposed to be made, to the current means of ingress and egress to the Property or to the roads or driveways adjoining the Property, or to change such ingress or egress or to change the grade thereof, Seller agrees immediately to notify HRSD thereof. HRSD then shall have the right, at HRSD's option, to terminate this Agreement by giving written notice to Seller within thirty (30) days after receipt of such notice.
16. DEFAULT AND REMEDIES.
 - a. If the sale and purchase contemplated by this Agreement is not consummated because of Seller's or HRSD's default, the non-defaulting party may elect to:
 - i Terminate this Agreement;
 - ii Seek and obtain specific performance of this Agreement; or
 - iii Pursue all other rights or remedies available at law or in equity, including an action for damages.
 - b. If either Seller or HRSD defaults under this Agreement, the defaulting party will be liable for any expenses incurred by the non-defaulting party in connection with the enforcement of its rights under this Agreement.
 - c. These remedies are cumulative and non-exclusive and may be pursued at the option of the non-defaulting party without a requirement of election of remedies.
17. ENTIRE AGREEMENT. This Agreement contains the entire agreement of the parties and will supersede the terms and conditions of all prior written and oral agreements, if any, concerning the matters it covers. The parties

acknowledge there are no oral agreements, understandings, representations, or warranties that supplement or explain the terms and conditions contained in this Agreement. This Agreement may not be modified except by an agreement in writing signed by the parties.

18. WAIVER. Failure to insist upon strict compliance with any of the terms, covenants, or conditions hereof will not be deemed a waiver of the term, covenant, or condition, nor will any waiver or relinquishment of any right or power at any one time or more times be deemed a waiver or relinquishment of the right or power at any other time or times.
19. SEVERABILITY. This Agreement will be construed in its entirety and will not be divisible, except that the invalidity or unenforceability of any provision hereof will in no way affect the validity or enforceability of any other provision.
20. CAPTIONS. Captions are used in this Agreement for convenience only and will not be used to interpret this Agreement or any part of it.
21. GOVERNING LAW. This Agreement is to be construed in accordance with the laws of the Commonwealth of Virginia.
22. CHOICE OF FORUM/JURISDICTION. The parties hereby consent to the jurisdiction and venue of the courts of the Commonwealth of Virginia, specifically to the courts of the City of Norfolk, Virginia, and to the jurisdiction and venue of the United States District Court for the Eastern District of Virginia in connection with any action, suit, or proceeding arising out of or relating to this Agreement and further waive and agree not to assert in any action, suit, or proceeding brought in the City of Norfolk, Virginia, or the Eastern District of Virginia that the parties are not personally subject to the jurisdiction of these courts, that the action, suit, or proceeding is brought in an inconvenient forum or that venue is improper.
23. WAIVER OF TRIAL BY JURY. THE PARTIES WAIVE TRIAL BY JURY IN ANY ACTION, PROCEEDING, OR COUNTERCLAIM BROUGHT BY EITHER PARTY AGAINST THE OTHER ON ANY MATTER WHATSOEVER ARISING OUT OF OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ANY RELATED AGREEMENTS OR INSTRUMENTS AND THE ENFORCEMENT THEREOF, INCLUDING ANY CLAIM OF INJURY OR DAMAGE TO ANY PARTY OR THE PROPERTY OF ANY PARTY.
24. SUCCESSOR/ASSIGNMENT. This Agreement will be binding upon and the obligations and benefits hereof will accrue to the parties hereto, their

heirs, personal representatives, successors, and assigns. This Agreement is assignable by HRSD only upon written consent of the Seller, which consent will not be unreasonably withheld. If this Agreement is assigned by HRSD with Seller's consent, HRSD will nevertheless remain fully liable for its performance.

25. COUNTERPARTS. This Agreement may be executed in any number of counterparts, each will be considered an original, and together they will constitute one Agreement.
26. FACSIMILE SIGNATURES. Facsimile signatures will be considered original signatures for the purpose of execution and enforcement of the rights delineated in this Agreement.
27. ETHICS IN PUBLIC CONTRACTING. By executing this Agreement, the undersigned Seller or its representative, and the representative of HRSD, certify that the prices agreed to in this Agreement were arrived at without collusion or fraud and that they have not offered or received any payment, kickbacks or other inducement from any other party to this Agreement or its agent or employee in connection with this Agreement, and that they have not conferred on any public employee having responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services (or anything of more than nominal value, present or promised) unless disclosed in this Agreement.
28. 1031 EXCHANGE. Any party may consummate the purchase or sale (as applicable) of the Property to be conveyed hereunder as part of a so-called like-kind exchange (an "Exchange") pursuant to Section 1031 of the Code, as amended; provided, however, that: (i) the Closing shall not be delayed or affected by reason of the Exchange nor shall the consummation or accomplishment of an Exchange be a condition precedent or condition subsequent to the exchanging party's obligations under this Agreement; (ii) any assignment of this Agreement necessary to effect its Exchange shall comply with all of the terms of this Agreement; (iii) no party shall be required to take an assignment of any agreement for the relinquished or replacement property or be required to acquire or hold title to any real property for purposes of consummating an Exchange desired by the other party; (iv) the exchanging party shall pay any additional costs that would not otherwise have been incurred by the non-exchanging party had the exchanging party not consummated the transaction through an Exchange; and (v) the non-exchanging party shall not incur any liabilities as a result of the Exchange. No party shall by this Agreement or acquiescence to an Exchange desired by the other party have its rights under this Agreement affected or diminished in any manner or be responsible for compliance with or be deemed to have warranted to

the exchanging party that its Exchange in fact complies with Section 1031 of the Code. Subject to the provisions of this Paragraph 28, each party shall cooperate with the other party in effecting an Exchange.

[THE REMAINDER OF THIS PAGE WAS INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the Hampton Roads Sanitation District Commission has caused this Agreement to be signed on its behalf by its General Manager in accordance with authorization granted at its regular meeting held on _____, 2022. This Agreement is expressly subject to approval by the HRSD Commission

WITNESS the following signatures and seals:

BUYER:

HAMPTON ROADS SANITATION DISTRICT (HRSD)

By: _____

Date: _____

Name: Jay Bernas, P.E.

Title: General Manager

Contact Address: 1434 Air Rail Avenue, Virginia Beach, Virginia 23455

COMMONWEALTH OF VIRGINIA

City of Virginia Beach, to-wit:

The foregoing instrument was acknowledged before me this ____ day of _____, 2022, by Jay Bernas, P.E., General Manager, Hampton Roads Sanitation District.

Notary Public

Notary Public Registration No. _____

My commission expires: _____

Exhibit "A"

Legal Description

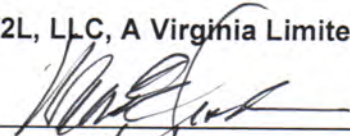
ALL THAT certain lot, piece or parcel of land, together with all improvements thereon and appurtenances thereto, situate, lying and being in the City of Norfolk, Virginia, designated as LOT "Y", 27,447 square feet or 0.6301 acres, which is more particularly set forth on that certain plat entitled "SUBDIVISION OF PROERTY OF AUTOZONE DEVELOPMENT CORPORATION, A NEVADA CORPORATION AS DESCRIBED IN INSTRUMENT NO. 040031501, NORFOLK, VIRGINIA", dated August 1, 2003, and made by Rood Land Surveying, P.C., and recorded in the Clerk's Office of the Circuit Court of the City of Norfolk, Virginia, in Map Book 66, at page 104.

IT BEING the same property conveyed to K3W2L LLC, a Virginia limited liability company, by Deed from AutoZone Development Corporation, a Nevada corporation, dated June 8, 2010 and recorded June 9, 2010 in the Clerk's Office of the Circuit Court of the City of Norfolk, Virginia as Instrument No. 100011614.

WITNESS the following signatures and seals:

SELLER:

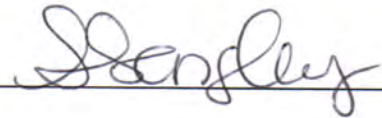
K3W2L, LLC, A Virginia Limited Liability Company

By: 
Date: 4/20/2022

Name: Warren E. Sachs
Title: Managing Member
Contact Address: 125 86th Street, Virginia Beach, Virginia 23451

COMMONWEALTH OF VIRGINIA
City/County of Virginia Beach to-wit:

The foregoing instrument was acknowledged before me this 20th day of April,
2022, by Warren Sachs (Name), Managing Member (Title),
K3W2L, LLC, A Virginia Limited Liability Company.


Notary Public

Notary Public Registration No. 7016014
My commission expires: 10/31/2022



Exhibit "B"

EXHIBIT

PROJECT PARCEL NO. 001 HRSD CIP#VP010920-NORVIEW ESTABROOK
DIVISION 1 18-INCH FORCE MAIN REPLACEMENT PHASE II, SECTION 2
PROPERTY OF: K3W2L, LLC
PROPERTY ADDRESS: 3310 CROWWELL DRIVE
OWNER ADDRESS: 125 86TH STREET, VIRGINIA BEACH, VA 23451
GPIN #: 1448064728

NOTES:

1. HORIZONTAL COORDINATE INFORMATION IS BASED ON THE CITY OF NORFOLK GEODETIC CONTROL SYSTEM AND WAS SET BY GPS SURVEY, UNITS ARE U.S. SURVEY FEET.
2. PROPERTY LINES SHOWN ARE BASED ON COMPILED RECORD INFORMATION, TAX MAP INFORMATION AND MADE TO FIT FIELD FOUND MONUMENTATION. THIS PLAT IS FOR EASEMENT PURPOSES ONLY AND DOES NOT CONSTITUTE A PHYSICAL OR BOUNDARY SURVEY.
3. A TITLE REPORT WAS NOT PROVIDED FOR THIS PROJECT, THEREFORE THERE MAYBE OTHER EASEMENTS THAT AFFECT THE PROPERTY THAT ARE NOT SHOWN.

PARCEL 001

COMPILED PROPERTY ACQUISITION PLAT
SHOWING PROPERTY TO BE ACQUIRED FROM
K3W2L, LLC

BY

HAMPTON ROADS SANITATION DISTRICT
LOT "Y"

SUBDIVISION OF PROPERTY OF AUTOZONE DEVELOPMENT
CORPORATION, A NEVADA CORPORATION AS DESCRIBED IN
INSTRUMENT NO. 040031501
CITY OF NORFOLK, VIRGINIA

HRSD CIP # VP010920 - NORVIEW ESTABROOK DIVISION 1
18-INCH FORCE MAIN REPLACEMENT PHASE II, SECTION 2

DATE: 4/19/22

SHEET 1 OF 2

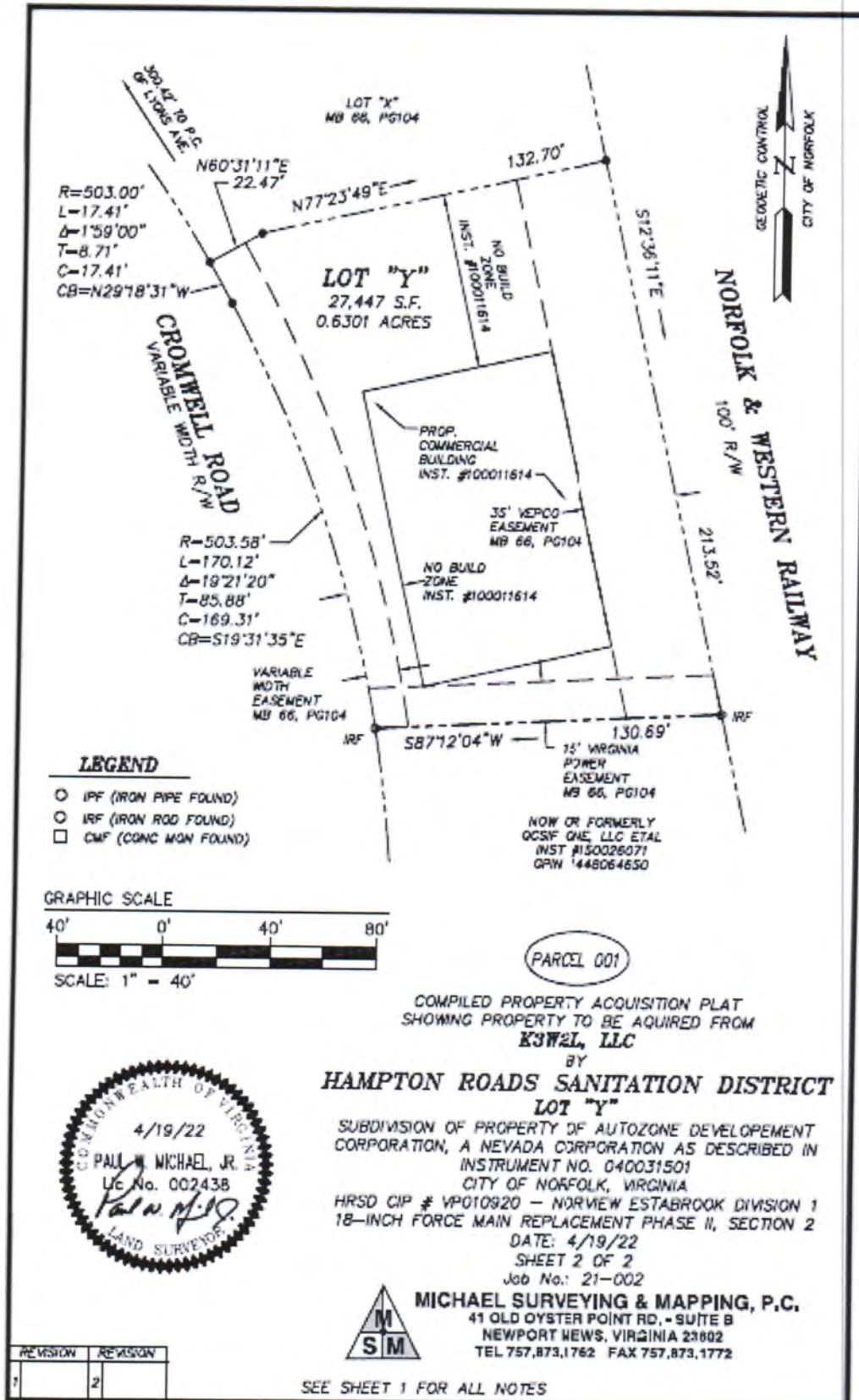
Job No.: 21-002

MICHAEL SURVEYING & MAPPING, P.C.

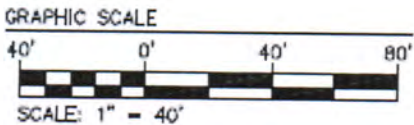
41 OLD OYSTER POINT RD., SUITE B
NEWPORT NEWS, VIRGINIA 23602
TEL 757,873,1762 FAX 757,873,1772



REVISION	REVISION
1	2



- LEGEND**
- IPF (IRON PIPE FOUND)
 - IRF (IRON ROD FOUND)
 - CWF (CONC MGN FOUND)



(PARCEL 001)

COMPILED PROPERTY ACQUISITION PLAT
 SHOWING PROPERTY TO BE ACQUIRED FROM
K3W2L, LLC
 BY
HAMPTON ROADS SANITATION DISTRICT
LOT "Y"

SUBDIVISION OF PROPERTY OF AUTOZONE DEVELOPMENT CORPORATION, A NEVADA CORPORATION AS DESCRIBED IN INSTRUMENT NO. 040031501 CITY OF NORFOLK, VIRGINIA

HRSD CIP # VP010920 - NORVIEW ESTABROOK DIVISION 1 18-INCH FORCE MAIN REPLACEMENT PHASE II, SECTION 2

DATE: 4/19/22
 SHEET 2 OF 2
 Job No.: 21-002

MICHAEL SURVEYING & MAPPING, P.C.
 41 OLD OYSTER POINT RD. - SUITE B
 NEWPORT NEWS, VIRGINIA 23602
 TEL 757.873.1762 FAX 757.873.1772

REVISION	REVISION
1	2

SEE SHEET 1 FOR ALL NOTES

PROJECT PARCEL NO. 001 HRSD CIP#VP010920–NORVIEW ESTABROOK
 DIVISION 1 18–INCH FORCE MAIN REPLACEMENT PHASE II, SECTION 2
 PROPERTY OF: K3W2L, LLC
 PROPERTY ADDRESS: 3310 CROMWELL DRIVE
 OWNER ADDRESS: 125 86TH STREET, VIRGINIA BEACH, VA 23451
 GPIN #: 1448064728

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 CITY OF NORFOLK, VIRGINIA

HRSD CIP # VP010920 – NORVIEW ESTABROOK DIVISION 1
 18–INCH FORCE MAIN REPLACEMENT PHASE II, SECTION 2

DATE: 4/19/22

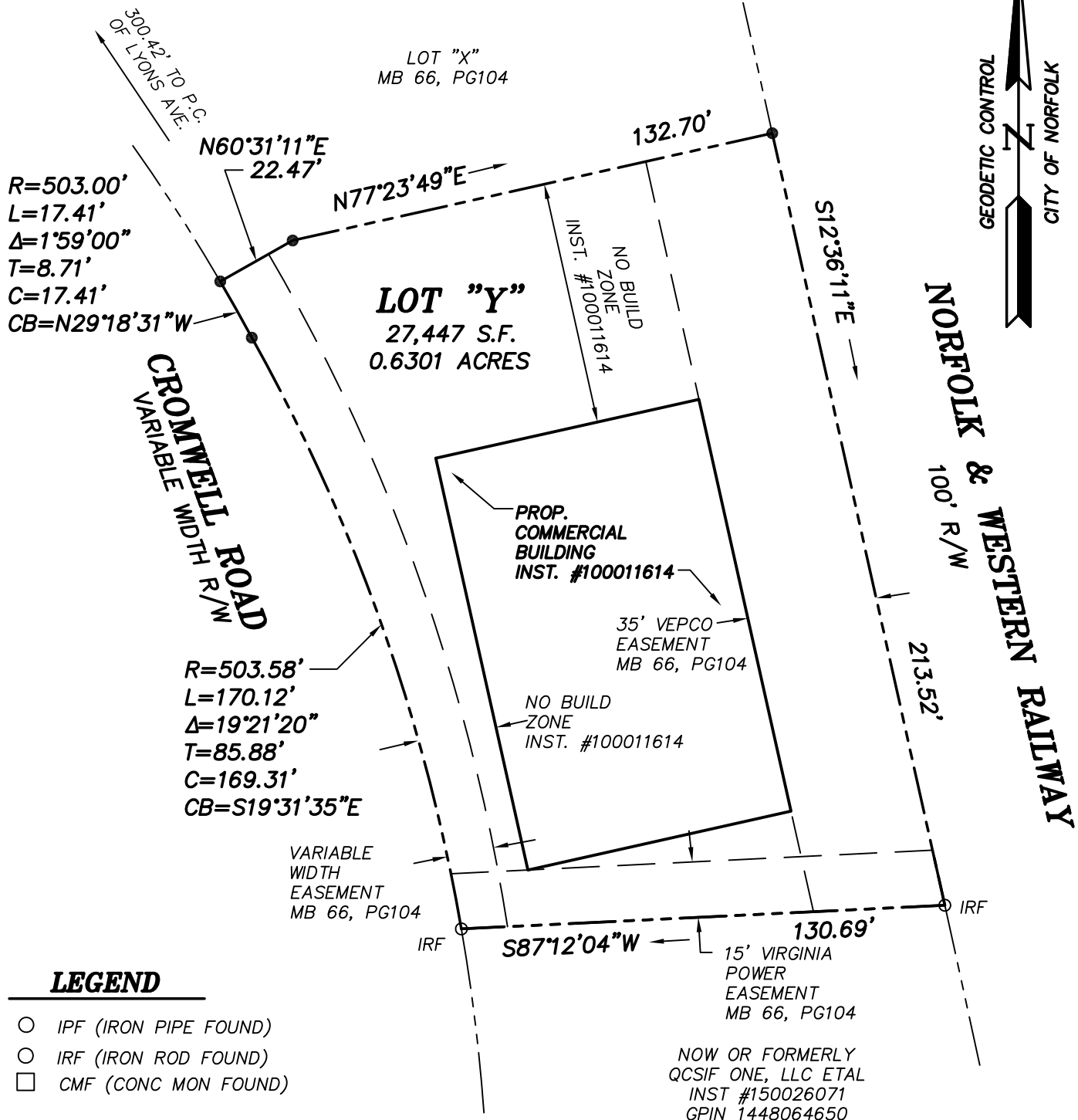
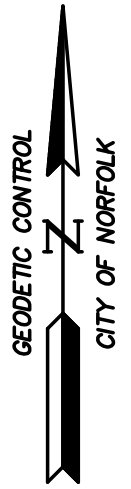
SHEET 1 OF 2

Job No.: 21–002

MICHAEL SURVEYING & MAPPING, P.C.
 41 OLD OYSTER POINT RD. - SUITE B
 NEWPORT NEWS, VIRGINIA 23602
 TEL 757.873.1762 FAX 757.873.1772



REVISION	REVISION
1	2



$R=503.00'$
 $L=17.41'$
 $\Delta=1^{\circ}59'00''$
 $T=8.71'$
 $C=17.41'$
 $CB=N29^{\circ}18'31''W$

$R=503.58'$
 $L=170.12'$
 $\Delta=19^{\circ}21'20''$
 $T=85.88'$
 $C=169.31'$
 $CB=S19^{\circ}31'35''E$

LEGEND

- IPF (IRON PIPE FOUND)
- IRF (IRON ROD FOUND)
- CMF (CONC MON FOUND)

GRAPHIC SCALE



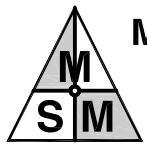
SCALE: 1" = 40'

PARCEL 001

COMPILED PROPERTY ACQUISITION PLAT
 SHOWING PROPERTY TO BE ACQUIRED FROM
K3W2L, LLC

BY
HAMPTON ROADS SANITATION DISTRICT
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SUBDIVISION OF PROPERTY OF AUTOZONE DEVELOPEMENT CORPORATION, A NEVADA CORPORATION AS DESCRIBED IN INSTRUMENT NO. 040031501
 CITY OF NORFOLK, VIRGINIA
 HRSD CIP # VP010920 – NORVIEW ESTABROOK DIVISION 1
 18-INCH FORCE MAIN REPLACEMENT PHASE II, SECTION 2
 DATE: 4/19/22
 SHEET 2 OF 2
 Job No.: 21-002



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 NEWPORT NEWS, VIRGINIA 23602
 TEL 757.873.1762 FAX 757.873.1772

REVISION	REVISION
1	2

SEE SHEET 1 FOR ALL NOTES

LOCATION MAP

3310 Cromwell Drive, Norfolk



Legend

- New Force Main
- Existing HRSD Force Main
- 3310 Cromwell Drive

AGENDA ITEM 21. – May 24, 2022

Subject: COVID-19 Wastewater Surveillance Study Update

Recommended Action: No action is required.

Brief: Staff will present the latest data and status of the COVID-19 surveillance work.

AGENDA ITEM 22. – May 24, 2022

Subject: Operations & Nominations (O&N) Committee Appointment

Recommended Action: Chair to appoint an O&N Committee to recommend nominations for Chair and Vice-Chair of the Commission for the coming year and to review certain Commission Adopted Policies.

Brief: The Commission is required by the Enabling Act to elect a chair and vice-chair each year. The election of officers is normally held in June, and the new officers assume their duties in July.

The Chair customarily appoints an O&N Committee to nominate Commission officers for the coming year. The Committee will also review the HRSD Commission Governance Guidelines, Remote Participation and Ethics policies. Commissioners Levenston and Glenn served on the committee last year.

The Committee will hold its first meeting following adjournment of the May 24, 2022 Commission meeting.

AGENDA ITEM 23. – May 24, 2022

Subject: Unfinished Business

AGENDA ITEM 24. – May 24, 2022

Subject: New Business

AGENDA ITEM 25. – May 24, 2022

Subject: Commissioner Comments

AGENDA ITEM 26. – May 24, 2022

Subject: Public Comments Not Related to Agenda

AGENDA ITEM 27. – May 24, 2022

Subject: Informational Items

Recommended Action: No action is required.

Brief: The following items listed below are presented for information.

- a. Management Reports
 - (1) [General Manager](#)
 - (2) [Communications](#)
 - (3) [Engineering](#)
 - (4) [Finance](#)
 - (5) [Information Technology](#)
 - (6) [Operations](#)
 - (7) [Talent Management](#)
 - (8) [Water Quality](#)
 - (9) [Report of Internal Audit Activities](#)
- b. [Strategic Planning Metrics Summary](#)
- c. [Emergency Declarations - Bowers Hill Interceptor Force Main Section I
Emergency Repair](#)



May 12, 2022

Re: General Manager's Report

Dear Commissioners:

With inflation and supply and labor issues continuing to impact our financials, staff are reviewing all compliance-related capital projects to value engineer project scopes while still ensuring regulatory compliance. In addition, Operations staff continue to optimize power, gas and chemical usage to control costs.

After considering the current transmission rates, guidance from the CDC, and VOSHA's revocation and reasoning behind its revocation of the Virginia Standard, HRSD has eliminated its Infectious Disease Preparedness and Response Plan effective May 1, 2022. As part of this process, HRSD also has determined that the continuation of the Mandatory Vaccine Policy is no longer necessary to protect the health and safety of the HRSD Community. Accordingly, the Mandatory Vaccine Policy and its requirements were eliminated effective May 1, 2022. Currently, 98% of HRSD are vaccinated and 41% have received at least one booster.

The highlights of March's activities are detailed in the attached monthly reports.

A. **Treatment Compliance and System Operations:** The Central Environmental Laboratory (CEL) initiated a systematic corrective action for Biochemical Oxygen Demand (BOD) robotics in response to errors made following maintenance. The errors created invalid data for multiple plants spanning three weeks in April, which resulted in weekly monitoring requirements not being met. Letters were sent to DEQ to explain the situation and the corrective action to prevent future occurrences.

On April 23rd, a failure occurred on the bottom of a 36-inch ductile iron pipe force main just west of I-664 near 3025 Gum Court, Chesapeake. The failure was caused by external corrosion, resulting in graphitization on the exterior of the pipe; it was repaired with a full circle clamp. Impacted areas were cleaned and treated with lime. Approximately 472,000 gallons of wastewater were released, with 20,000 gallons recovered. The remaining 452,000 entered a drainage ditch draining to Drum Point Creek / Western Branch of the Elizabeth River. By April 28th, water quality sampling showed HF183 (Human DNA marker) being below detectable limits just downstream of the spill location.

Staff are working on several issues related to odor and associated odor complaints at the Atlantic plant. Staff are sending letters to nearby residents to assure them that we are taking these issues seriously and developing a plan to address them. Staff have a daily checklist to inspect potential odor sources and short- and long-term plan is being developed internally and will likely result in additional capital projects.

PO Box 5911, Virginia Beach, VA 23471-0911 • 757.460.7003

- B. **Finance:** Staff worked diligently in order to close on \$126 million for both the Eastern Shore and Programmatic Virginia Clean Water Revolving Loan Funds (VCWRLF) on April 29th. This saves our ratepayers \$14 million in interest expenses compared to open market rates. More importantly, by closing in April, we saved an additional \$6 million because we secured the loan at 1.3% for 20 years as opposed to 1.75% if we closed in May. Our monthly financials continue to look strong as higher than expected water consumption is driving revenues higher than expected, while staff continues to control expenses.
- C. **Internal Communications:** I participated in the following meetings/activities with HRSD personnel:
1. Continued lunches with Division Leaders
 2. Visited the Atlantic Treatment Plant
 3. Finance Committee budget briefing
 4. Meetings to discuss Rehab Action Plan projects
 5. Site visit to the Gum Court line break Saturday night into Sunday morning
- D. **External Communications:** I participated in the following meetings/activities:
1. Spoke at the Wet Weather Partnership about HRSD's Integrated Plan
 2. Smart Sewer workshop
 3. Director of Utilities monthly meeting
 4. National Water Policy fly-in in Washington DC
 5. Eastern Shore public meeting on April 6th
 6. Water Research Foundation Financial Management brainstorm
- E. **SWIFT Update:** With the Integrated Plan (IP) signed, I created a new SWIFT Strategy Team to revisit the entire SWIFT program and nutrient improvements schedule to ensure both IP compliance and upcoming nutrient compliance deadlines in 2026, 2028, and 2032. The goal for this team is to ensure that we can ensure compliance while also trying to achieve other ancillary benefits, such as cost savings.
- F. **Integrated Plan (IP):** In the IP, HRSD is responsible for all wet weather capacity-related overflows. A Commission adopted policy is needed to ensure that there is a clear definition of HRSD's responsibilities. In a collaborative effort with the localities, staff held a meeting with the Regional Capacity Team to develop a mutually agreed upon policy. For example, the policy needs to clearly define that HRSD is only responsible for an overflow if it is due to wet weather below the defined level of service and not due to development or poor maintenance. HRSD is also developing a standard

operating procedure for investigating locality overflows. The final policy is expected to be presented to the Commission this summer.

Thanks for your continued dedicated service to HRSD, the Hampton Roads region, the Commonwealth, and the environment. **I look forward to seeing you in person in Virginia Beach at 10 am on Tuesday, May 24, 2022.**

Respectfully submitted,

Jay Bernas, P.E.
General Manager

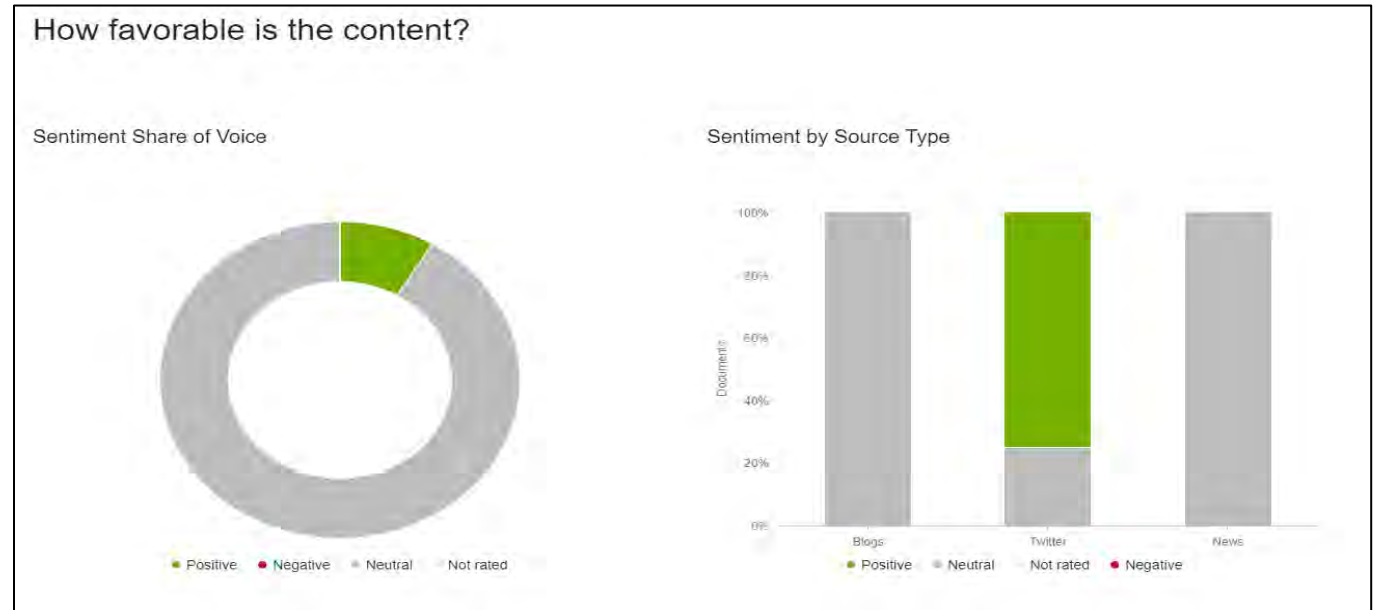
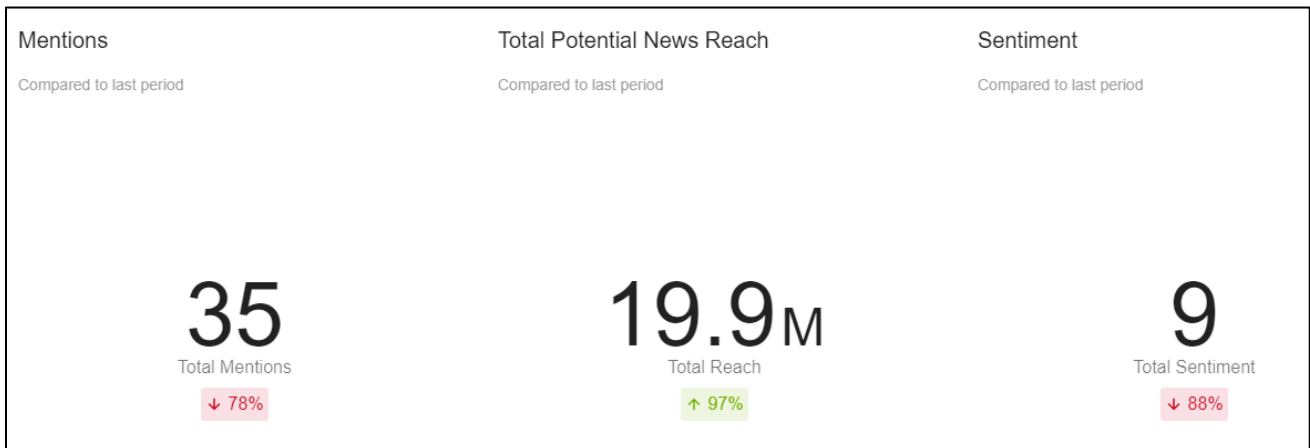
TO: General Manager
 FROM: Director of Communications
 SUBJECT: Monthly Report for April 2022
 DATE: May 11, 2022

A. Publicity and Promotion

HRSD and/or SWIFT were mentioned or featured in 9 news stories or media/social media mentions on topics that included:

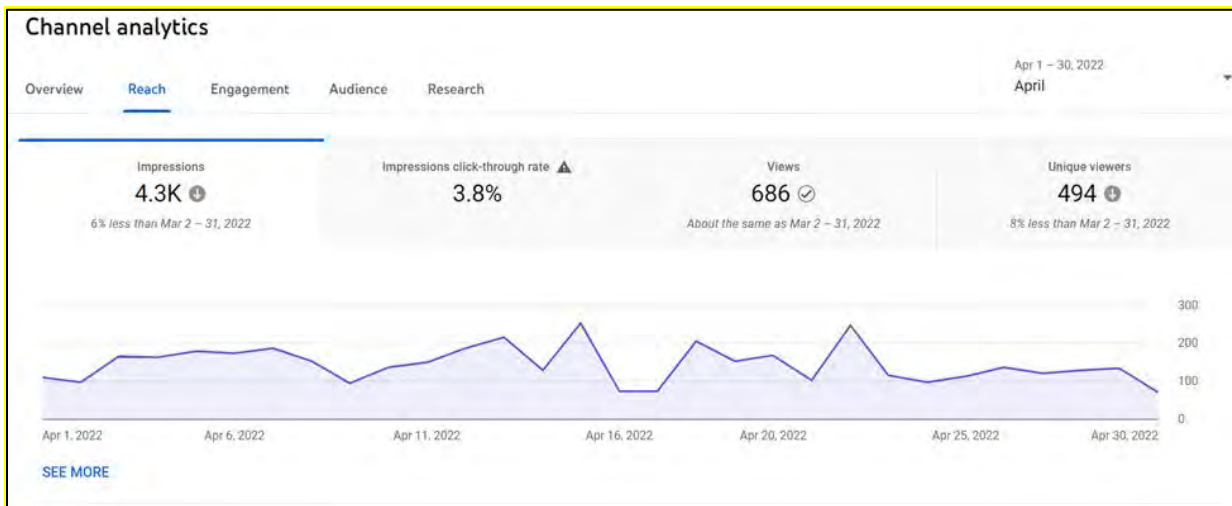
1. HRSD expansion into Eastern Shore
2. Proper medicine disposal feature on Coast Live (WTKR TV)
3. Virginia Water Environment Association podcast featuring highlighting former GM's public service
4. New amenities coming to Riverview Farm Park in Newport News

Analysis of April media coverage:



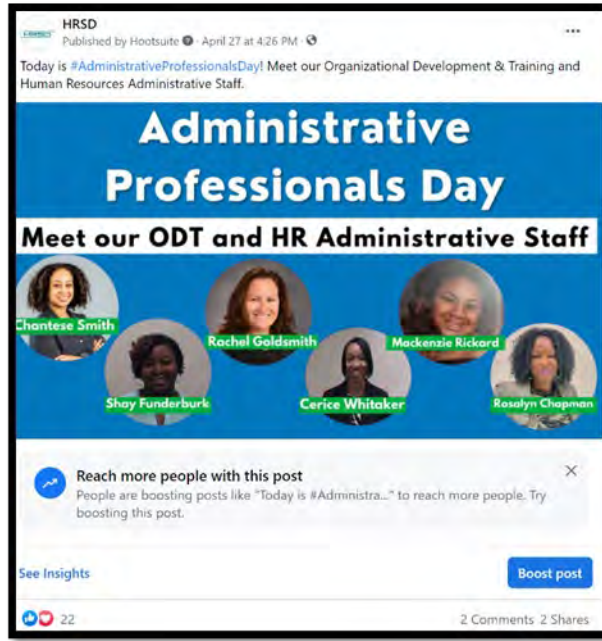
B. Social Media and Online Engagement

1. Metrics

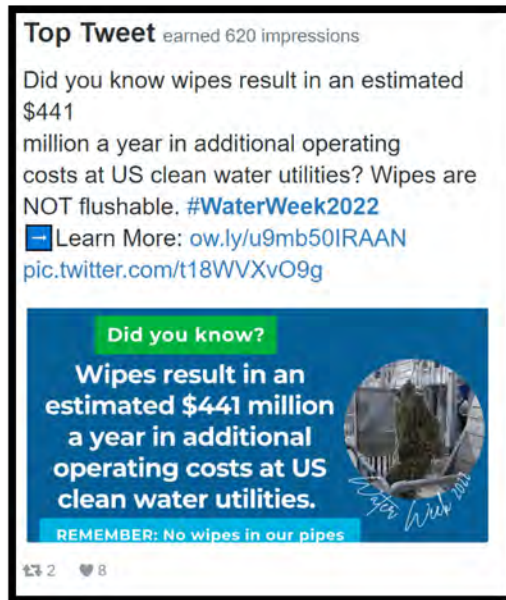


2. Top posts on Facebook, Twitter, and YouTube

a. Top Facebook post



b. Top Tweet



c. Top YouTube Videos

Top YouTube Videos	
1.	The Wastewater Treatment Process (382 views)
2.	SWIFT What is the Potomac Aquifer (75 views)
3.	What is Asset Management? HRSD Celebrates Infrastructure Week United for Infrastructure (36 views)
4.	HRSD Employee Testimonials - Robert (27 views)
5.	Overview of HRSD's Sustainable Water Initiative for Tomorrow Pilot Project (18 views)

3. Website and Social Media Impressions and Visits

- a. Facebook: 6,873 page impressions, 4,626 post impressions reaching 4,403 users, and Facebook Engagement of 211 (160 reactions, 33 shares, and 18 comments)
- b. Twitter: 3,595 tweet impressions; 1,509 profile visits and 11 mentions
- c. HRSD.com/SWIFTVA.com: 920 page visits
- d. LinkedIn Impressions: 2,951 page impressions and 3,516 post impressions
- e. YouTube: 686 views
- f. Next Door unique impressions: 688 post impressions from five targeted neighborhood posting shared with 7,771 residents
- g. Blog Posts: (0)
- h. Construction Project Page Visits – 1,483 total visits (not including direct visits from home page, broken down as follows:
 - (1) 1048 visits to individual pages
 - (2) 435 to the status page

C. News Releases, Advisories, Advertisements, Project Notices, Community Meetings and Project Web Postings

- 1. News Releases: 4
- 2. Traffic Advisories: 0
- 3. Construction Notices and or notices to neighbors: 3
- 4. Advertisements: 0
- 5. Project Notices: 3 (via door hanging, reaching 307 residents)
- 6. Project/Community Meetings: 0

7. New Project Web Pages: 1 ([Old Buckroe Road Sanitary Sewer Replacement](#))

8. New Project Videos: 0

D. Special Projects and Highlights

1. The Communications department kicked off the return of virtual HRSD Lunch and Learns with “Eliminating filler words for more effective public speaking and presentations.” The event was well attended, and we are looking into making the recording available to all via the Communications SharePoint page. Asset Management will host a virtual Lunch and Learn event in May.
2. Director and staff had a preliminary planning meeting with the James River SWIFT project team to begin discussions on a future groundbreaking event for the project following Commission approvals.
3. Director and staff worked with TSD and IT staff to finalize, launch and promote new web content on HRSD.com, [HRSD’s Approach to Managing PFAS](#).
4. Meetings with staff from the cities of Chesapeake and Portsmouth, Virginia Department of Health staff, Department of Environmental Quality staff, and Virginia Department of Emergency Management staff regarding communication and clean-up efforts related to the Gum Court force main failure in Chesapeake.

E. Internal Communications

1. Director participated in the following internal meetings and events:
 - a. DEI UNIFIED Council meeting and communication planning meeting
 - b. Leadership & Management Academy orientation
 - c. Meeting with external auditors performing FOIA audit
 - d. Weekly GM check-in meetings
 - e. MOM Quarterly Meeting
 - f. Finance Committee meeting
 - g. James River SWIFT ground breaking event planning meetings
 - h. Discharge Monitoring Report (DMR), SWIFT Quality Steering Team (QST) and QST meetings
 - i. Weekly GM check-in meetings
2. Director also conducted biweekly communications department status meetings and weekly team and one-on-one check-in meetings.
3. Staff attended project progress and outreach development meetings with various project managers.
4. Staff attended Value of Water (VOW) monthly meeting.

F. Metrics

1. Educational and Outreach Activities: six in person; 45 virtual

- a. Self-guided SWIFT Virtual Tours – 45 views (analytics specify number of times “Take a Tour” button was selected)
- b. 04/06/2022 – Cox High School (3 classes) | 85 students
- c. 04/07/2022 – Cox High School (2 classes) | 49 students
- d. 04/13/2022 – Tabb Middle School Science Expo Night | 1,100 attendees
- e. 04/15/2022 – Coast Live Interview for askHRGreen re: medicine disposal (WTKR TV)
- f. 04/20/2022 – Woodland Senior Apartments (Hampton) What Not to Flush | 30 attendees
- g. 04/23/2022 – City of Virginia Beach Earth Day event | 1,000 attendees

2. Number of Community Partners: 4

- City of Virginia Beach
- Virginia Beach Public Schools
- York County School Division
- Woodland Apartments at Phoebus

3. Additional Activities Coordinated by Communications Department: 3

- 04/27/2022 – St. Patrick School Earth Day event | 80 students
- 04/27/2022 - Ghent School Career Day event | 100 students
- 04/29/2022 - William H. Cooper Elementary Career Day event | 150 students

4. Monthly Metrics Summary

Item #	Strategic Planning Measure	Unit	April 2022
M-1.4a	Total Training Hours per Full Time Employee (3) - Current Month	Hours / #FTE	10
M-1.4b	Total Training Hours per Full Time Employee (3) - Cumulative Fiscal Year-to-Date	Hours / #FTE	74.25
M-5.2	Educational and Outreach Events	Number	51
M-5.3	Number of Community Partners	Number	4

Respectfully,

Leila Rice, APR
 Director of Communications

TO: General Manager
FROM: Director of Engineering
SUBJECT: Engineering Monthly Report for April 2022
DATE: May 9, 2022

A. General

1. Capital Improvement Program (CIP) spending for the ninth month of Fiscal Year (FY) 2022 was below the planned spending target. Actual CIP spending for the FY is likely to continue to trail planned spending with a new FY 2022 target of \$180M.

CIP Spending (\$ million):

	Current Period	FYTD
Actual	10.31	104.93
Plan	26.90	212.80

2. A Water Quality Improvement Fund (WQIF) grant request was recently submitted for the Eastern Shore Transmission Force Main project. This is the first WQIF grant application submitted by HRSD to the VDEQ in several years. The WQIF Grant Program recently changed their procedures to allow for the submittal of conveyance projects that eliminate treatment plants that would otherwise require nutrient removal upgrades. This is the case for the Nassawadox Treatment Plant in Northampton County. The costs required to upgrade the treatment plant can be applied to the conveyance project. In the case of the Nassawadox Treatment Plant, the allowable improvements costs are estimated at \$4.7M. Since the transmission force main will cost \$20M, it is expected that all the treatment plant costs should be approved, and the funds can be applied to the conveyance project. We should receive feedback from the VDEQ in the coming months on this WQIF grant request. HRSD will have several other requests for similar projects in the coming year.

B. Asset Management Division

1. An upgrade to the Computerized Maintenance Management System (CMMS) was recently completed to calculate the replacement cost of specific assets. This replacement cost will include materials, engineering, construction, contingency and inflation in the estimate. This tool should limit the need for staff to prepare detailed estimates for each asset.
2. A recent line break on an existing pipe in Chesapeake on the Bowers Hill Interceptor Force Main is under assessment for further risk of failure. For most emergency repair efforts, the Asset Management Division conducts a condition assessment of the adjacent sections of pipe. In this case the failure appears to be due to external corrosion, so soil samples are being analyzed and the remaining pipe wall thickness is being determined to understand if further work is needed to this pipe segment. A recommendation will be made in the coming weeks if further pipe segments need to be repaired or replaced.

C. North Shore, South Shore and SWIFT Design & Construction Divisions

1. Construction continues on the Morison Pump Station Discharge Force Main Replacement project in Newport News. This is a relatively small project to replace sections of aging asbestos cement force main pipe. Although small in cost, this project includes two trenchless crossings including a micro-tunneling crossing and a horizontal directionally drilled crossing. This pipe replacement includes work under the CSX railroad tracks and tie-ins to the existing Morrison Pump Station. The construction effort should be completed later this summer.
2. Design efforts continue for the Larchmont Area Sanitary Sewer Improvements project in Norfolk. The 60% design submittal has been received from the Design Team and is under review by Staff. A proposal to reduce the scope of the project due to escalating costs has been proposed by HRSD. A Value Engineering (VE) Team has been selected from the various project stakeholders. This group will consider ways to reduce the scope of the project while still meeting the regulatory requirements and the needs of the local citizens in the Larchmont Section of Norfolk. The VE Team will meet in May to consider project options. Since this project is one of the Sewer Rehabilitation Action Plan Phase 2 projects, a quick decision is needed to keep this project on schedule.
3. Negotiation efforts continue for the James River SWIFT and Advanced Nutrient Reduction Improvements project. The 60% design submittal has been received from the Design-Build Team. This submittal will form the basis for the final stipulated price. Due to several scope changes and recent cost escalations, these negotiations are very challenging. If these negotiations are successful, staff will bring a recommendation to the May Commission Meeting.

D. Planning & Analysis Division

1. Staff are conducting the annual update to the Regional Hydraulic Model. The Regional Hydraulic Model plays a key role for HRSD and the various jurisdictions that discharge to the HRSD sewer system. The model is used for many purposes including future planning, emergency diversions and CIP project design. The annual update allows for the most recent data to be integrated into the model including new pump stations and development and changes to existing sewers in the region. This annual update is checked and then shared with all jurisdictions that connect or have an interest in the regional sewer system.
2. The Capital Improvement Program (CIP) update requires information from numerous sources. An important part of the CIP is graphical information for each project. The Geographic Information System (GIS) Section provides these needed graphics and other related data. HRSD's GIS is a key component to many systems at HRSD and almost every function at HRSD from billing, design, water quality, and biosolids land application use this system to manage data and make better decisions.

E. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 4

- a. 04/05/2022 – Participated in a panel discussion entitled, *Using Design-Build to Mitigate the Supply Chain Roller Coaster Ride*, at the Design-Build Institute of America (DBIA) 2022 Water/Wastewater Conference.
 - b. 04/12/2022 – Staff presented to the Old Dominion University Civil Engineering Senior Class about Project Delivery.
 - c. 04/22/2022 – Staff judged at the Virginia Water Environment Association (VWEA) Student Design Competition.
 - d. 04/29/2022 – Staff judged the Virginia Stockholm Junior Water Prize (SJWP) Student Competition.
2. Number of Community Partners: 4
- a. DBIA
 - b. Old Dominion University
 - c. VWEA
 - d. SJWP
3. Number of Research Partners: 1
- a. Water Research Foundation – Holistic Watershed Management & Integrated Planning Summit
4. Monthly Metrics Summary:

Item #	Strategic Planning Measure	Unit	April 2022
M-1.4a	Total Training Hours per Full Time Employee (45) - Current Month	Hours / #FTE	2.02
M-1.4b	Total Training Hours per Full Time Employee (45) - Cumulative Fiscal Year-to-Date	Hours / #FTE	20.36
M-5.2	Educational and Outreach Events	Number	4
M-5.3	Number of Community Partners	Number	4
M-5.4	Number of Research Partners	Number	1

Bruce W. Husselbee, PhD, P.E., DBIA

Bruce W. Husselbee, PhD, P.E., DBIA

TO: General Manager
FROM: Director of Finance
SUBJECT: Monthly Report for April 2022
DATE: May 12, 2022

A. General

1. On April 29th, staff worked diligently to close on \$126 million for both the Eastern Shore and Programmatic Virginia Clean Water Revolving Loan Funds. This saves ratepayers \$14 million in interest expenses compared to open market rates. More importantly, by closing in April, an additional \$6 million was saved because the loan was secured at 1.3% for 20 years as opposed to 1.75% if the loan closed in May.
2. Water consumption is coming in strong the last couple of months, which is driving wastewater revenues higher. Although we will likely be lower than Fiscal Year 2021 actual water consumption, we should end higher than budget. Interest Income continues to lag due to market value adjustments related to our one to three year investments. Bond prices vary inversely to rates which means that rising interest rates cause the values to decline, but over time, the higher rates will offset the declines. Personal Services and Fringe Benefits are in line with the previous year. Transportation, Utilities and Chemicals are higher than the previous year due to inflationary pressures. Operations continues to optimize the system to reduce usage where possible while maintaining treatment objectives. Overall, financials look strong as revenues exceed expenses in a challenging, inflationary environment.
3. The risk-off sentiment continues as the stock market continues its downward slide with aggressive monetary tightening by the Federal Reserve, Ukraine invasion, and persistent inflation. HRSD's Retiree Health Trust returned -6.37%, below the benchmark (-5.53%) for the quarter ended March 31. HRSD's investment advisor is shifting assets to a more defensive position to protect our portfolio.
4. Field activities including shut-off notifications resumed the week of April 4, 2022. During the slow roll-out, the Debt Solutions field team conducted 672 shut-offs during April. Over 1,900 pay plans were created through self-service and call center interactions to avoid or interrupt the severance process.
5. Warning tag and late payment fees have resumed. All March and April bills contained a message indicating the resumption of late payment fees. The late payment fees will begin to appear on June bills if the May bill is not paid by the due date. If a customer has a pay plan and is keeping up with it, late payment fees can be avoided.
6. The Call Center team has helped an increasing number of customers seeking pay plans (up 65 percent) and ways to avoid shut-off field activities (up 76 percent). The average wait time was 101 seconds with only seven percent of calls abandoned. The steady increase of the field activities roll out has helped the Call Center continue to manage the service level at 83 percent of calls answered within three minutes.
7. The Quarterly investment summary for [HRSD's Operating Cash Strategies and Retiree Health Trust \(OPEB\)](#) is attached.

B. Interim Financial Report

1. Operating Budget for the Period Ended April 30, 2022

	Amended Budget	Current YTD	Current YTD as % of Budget (83% Budget to Date)	Prior YTD as % of Prior Year Budget
Operating Revenues				
Wastewater	\$ 336,455,000	\$ 289,416,735	86%	85%
Surcharge	1,600,000	1,343,831	84%	89%
Indirect Discharge	3,200,000	2,721,321	85%	79%
Fees	3,020,000	161,171	5%	-13%
Municipal Assistance	700,000	888,765	127%	87%
Miscellaneous	1,285,000	2,106,793	164%	136%
Total Operating Revenue	346,260,000	296,638,616	86%	84%
Non Operating Revenues				
Facility Charge	7,320,000	5,804,115	79%	104%
Interest Income	1,210,000	(1,895,987)	-157%	32%
Build America Bond Subsidy	2,095,000	1,064,842	51%	95%
Other	610,000	1,159,219	190%	173%
Total Non Operating Revenue	11,235,000	6,132,189	55%	96%
Total Revenues	357,495,000	302,770,805	85%	85%
Transfers from Reserves	17,346,624	14,455,520	83%	85%
Total Revenues and Transfers	\$ 374,841,624	\$ 317,226,325	85%	85%
Operating Expenses				
Personal Services	\$ 62,776,055	\$ 52,629,484	84%	83%
Fringe Benefits	25,173,707	19,803,553	79%	80%
Materials & Supplies	9,509,735	7,426,212	78%	75%
Transportation	1,555,282	1,078,550	69%	56%
Utilities	12,350,061	10,613,024	86%	79%
Chemical Purchases	9,249,441	7,416,782	80%	61%
Contractual Services	55,345,089	31,265,808	56%	56%
Major Repairs	16,056,857	7,069,862	44%	45%
Capital Assets	655,963	453,001	69%	28%
Miscellaneous Expense	3,137,304	2,151,696	69%	70%
Total Operating Expenses	195,809,494	139,907,972	71%	70%
Debt Service and Transfers				
Debt Service	64,308,209	56,166,743	87%	89%
Transfer to CIP	114,463,921	100,386,600	88%	84%
Transfer to Risk management	260,000	216,670	83%	83%
Total Debt Service and Transfers	179,032,130	156,770,013	88%	85%
Total Expenses and Transfers	\$ 374,841,624	\$ 296,677,985	79%	77%

4. Capital Improvements Budget and Activity Summary for Active Projects for the Period Ended April 30, 2022

HRSD - PROJECT ANALYSIS

April 30, 2022

Classification/ Treatment Service Area	Appropriated Funds	Expenditures prior to 7/1/2021	Expenditures Year to Date FY2022	Total Project Expenditures	Encumbrances	Available Funds
Administration	70,138,240	20,771,298	1,996,133	22,767,431	2,905,033	44,465,776
Army Base	163,448,800	123,537,916	1,053,827	124,591,743	1,068,153	37,888,904
Atlantic	151,152,840	74,355,561	4,905,251	79,260,812	3,494,734	68,397,294
Boat Harbor	374,363,292	42,734,184	6,955,698	49,689,882	167,516,055	157,157,355
Ches-Eliz	183,269,370	105,101,136	12,099,025	117,200,161	7,121,808	58,947,401
Eastern Shore	26,967,651	68,570	1,317,393	1,385,963	22,197,333	3,384,355
James River	293,825,698	21,336,192	15,414,171	36,750,363	206,459,902	50,615,433
Middle Peninsula	95,522,822	13,361,582	4,976,990	18,338,572	7,088,696	70,095,554
Nansemond	401,373,953	27,969,786	11,378,559	39,348,345	261,910,956	100,114,652
Surry	57,612,528	26,413,528	11,464,732	37,878,260	3,538,456	16,195,812
VIP	156,548,633	9,757,328	5,676,869	15,434,197	14,491,079	126,623,357
Williamsburg	28,243,555	17,550,821	2,149,622	19,700,443	5,496,927	3,046,185
York River	71,119,281	9,783,051	2,877,870	12,660,921	4,318,897	54,139,463
General	788,204,526	152,763,171	49,666,844	202,430,015	282,523,042	303,251,469
	\$ 2,861,791,189.00	\$ 645,504,124.46	\$ 131,932,983.54	\$ 777,437,108.00	\$ 990,131,071.00	\$ 1,094,223,010.00

5. Debt Management Overview

HRSD - Debt Outstanding (\$000's)

April 30, 2022

	Principal Mar 2022	Principal Payments	Principal Draws	Principal Apr 2022	Interest Payments
Fixed Rate					
Senior	183,899	-	-	183,899	-
Subordinate	599,945	(219)	4,896	604,622	(2,071)
Variable Rate					
Subordinate	50,000	-	-	50,000	(19)
Line of Credit	33,721			33,721	(27)
Total	\$ 867,565	\$ (219)	\$ 4,896	\$ 872,242	\$ (2,117)

HRSD- Series 2016VR Bond Analysis

April 29, 2022

	SIFMA Index	HRSD	Spread to SIFMA
Maximum	4.71%	4.95%	0.24%
Average	0.33%	0.48%	0.15%
Minimum	0.01%	0.01%	0.00%
As of 4/29/22	0.44%	0.40%	-0.04%

* Since October 20, 2011 HRSD has averaged 48 basis points on Variable Rate Debt

6. Financial Performance Metrics for the Period Ended April 30, 2022

HRSD - UNRESTRICTED CASH

April 30, 2022

Can be used for any purpose since it is not earmarked for a specific use and is extremely liquid

		Days Cash on	
		Hand	Adjusted Days Cash on Hand
Total Unrestricted Cash	\$ 213,789,206		399
Risk Management Reserve	\$ (4,236,213)	(8)	391
Capital (PAYGO only)	\$ (28,128,724)	(53)	338
Adjusted Days Cash on Hand	\$ 181,424,269		338

Risk Management Reserve as a % of Projected Claims Cost is 25% YTD compared to 25% Policy Minimum
Adjusted Days Cash on Hand Policy Minimum is 270-365 days.

HRSD - SOURCES OF FUNDS

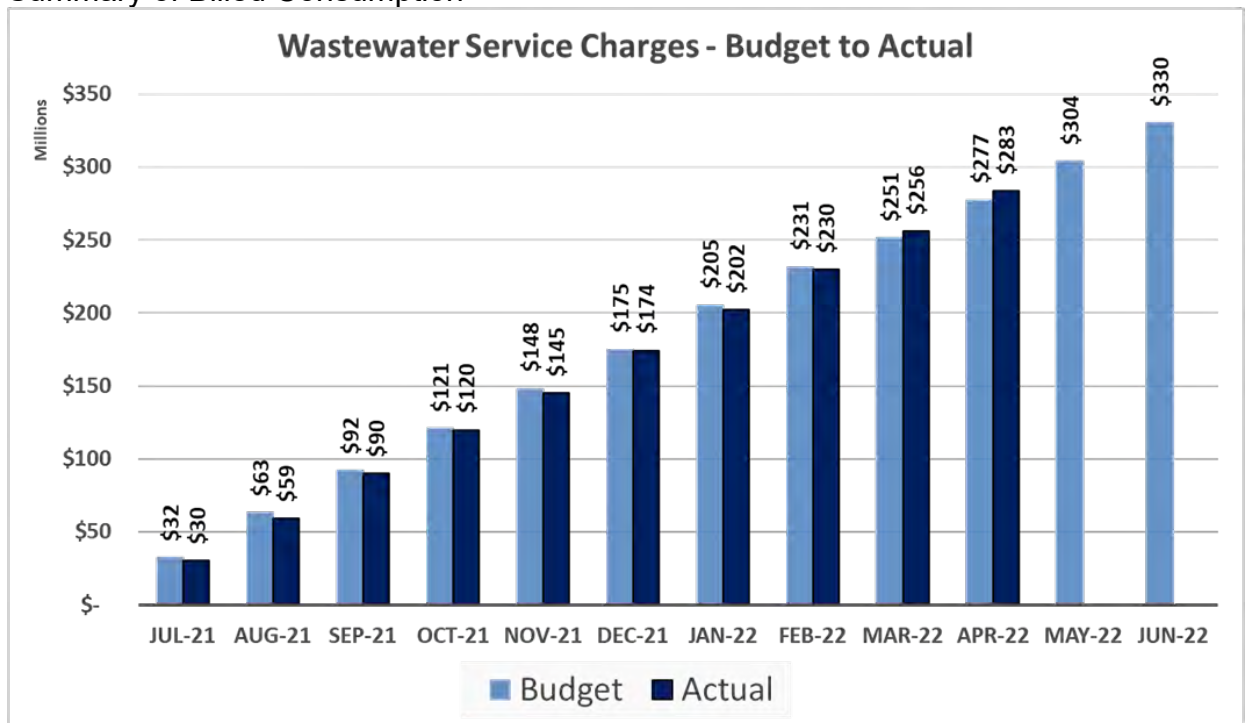
April 30, 2022

Primary Source	Beginning Market Value	YTD	YTD	YTD	Ending Market Value	Allocation of	Credit Quality	Current Mo Avg Yield
	July 1, 2021	Contributions	Withdrawals	Income Earned	April 30, 2022	Funds		
BAML Corp Disbursement Account	30,017,420	403,767,346	407,217,289	33,601	26,601,078	15.6%	N/A	0.55%
VIP Stable NAV Liquidity Pool	108,890,465	50,000,000	15,000,000	155,281	144,045,746	84.4%	AAAm	0.40%
Total Primary Source	\$ 138,907,885	\$ 453,767,346	\$ 422,217,289	\$ 188,882	\$ 170,646,824	100.0%		

Secondary Source	Beginning Market Value	YTD	YTD	YTD	Ending Market Value	Ending Cost	LTD Mkt Adj	Yield to Maturity at Market
	July 1, 2021	Contributions	Withdrawals	Income Earned & Realized G/L	April 30, 2022			
VIP 1-3 Year High Quality Bond Fund	65,054,203	-	10,790	269,914	62,928,394	63,658,668	(730,274)	
Total Secondary Source	\$ 65,054,203	\$ -	\$ 10,790	\$ 269,914	\$ 62,928,394	\$ 63,658,668	\$ (730,274)	

	Total	Fund Alloc
Total Primary Source	\$ 170,646,824	73.1%
Total Secondary Source	\$ 62,928,394	26.9%
TOTAL SOURCES	\$ 233,575,218	100.0%

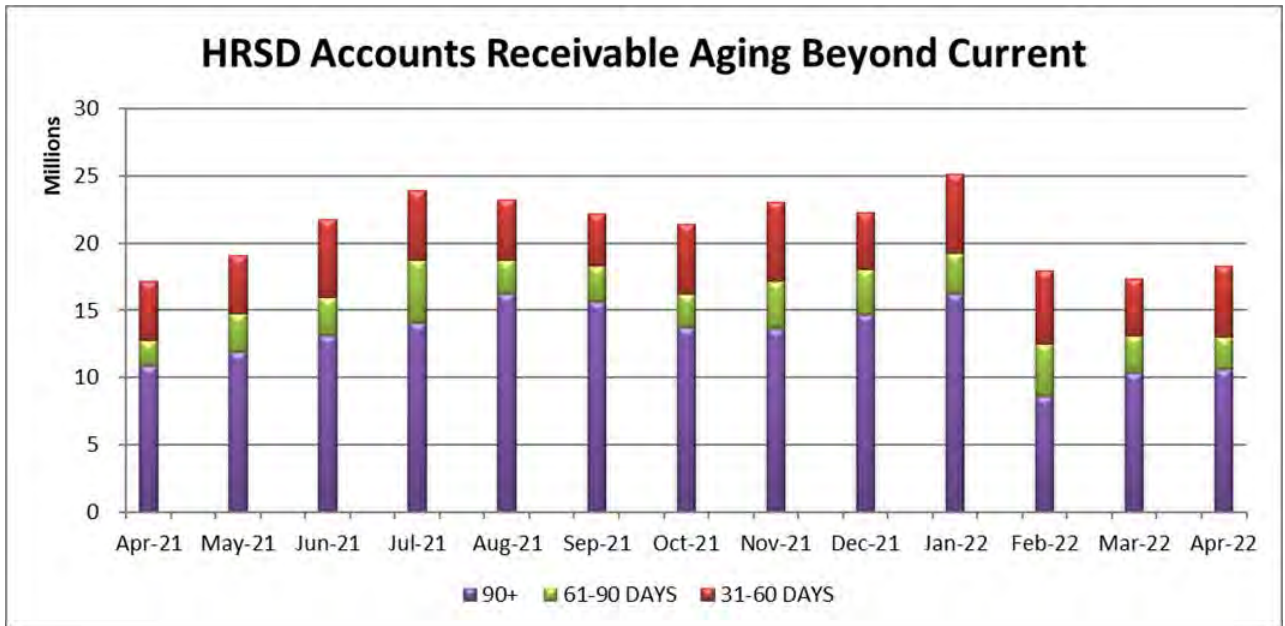
7. Summary of Billed Consumption

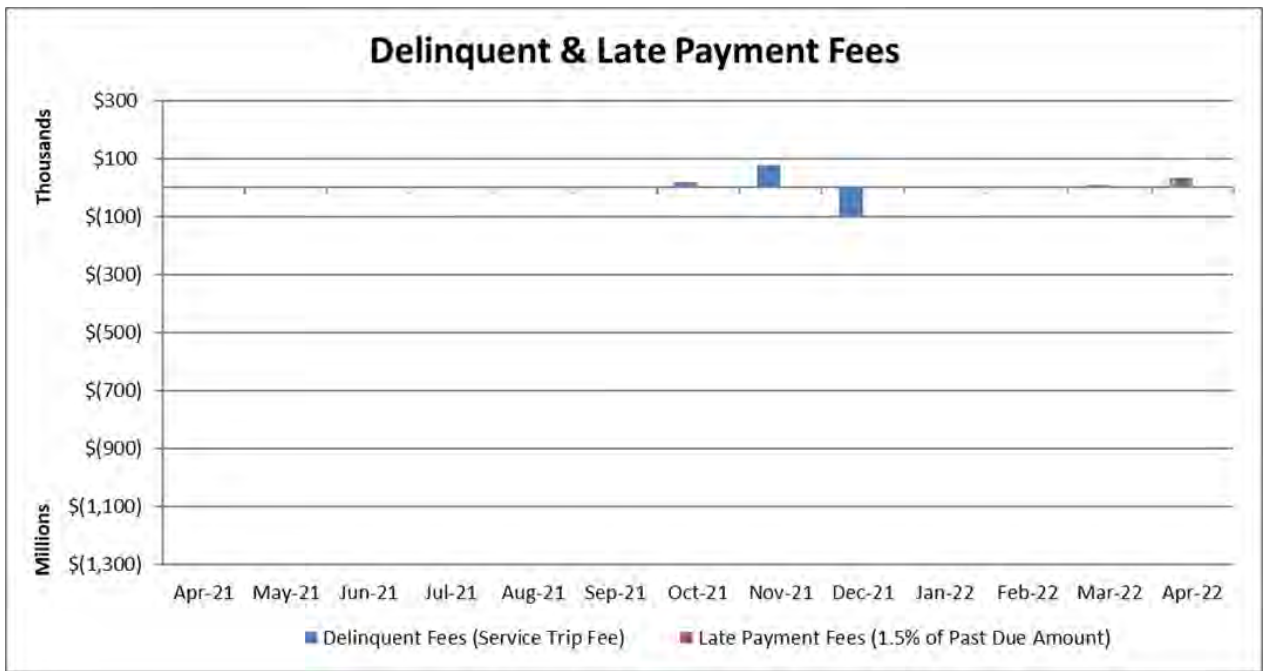


Summary of Billed Consumption (,000s ccf)							
Month	FY2022 Cumulative Budget Estimate	FY2022 Cumulative Actual	% Difference		% Difference		% Difference
			From Budget	Cumulative FY2021 Actual	From FY2021	Cumulative 3 Year Average	From 3 Year Average
July	5,015	4,976	-0.8%	4,751	4.7%	5,006	-0.6%
Aug	9,883	9,517	-3.7%	9,459	0.6%	9,866	-3.5%
Sept	14,413	14,346	-0.5%	14,335	0.1%	14,303	0.3%
Oct	18,892	19,048	0.8%	18,863	1.0%	18,931	0.6%
Nov	23,125	22,952	-0.7%	21,192	8.3%	22,474	2.1%
Dec	27,336	27,541	0.8%	27,614	-0.3%	27,458	0.3%
Jan	32,088	31,865	-0.7%	32,478	-1.9%	32,116	-0.8%
Feb	36,182	36,187	0.0%	36,068	0.3%	36,110	0.2%
March	39,309	40,229	2.3%	41,018	-1.9%	40,340	-0.3%
Apr	43,360	44,569	2.8%	45,116	-1.2%	44,540	0.1%
May	47,508	-	N/A	49,256	N/A	48,716	N/A
June	51,620	-	N/A	54,195	N/A	53,202	N/A

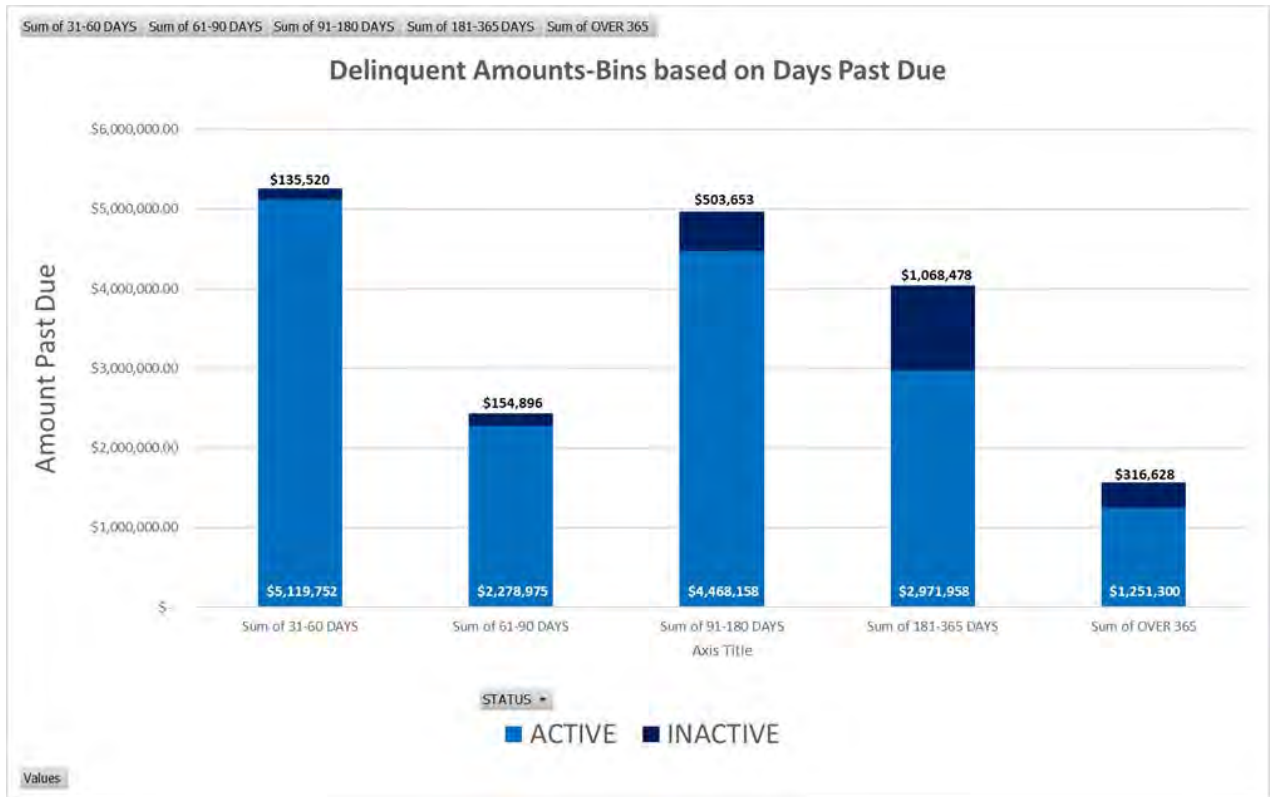
C. Customer Care Center

1. Accounts Receivable Overview

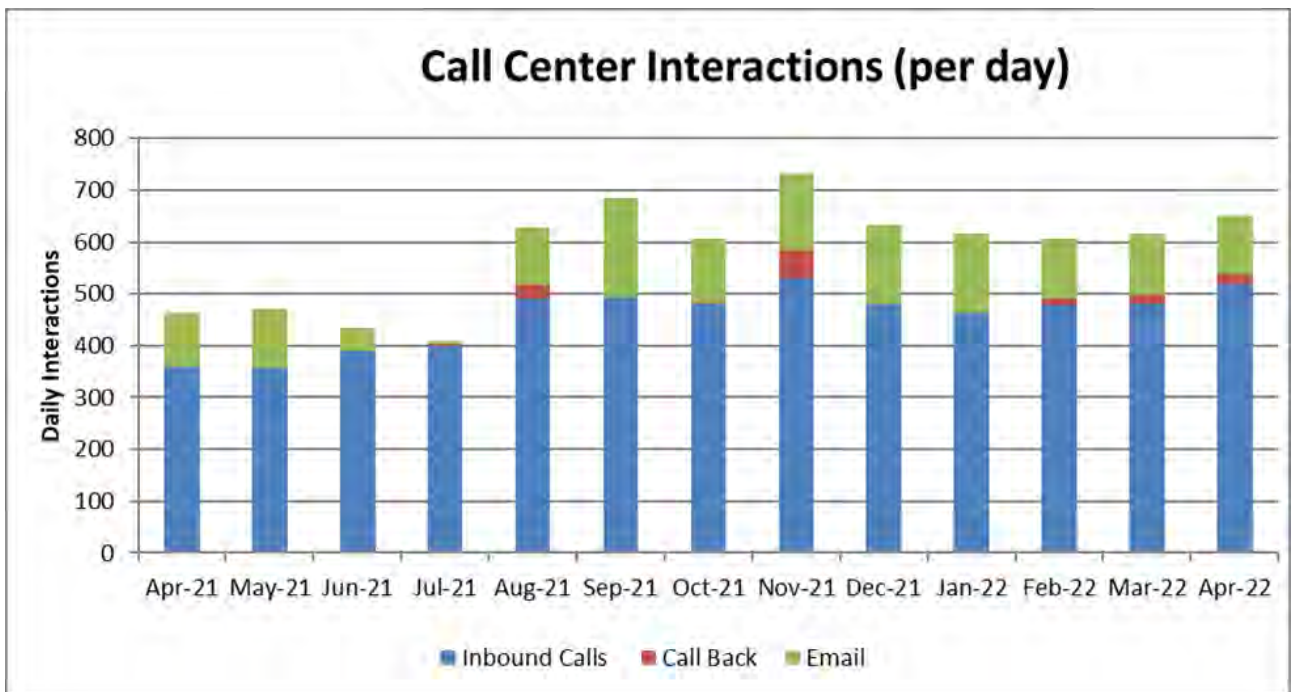
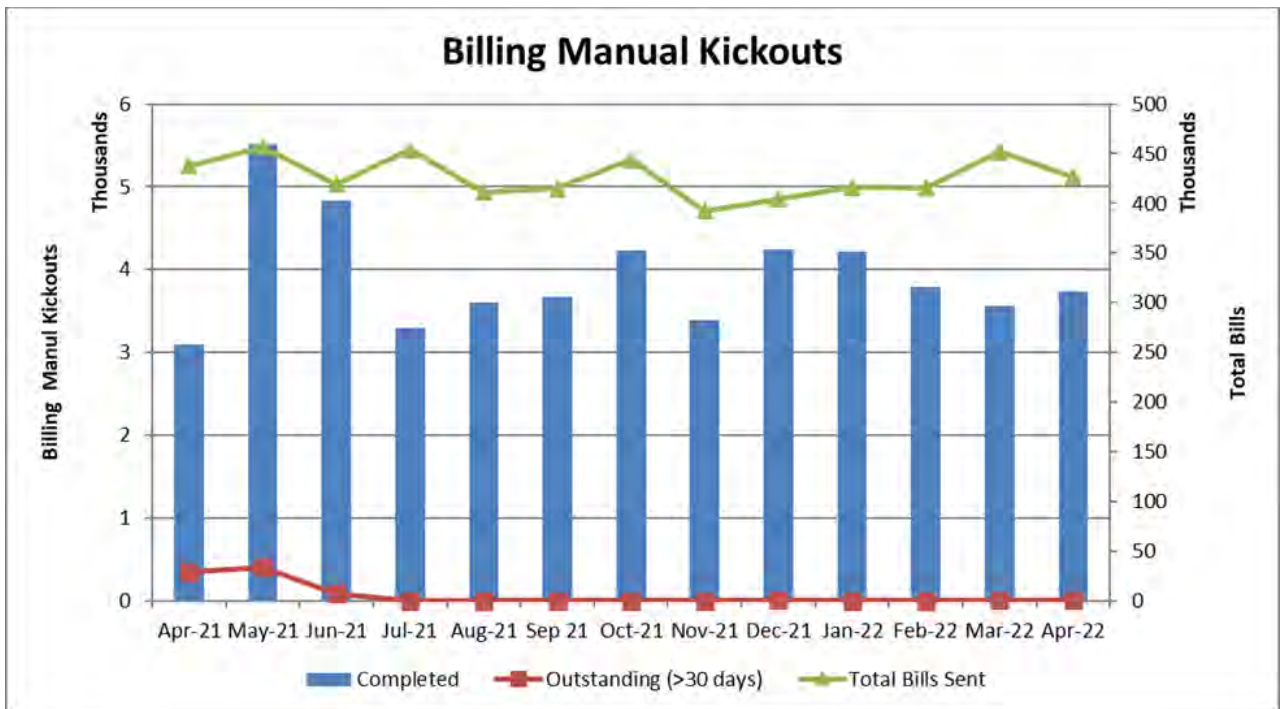


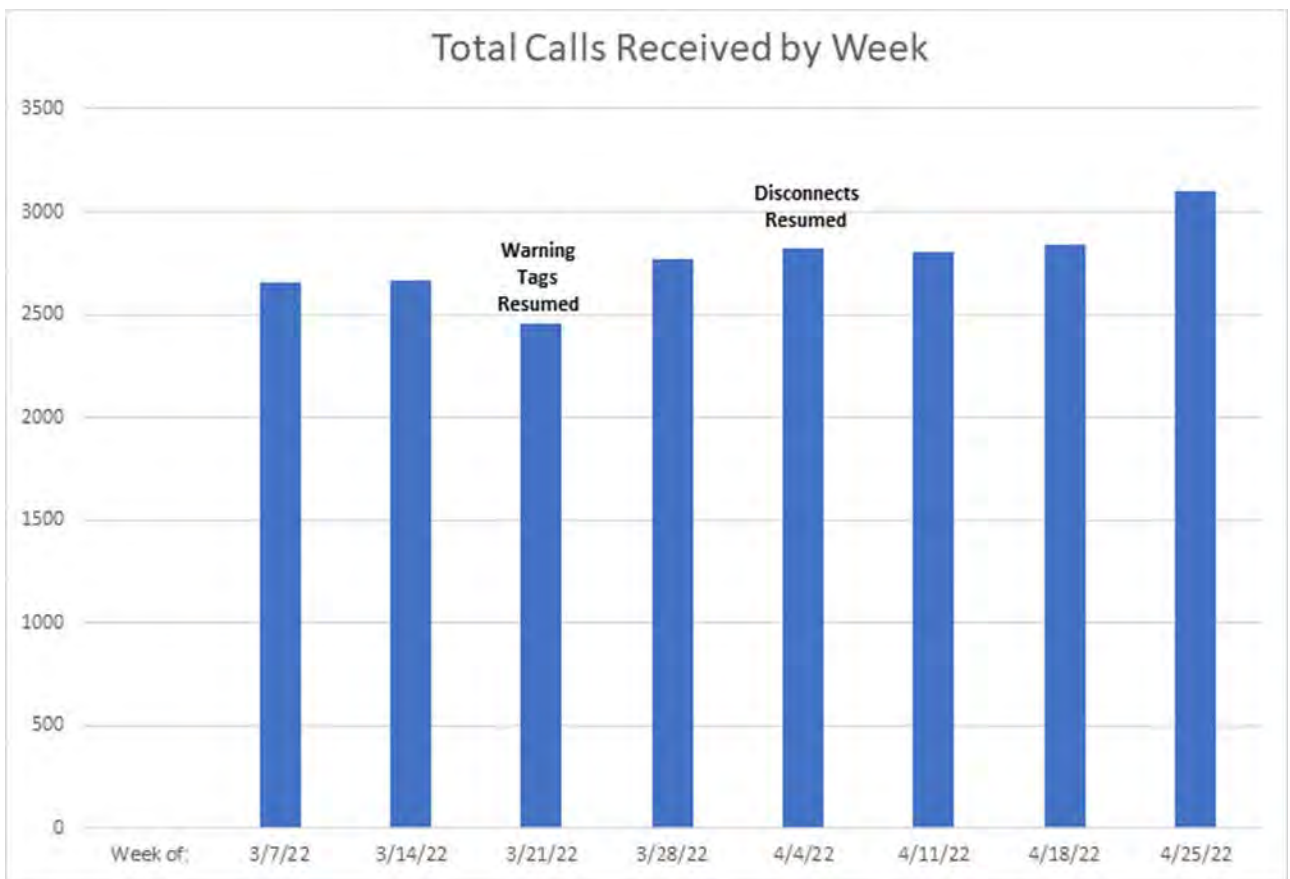


Apr 20-Feb 22 Field Activity was suspended late March 2020 in response to COVID-19.



2. Customer Care Center Statistics





Customer Interaction Statistics	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Calls Answered within 3 minutes	96%	65%	91%	93%	50%	67%	84%	88%	86%	83%
Average Wait Time (seconds)	30	433	57	38	379	193	89	75	81	101
Calls Abandoned	4%	23%	6%	4%	22%	15%	9%	6%	7%	7%

D. Procurement Statistics

ProCard Fraud	External Fraud Transactions *	Comments
July	0	
August	0	
September	1	Caught by card holder
October	0	
November	1	
December	8	Caught by card holder
January	5	3 caught by the bank, 2 caught by card holder
February	1	Caught by card holder
March	2	Caught by the bank
April	0	
Total	18	

***External Fraud:** Fraud from outside HRSD (i.e.: a lost or stolen card, phishing, or identity theft)

E. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 0
2. Community Partners: 0
3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	April 2022
M-1.4a	Training During Work Hours Per Full Time Employee (102) – Current Month	Hours / #FTE	1.03
M-1.4b	Total Training During Work Hours Per Full Time Employee (102) – Cumulative Fiscal Year-to-Date	Hours / #FTE	20.59
M-5.2	Educational and Outreach Events	Number	0
M-5.3	Number of Community Partners	Number	0
	Wastewater Revenue	Percentage of budgeted	104%
	General Reserves	Percentage of Operating Budget less Depreciation	108%
	Liquidity	Days Cash on Hand	399 Days
	Accounts Receivable (HRSD)	Dollars	\$36,254,846
	Aging Accounts Receivable	Percentage of receivables greater than 90 days	29%

Respectfully,
Jay A. Bernas
Jay A. Bernas, P.E.
Director of Finance

Attachments: [HRSD's Operating Cash Strategies and Retiree Health Trust \(OPEB\)](#)

	Total Portfolio Value	
	March 31, 2022	December 31, 2021
Investment Assets	\$ 69,818,589	\$ 74,609,535
Combined Assets	\$ 69,863,934	\$ 74,654,878

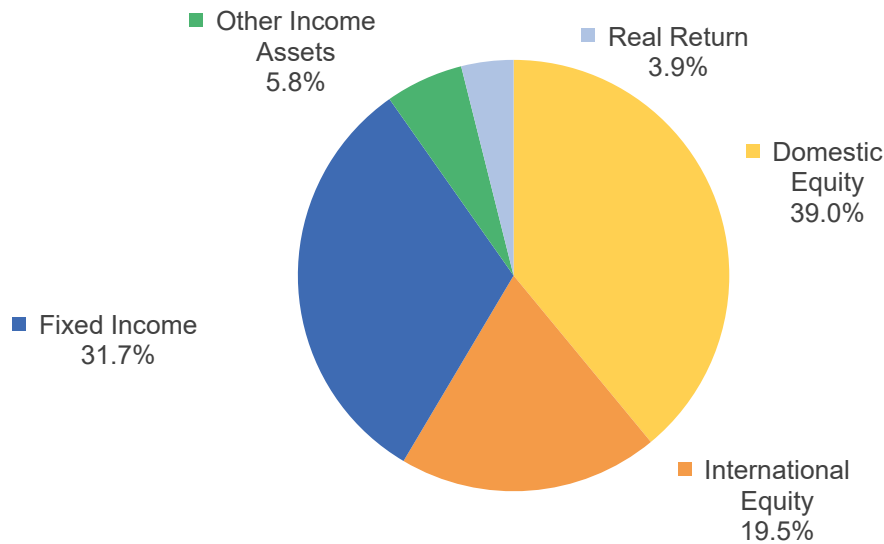
Portfolio Recap & Strategy

- The Retiree Health Plan Trust portfolio returned -6.37% (investment assets) for the quarter ended March 31, 2022, below the -5.53% return of the Blended Benchmark.* Over the quarter, the Multi-Asset Class Investment Committee (“the Committee”) sought to add value to the portfolio by increasing allocations to Fixed Income and Real Return, while decreasing allocations to Domestic Equity, International Equity, and Other Growth. The Committee added the Invesco Optimum Yield Diversified Commodity ETF, Invesco S&P 500 Equal Weight ETF, iShares Core S&P Small-Cap ETF, Vanguard FTSE Developed Markets ETF, and Pacific Funds Floating Rate Income Fund during the quarter.
- Inflation continues to be the focal point of investors and the economy. It started the quarter at 40-year highs, with headline consumer price index (CPI) surging to 7.5% in January and ending the quarter even higher, with March’s headline CPI jumping to 8.5% YoY. The U.S. labor market added an average of 562,000 jobs per month in the first quarter, making March the 11th straight month of job gains in excess of 400,000 jobs. Wages continued to climb, up 5.6% year-over-year (YoY). Initial jobless claims fell to its lowest level since 1968 during the last week of the quarter at 166,000, 23,000 lower than pre-COVID levels. The labor force participation rate also rose, up slightly from 61.9% to 62.4%, and March saw the unemployment rate continuing to fall, down to 3.6% from 3.8% in February. Both rates are just short of pre-COVID levels when labor force participation was 63.3% at unemployment was at 3.5%.
- The Russian invasion of Ukraine in late February has not only wrought destruction in Ukraine, but its ripple effects across the world economy were felt during the quarter as well. The conflict is expected to knock off an estimated \$1 trillion off the world’s economy and add 3% to global inflation this year, according to the UK’s National Institute of Economic and Social Research. Sanctions from the U.S., EU, and other nations have been utilized as an attempt to pressure Russia into peace talks, but in today’s globalized economy sanctions are rarely ever free of cost. With Russia standing as the world’s 11th largest economy, removing it from the global financial system will almost certainly cause collateral damage.
- The S&P 500 Index (S&P) posted a negative return of -4.60% for the quarter, despite a rally in March following the sharp selloff in January and February. Within S&P 500, nine out of the 11 sectors returned negative returns for the quarter. Communication Services (-11.92%), Consumer Discretionary (-9.03%) and Information Technology (-8.36%) were the worst-performing sectors, as surging inflation and rising interest rates impacted investor sentiment around richly valued sectors. Energy (+38.99%) was the best-performing sector, with the Russia and Ukraine war putting upward pressure on energy prices. Equity markets outside the United States, as measured by the MSCI ACWI ex-U.S. Index, underperformed their U.S. counterparts, returning -5.44% for the quarter.
- The U.S. bond market represented by the Bloomberg U.S. Aggregate (Aggregate) Index was sharply negative in the first quarter with a 5.93% loss. This was the worst quarterly performance for the Aggregate since the third quarter of 1980. The fixed-rate mortgage market, as measured by the Bloomberg U.S. Mortgage-Backed Securities (MBS) Index, had another weak quarter, down 4.97%. On the commercial side, the Bloomberg U.S. Agency CMBS Index fell 6.41%. Corporate credit was sharply negative as the Bloomberg U.S. Corporate Index, with its high duration, lost 7.69% while high yield bonds, as represented by the Bloomberg U.S. Corporate High Yield (HY) Index, sold off 4.84%. Within HY, results were again strongest in the single B-rated area. Emerging market USD sovereign bonds, as represented by the JP Morgan EMBI Global Diversified Index, were down 10.02%.
- Commodity futures, represented by the Bloomberg Commodity Total Return Index, gained 25.55% in the first quarter of 2022. REITs, as measured by the FTSE NAREIT Equity REITs Index, fell 3.89% in the first quarter of 2022, compared to a strong 16.31% return in the prior quarter.

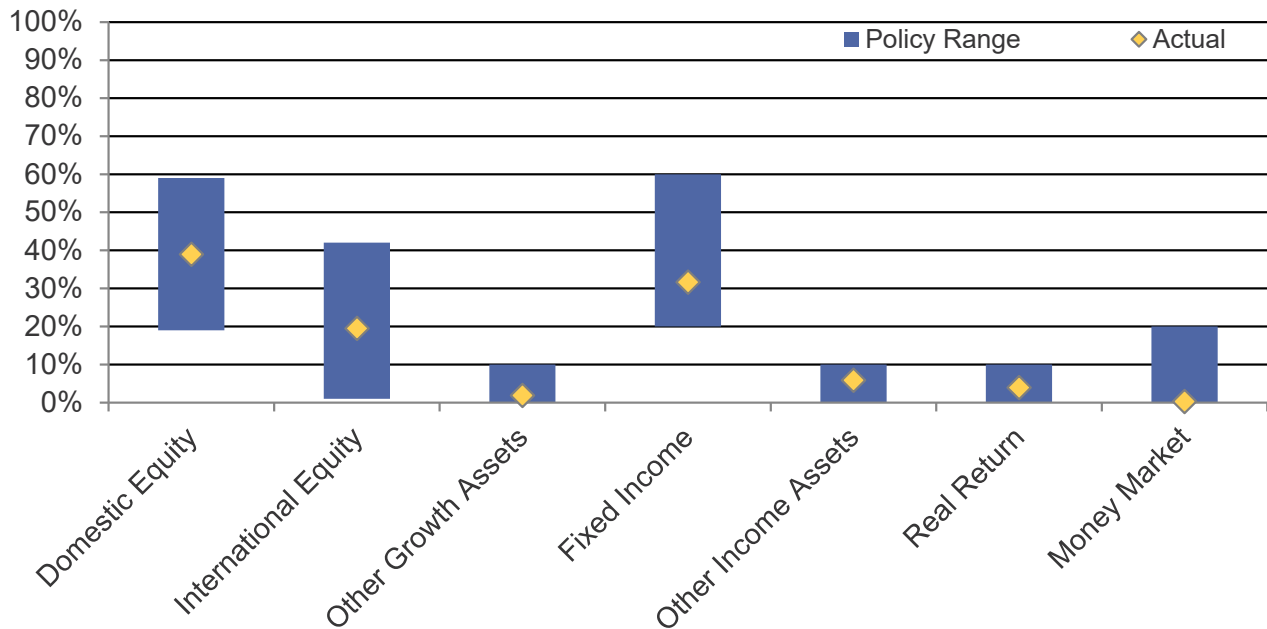
*Performance is unreconciled and does not include funds from Boyd Watterson. See page 3 for detailed information about the Blended Benchmark.

Security Type	March 31, 2022	% of Portfolio	December 31, 2021	% of Portfolio	Permitted by Policy
Domestic Equity	\$ 27,196,189	38.9%	\$ 30,262,173	40.5%	19% - 59%
International Equity	\$ 13,591,862	19.5%	\$ 15,935,379	21.3%	1% - 41%
Other Growth	\$ -	0.0%	\$ 1,391,820	1.9%	0% - 10%
Fixed Income	\$ 22,098,333	31.6%	\$ 21,024,773	28.2%	20% - 60%
Other Income Assets	\$ 4,073,126	5.8%	\$ 4,186,759	5.6%	0% - 10%
Real Return	\$ 2,730,542	3.9%	\$ 1,500,782	2.0%	0% - 10%
Money Market Funds	\$ 173,881	0.2%	\$ 353,192	0.5%	0% - 20%
Totals	\$ 69,863,934	100.0%	\$ 74,654,878	100.0%	

Portfolio Composition (as of 3/31/22)



Asset Allocation (as of 3/31/22)

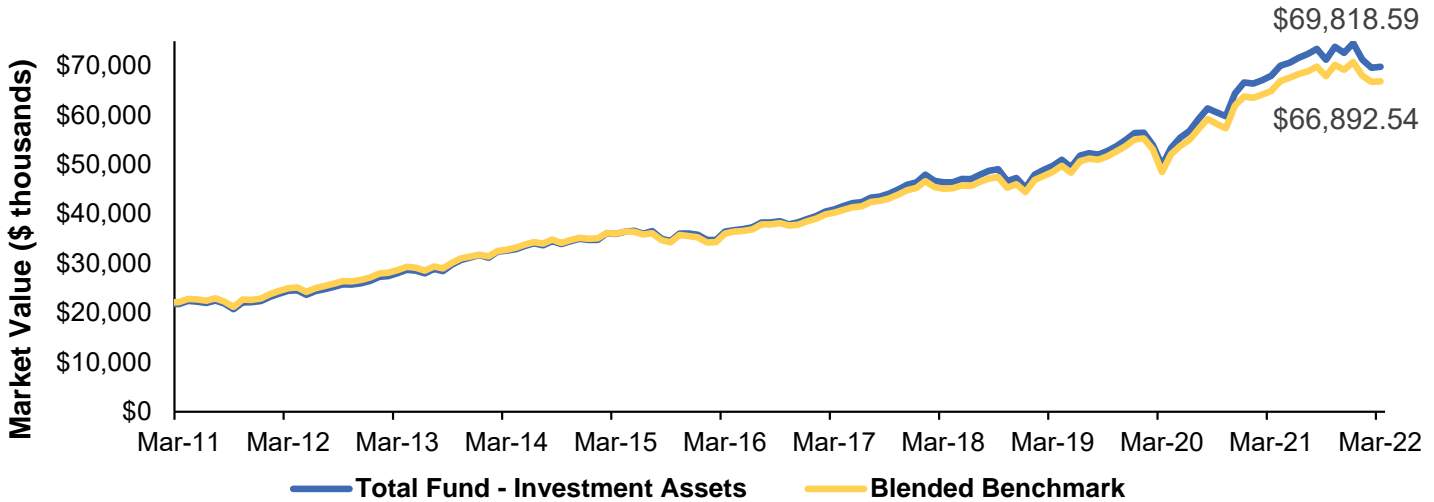


Index	Market Values	%	1 Quarter	Year to Date	Trailing 1 Year	Trailing 3 Years	Trailing 5 Years	Apr-2013 To Mar-2022*	Since Inception	Inception Date
Domestic Equity	\$ 27,196,189	38.95								
Vanguard Total Stock Market ETF	\$ 20,123,979	28.82	-5.45%	-5.45%	11.67%	18.14%	15.36%	14.22%	34.80%	4/1/2020
Russell 3000 Index			-5.28%	-5.28%	11.92%	18.24%	15.40%	14.25%	34.87%	4/1/2020
Invesco S&P 500 Equal Weight ETF	\$ 1,744,746	2.50	-2.76%	-2.76%	12.90%	16.78%	13.67%	13.24%	2.56%	3/1/2022
S&P 500 Equal Weighted			-2.72%	-2.72%	13.11%	16.97%	13.89%	13.56%	2.58%	3/1/2022
Jensen Quality Growth Fund	\$ 2,548,383	3.65	-7.55%	-7.55%	17.20%	17.32%	17.07%	15.22%	17.32%	4/1/2019
S&P 500			-4.60%	-4.60%	15.65%	18.92%	15.99%	14.71%	18.92%	4/1/2019
iShares Core S&P Mid-Cap ETF	\$ 1,397,246	2.00	-4.89%	-4.89%	4.51%	14.08%	11.04%	11.52%	2.70%	10/1/2021
S&P MidCap 400			-4.88%	-4.88%	4.59%	14.14%	11.10%	11.60%	2.73%	10/1/2021
iShares Core S&P Small-Cap ETF	\$ 1,381,835	1.98	-5.65%	-5.65%	1.12%	13.52%	10.86%	12.13%	1.76%	2/1/2022
S&P SmallCap 600			-5.62%	-5.62%	1.23%	13.58%	10.89%	12.17%	1.77%	2/1/2022
International Equity	\$ 13,591,862	19.47								
Vanguard Total International Stock ETF	\$ 3,751,791	5.37	-6.07%	-6.07%	-1.78%	7.82%	6.82%	5.51%	22.53%	4/1/2020
MSCI AC World ex USA (Net)			-5.44%	-5.44%	-1.48%	7.51%	6.76%	5.25%	21.32%	4/1/2020
J. O. Hambro International Select	\$ 3,010,858	4.31	-14.30%	-14.30%	-6.66%	8.76%	8.59%	8.77%	9.00%	1/1/2016
MSCI AC World ex USA (Net)			-5.44%	-5.44%	-1.48%	7.51%	6.76%	5.25%	7.41%	1/1/2016
Harding Loevner International Equity	\$ 3,011,832	4.31	-10.97%	-10.97%	-4.20%	9.26%	8.15%	7.09%	11.97%	7/1/2020
MSCI AC World ex USA (Net)			-5.44%	-5.44%	-1.48%	7.51%	6.76%	5.25%	14.51%	7/1/2020
Vanguard FTSE Developed Markets ETF	\$ 1,014,442	1.45	-6.04%	-6.04%	0.73%	8.58%	7.19%	6.21%	0.34%	3/1/2022
MSCI EAFE (net)			-5.91%	-5.91%	1.16%	7.78%	6.72%	5.73%	0.64%	3/1/2022
Artisan International Small-Mid	\$ 622,799	0.89	-12.71%	-12.71%	-7.99%	12.77%	11.66%	-	-7.47%	1/1/2021
Virtus KAR International Small-Mid Cap	\$ 863,101	1.24	-20.49%	-20.49%	-16.26%	6.14%	8.05%	-	-12.91%	1/1/2021
MSCI AC World ex USA Smid Cap Index (Net)			-6.63%	-6.63%	-1.31%	8.54%	7.03%	6.23%	2.28%	1/1/2021
Hartford Schroders Emerging Markets Equity	\$ 1,317,039	1.89	-8.81%	-8.81%	-16.42%	5.74%	6.66%	4.09%	1.68%	3/1/2018
MSCI EM (net)			-6.97%	-6.97%	-11.37%	4.94%	5.98%	3.51%	1.20%	3/1/2018
Fixed Income	\$ 22,098,333	31.65								
Baird Core Plus	\$ 5,488,184	7.86	-6.14%	-6.14%	-4.13%	2.39%	2.75%	2.73%	2.91%	5/1/2014
Blmbg. U.S. Aggregate			-5.93%	-5.93%	-4.15%	1.69%	2.14%	2.07%	2.26%	5/1/2014
DoubleLine Core Fixed Income	\$ 3,532,025	5.06	-4.88%	-4.88%	-3.19%	1.64%	2.22%	2.47%	1.73%	9/1/2017
PGIM Total Return Bond	\$ 5,458,140	7.82	-6.50%	-6.50%	-3.29%	2.20%	2.95%	3.01%	2.34%	9/1/2017
Blmbg. U.S. Aggregate			-5.93%	-5.93%	-4.15%	1.69%	2.14%	2.07%	1.73%	9/1/2017
Voya Intermediate Bond	\$ 3,651,349	5.23	-6.28%	-6.28%	-4.26%	2.20%	2.68%	-	0.19%	1/1/2020
Blmbg. U.S. Aggregate			-5.93%	-5.93%	-4.15%	1.69%	2.14%	2.07%	-0.19%	1/1/2020
iShares Intermediate-Term Corporate Bond ETF	\$ 1,107,441	1.59	-7.01%	-7.01%	-4.88%	2.84%	3.15%	2.66%	0.62%	10/1/2019
ICE BofAML U.S. Corporate 5-10 Year Index			-7.24%	-7.24%	-4.92%	2.94%	3.32%	3.32%	0.74%	10/1/2019
MFS Emerging Markets Debt	\$ 1,003,107	1.44	-7.94%	-7.94%	-6.26%	1.49%	2.23%	2.62%	-7.94%	1/1/2022
JPM EMBI Global Diversified			-10.02%	-10.02%	-7.44%	0.01%	1.69%	3.05%	-10.02%	1/1/2022
Pacific Funds Floating Rate Income	\$ 1,320,306	1.89	0.02%	0.02%	3.29%	3.52%	3.54%	3.59%	-0.39%	2/1/2022
Credit Suisse Leveraged Loan Index			-0.10%	-0.10%	3.22%	4.10%	4.05%	4.05%	-0.46%	2/1/2022
MainStay MacKay High Yield Corp Bond Fund	\$ 537,782	0.77	-3.21%	-3.21%	0.78%	4.57%	4.62%	-	-0.83%	6/1/2021
ICE BofAML High Yield Master II			-4.51%	-4.51%	-0.31%	4.39%	4.56%	4.91%	-1.67%	6/1/2021
Other Income	\$ 4,073,126	5.83								
Boyd Watterson GSA Fund	\$ 2,698,198	3.86	0.00%	0.00%	4.84%	-	-	-	6.51%	7/1/2019
NCREIF Property Income			-	-	-	-	-	-	-	7/1/2019
iShares Preferred&Income Securities ETF	\$ 1,374,928	1.97	-6.94%	-6.94%	-0.67%	4.99%	4.07%	4.52%	-5.19%	9/1/2021
ICE BofAML Preferred Stock, Hybrid Securities			-7.91%	-7.91%	-4.55%	2.47%	3.42%	4.65%	-7.29%	9/1/2021
Real Return	\$ 2,730,542	3.91								
Invesco Opt Yield Diversified Commodity	\$ 1,384,758	1.98	25.72%	25.72%	57.95%	18.36%	11.73%	-	-	4/1/2022
Bloomberg Commodity Index Total Return			25.55%	25.55%	49.25%	16.12%	9.00%	-0.44%	-	4/1/2022
PIMCO Commodity Real Return Strategy	\$ 1,345,785	1.93	24.35%	24.35%	52.80%	19.76%	11.07%	-0.07%	35.12%	6/1/2021
Bloomberg Commodity Index Total Return			25.55%	25.55%	49.25%	16.12%	9.00%	-0.44%	34.17%	6/1/2021
Cash Equivalent										
First American Government Obligation	\$ 128,537	0.18	0.01%	0.01%	0.03%	0.63%	0.96%	0.57%	1.20%	1/1/2004
Retiree Health Plan Trust	\$ 69,818,589	100.00	-6.37%	-6.37%	2.35%	10.31%	9.08%	8.03%	8.52%	9/1/2009
Blended Benchmark*			-5.53%	-5.53%	2.61%	9.57%	8.44%	7.24%	8.14%	9/1/2009

Data as of March 31, 2022.

* refers to performance that is not applicable.

Growth of Invested Assets: Actual v. Benchmark



*Active Strategy implemented April 1, 2013. Since inception to June 30, 2017, the Blended Benchmark was 33% Russell 3000 / 21% MSCI ACWI ex USA net) / 3% FTSE NAREIT Equity REITs / 3% Bloomberg Commodity TR / 40% Bloomberg Barclays Aggregate. From July 1, 2017 to present, the Blended Benchmark was 39% Russell 3000 / 21% MSCI ACWI ex USA net) / 40% Bloomberg Barclays Aggregate.

TO: General Manager
FROM: Director of Information Technology
SUBJECT: Information Technology Department Report for April 2022
DATE: May 11, 2022

A. General

1. Staff completed their review of mid-tier computing replacement proposals, and procurement has awarded a contract consistent with their recommendations. These high-density computing platforms will consolidate existing application and database servers which are nearing end of support.
2. The IT Help Desk processed 314 work orders in April, ensuring availability of computing resources to those working locally and remotely.
3. The organization-wide upgrade of the Microsoft Windows 10 operating system continues. Approximately 70% of all Windows 10 machines have been successfully upgraded, with the remainder scheduled for completion by early summer. This is a substantial upgrade to the Windows platform, with updated drivers, management features, and additional security and protection from malware. This will likely be one of the last major updates to Windows 10, as Microsoft plans to discontinue support for the Windows 10 platform in October of 2025.
4. The implementation of Microsoft OneDrive is complete, with all user data successfully migrated. Staff are monitoring performance and will optimize OneDrive performance based upon the results observed while monitoring.
5. Staff continue to work on several technology refresh initiatives involving Microsoft Office365 configuration and security parameters which are unique to cloud-based platforms like Office365. Representatives from Microsoft and other third-party consultants will be conducting a review of the currently installed Office365 components and their configurations. Following their analysis, and based upon best practices, adjustments will be made to ensure optimal system performance as well as the security and integrity all business data.

B. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 0
2. Number of Community Partners: 0

C. Metrics Summary

Item #	Strategic Planning Measure	Unit	April 2022
M-1.4a	Training During Work Hours Per Full-Time Employee (51) – Current Month	Total Training Hours / # FTE	0
M-1.4b	Total Training During Work Hours Per Full-Time Employee (51) – Cumulative Fiscal Year-to-Date	Total Training Hours / # FTE	9.37
M-5.2	Educational and Outreach Events	Number	0
M-5.3	Number of Community Partners	Number	0

Respectfully,

Don Corrado

TO: General Manager
FROM: Director of Operations
SUBJECT: Operations Report for April 2022
DATE: May 16, 2022

A. Interceptor Systems

1. North Shore (NS) Interceptor Systems

Staff continue to lead the successful deployment of the Supervisory Control and Data Acquisition (SCADA) project to new sites across the service area.

2. South Shore (SS) Interceptor Systems

- a. On April 23, a 36-inch ductile iron force main failed on Gum Court in Chesapeake. Isolating and diverting the flow was not possible due to the location in the system. After much effort, a contractor found a four-inch hole in the bottom of the pipe that was caused by external corrosion. The contractor installed a full circle clamp and restored the impacted area. The failure leaked approximately 452,000 gallons into stormwater ditches that drain to Drum Point Creek, a tributary of the Elizabeth River. The contractor performed further condition assessment immediately adjacent to the failure and found additional external corrosion on the pipe. As a result, the contractor installed appurtenances for a bypass near the failure to facilitate future pipeline replacement.
- b. On April 25, the City of Chesapeake reported a damaged air vent casting on Taylor Road. Staff replaced the casting.

B. Major Treatment Plant Operations

1. Army Base Treatment Plant (ABTP)

Staff removed the dry polymer feed system for the gravity belt thickener (GBT) and installed a new, more reliable emulsion polymer feed system. This eliminates the need for staff to lift and carry 55-pound bags of polymer to the loading hopper, lessening the chance of an on-the-job injury.

2. Atlantic Treatment Plant (ATP)

- a. On April 13, a staff member was covering shift and failed to complete the Total Residual Chlorine daily Quality Check (QC). This is done daily to ensure that the meter is reading within specifications. Upon discovery the next day, the meter was immediately checked and was operating within normal range. Treatment was stable. The failure to check the meter, however, resulted in 12 samples that did not meet QC standards.
- b. Staff received and investigated two odor complaints on April 11 and April 25. Although the source of the offsite odors is difficult to determine, contractors were

hauling biosolids away from the plant for land application the entire month. Staff also discovered that one of the Thermal Hydrolysis Process (THP) reactor ball valves was leaking and was a contributing source of offsite odors. Staff replaced the ball valve.

- c. In response to the offsite odor challenges at the plant, staff created a hotline and email address to help the Ocean Lakes community more easily provide feedback about any odor, noise, or other concerns they may have. In addition, staff are performing a daily inspection of plant equipment and all treatment processes where potential odor issues may arise; cleaning the solids holding areas more frequently; increasing air quality monitoring on plant site and within the surrounding community and are in the process of engaging a 3rd party specialist to provide additional expertise in environmental odor reduction and containment. Staff are also developing long-range solutions through several capital improvement project requests designed to further reduce the release of off-site nuisance odors.
- d. Secondary clarifier #1 sweep arm started tripping out continuously. Staff discovered faulty wiring and corrected the issue.
- e. On April 25, influent screen #2 failed and blinded causing water levels in the influent channel to rise triggering the channel bypass valve to open. Blinding occurs when enough debris is caught in the screens that it prevents water from passing through. Once the bypass opened with the screen still blinded, water levels in the influent channel level dropped and the bypass valve began to close causing an overflow. All overflow was contained within the Preliminary Treatment Facility building. When the channel level began to rise, the programming should have activated another influent screen, however, that did not happen. Staff are working to correct any programming deficiencies to prevent this from happening in the future. This is one of the new influent screens recently installed, so staff continue to optimize and work out programming issues.
- f. On April 12, a power loss caused the main boiler for the Thermal Hydrolysis Process (THP) to fail. Staff discovered that a check valve became stuck open allowing steam to enter the supply water system and prevent fresh water from reaching the boiler. Staff were able to get the check valve to seal and restarted the boiler system. Staff are working with a contractor to purchase and install a new check valve to prevent this from occurring again.
- g. Primary clarifier #6 cross collector was shearing shear pins. Staff drained and cleaned the tank and removed debris from the trough the screw operates in.
- h. Staff found the drain line for #5 and #6 primary clarifiers plugged. After opening the pipe, staff cleared four 2x4 pieces of wood and a large clump of rags from inside this drain line.
- i. A feedline to the primary fermenter became plugged and ruptured inside the digester building. Staff spent several days finding and removing the cause, and then spent additional time cleaning.

- j. On April 6, the contractor working on the #3 pre-dewatering centrifuge came on site to connect the power wiring to the machine. To perform this work, half of the motor control center (MCC) in the pre-dewatering building needed to be secured. The contractor, however, did not properly check and secure the power source. As a result, the equipment ran backwards damaging a motor and seal on pumps for the THP system. The contractor agreed to replace the damaged motor and seal.

3. Boat Harbor Treatment Plant (BHTP)

- a. The treatment process at the plant has fully recovered from the yeast problem noted in previous month's reports. Once the source of the yeast was located, loading to the plant was reduced. Minimal yeast remains in the system and staff are continually monitoring areas of accumulation in case of a resurgence.
- b. Contractors installed a new bar screen rack with less space between the teeth of the screen. The new rack should aid in removing more debris from the influent flow.

4. James River Treatment Plant (JRTP)

- a. The contractor modifying the #5 reactor of the Integrated Fixed Film Activated Solids (IFAS) tanks for improved nutrient removal completed demolition of concrete walls and scum removal equipment in tanks #1 and #2. These two tanks were placed back in service until equipment and materials arrived for construction. Tanks #7 and #9 were turned over to the contractor for similar demolition. While performing demolition, equipment and materials arrived on site, so the contractor will also proceed with construction on IFAS tanks #7 and #9. Staff used a fish pump to move K3 media from one tank to another to maintain plant operations.
- b. Contractors cut down approximately a dozen trees to preserve the property's eroding shoreline. Storm events continue to blow down trees and pull earth from the shoreline. There is a project to permanently stabilize the shoreline, but until it is started and completed, taking down the trees should help lessen erosion. Tree stumps were left in place to help hold the soil, and several trees were allowed to fall along the shoreline to act as a barrier.

5. Nansemond Treatment Plant (NTP)

- a. On April 27, staff took aeration tank #6 out of service to repair air leaks. The tank was returned to service on April 28.
- b. On April 29, staff took aeration tank #5 out of service to begin cleaning the tank for the installation of the big bubble mixing system. Tank #5 is the last tank to have the system installed.
- c. Sustainable Water Initiative For Tomorrow (SWIFT) Research Center (RC)
 - (1) The total volume of SWIFT recharge into the Potomac aquifer for March was 9.8 million gallons (MG) (46% Recharge Time based on 500 gpm).

- (2) The SWIFT recharge flow rate set point remained at 500 gpm for the month of April since the water level in the aquifer has been very stable.
- (3) There have been a few shutdowns at the SWIFT RC to accommodate electrical work for the new well that is being constructed. These shutdowns affected the recharge time.
- (4) On April 6, the blower from the ozone destruct unit failed and shutdown operations. Staff repaired the blower and returned it to service.

6. Virginia Initiative Plant (VIP)

- a. The Department of Environment Quality (DEQ) performed a site evaluation on April 5. Staff received a letter indicating full compliance.
- b. Staff replaced one blower, renewed media in the main air compressor dryer, and rebuilt one primary solids feed pump. Staff continues rehabilitation work on one primary clarifier and finished work on one scum concentrator, pending a test run.
- c. Staff and a contractor worked together to demolish a temporary enclosure and begin installation of a permanent building for noise abatement at the NEF blower pad.

7. Williamsburg Treatment Plant (WBTP)

- a. On April 2, insufficient sodium hypochlorite dosages created conditions for three consecutive contact tank residuals to be below 0.50 mg/L. Staff increased dosage amounts and chlorine residuals returned to normal.
- b. The project for upgrading the Distributed Control System (DCS) necessitated staff to manually operate numerous plant systems. Staff also had to shut down the incinerators (which are completely controlled by the DCS) and have a composting contractor haul centrifuge cake solids away from the plant.

8. York River Treatment Plant (YRTP)

On April 18, staff received an odor complaint from a neighbor close to the plant during a period of elevated flows and a wind blowing in the neighbor's direction. Staff responded to the complaint, but the odor had already dissipated by the time they arrived.

9. Incinerator Operations Events Summary

- a. Total Hydrocarbon (THC) monthly averages (not to exceed 100 parts per million) were met by all four treatment plants with incinerators with a THC continuous emissions monitoring (CEM) valid data captured of greater than 98 percent.
- b. There was one deviation from the minimum operating parameters and five minor bypass events (<60 minute). An air permit deviation occurred at Boat Harbor Treatment Plant (BHTP) when the continuous monitoring requirement was not met for a six-hour period after staff failed to select the burn zone once the

combustion of solids started. All indications are that during this six-hour period, the minimum operating parameters were met.

C. Small Communities (SC)

1. Middle Peninsula

a. Urbanna Treatment Plant (UBTP)

Staff installed IFAS media from JRTP to seed Train #2.

b. King William Treatment Plant and Collections (KWTP)

Total flow for the month of March was 2.096 MG of which 1.803 MG was pumped to Nestle-Purina as reuse/reclaimed water and 0.29 MG was effluent flow to the outfall.

2. Surry Systems

a. Surry County

- (1) On April 27, the sequencing batch reactor (SBR) float at the Surry County Treatment Plant switch assembly failed which prevented the SBR from decanting, causing an overflow of the tank to the drain pump station. Approximately 500 gallons were released, with 100 gallons recovered. Staff replaced the floats the following day.
- (2) During the month, staff reported one weekly average exceedance and a monthly average exceedance for cBOD concentrations at the Surry County Treatment Plant. The cause of the high cBOD levels is still being investigated but there have been small amounts of sludge discharging into the post equalization tank from the SBR during the start of the decant process. Staff from the Sussex Service Authority (SSA) inspected the decant seal and adjusted the travel limits. Aqua Aerobics has been contacted about replacement seals and troubleshooting the issue. There was also a mechanical issue with the wash assembly for the sand filter and the filter was down from April 11 through April 28. SSA will seed the digester during the month of May to improve settling in attempt to further reduce cBOD levels.

3. Eastern Shore (ES)

a. Onancock Treatment Plant (ONTP)

- (1) Staff are designing a new non-potable water (NPW) system to reduce reliance on potable water.
- (2) Staff installed five sewer laterals for the Town of Onancock.
- (3) Staff responded to numerous breaks and de-ragging of manholes.

D. Support Systems

Staff completed 12 projects, rebuilt two pumps for NS Interceptors and one for SS Interceptors. One notable project included fabricating a two-part stainless steel packing gland set that replaced the stock cast iron glands and reduced the down time.

E. Electrical & Instrumentation (E&I)

- a. Staff were notified that the Heat Exchanger Cooling Pumps for the THP Digester feed were inoperative at Atlantic Treatment Plant (ATP). Staff investigated and discovered that MCC A was wired incorrectly (i.e., improper phase rotation), causing the pump motors to operate backwards, resulting in one motor overheating, and failing. Staff rewired the affected MCC power cables to the proper phase rotation, replaced the damaged motor, and operationally tested all motors and pumps in the system.
- b. Staff assisted with upgrading the DCS software and hardware at the WBTP.
- c. Staff installed an additional sample pump, sample cup, three-way valve, and made programming changes to a “Jaralyzer” at the YRTP. These enhancements allow for additional sampling which should optimize methanol dosing.
- d. Staff worked with Dominion Energy (DE), to replace a faulty main circuit breaker identified during thermographic inspections at North Shore Road Pump Station (PS). The new circuit breaker was tested, and the station has returned to normal operation.

F. Special Projects and Energy Management (CEM)

The solar array for the NS operations center is performing as expected. The array produced over 26,000 kilowatt hours (kWh) this month, which provided 86% of the building load over the last three weeks. The solar array produced enough power to provide for 29 average homes.

G. Water Technology and Research

Odor control at the Atlantic Treatment Plant continues to be a challenge. There are capital projects pending to address these odor issues, including a replacement of aged and ineffective odor control stations A and C with a new facility that will serve these needs and others in the solids handling end of the plant, replacement of the waste gas flaring station, and new primary solids gravity thickeners. There are also several uncertainties with respect to sources of odor around the anaerobic digesters, specifically the emergency pressure relief valves and the annular space between the digester covers and tank sidewalls. These sources are now being evaluated and optimized as much as possible.

H. MOM reporting numbers

MOM Reporting #	Measure Name	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
2.7	# of PS Annual PMs Performed (NS)	2	3	3	4	2	4	4	4	4	5		
2.7	# of PS Annual PMs Performed (SS)	6	6	4	5	2	4	2	10	4	2		
2.7	# of Backup Generator PMs Performed (Target is 4.6)	10	13	8	10	8	13	12	12	10	7		
2.8	# of FM Air Release Valve PMs Performed (NS)	72	89	184	210	166	251	149	41	185	227		
2.8	# of FM Air Release Valve PMs Performed (SS)	124	165	193	269	167	205	211	166	381	265		
2.9	# of Linear Feet of Gravity Clean (NS) (Target is 2,417 for HRSD)	5,209	0	9,963	8,696	3,829	3,161	4,047	4,403	1,801	530		
2.9	# of Linear Feet of Gravity Clean (SS) (Target is 2,417 for HRSD)	0	3,531	7,717	10,276	5,272	0	0	745	2,693	0		
2.9	# of Linear Feet of Gravity CCTV Inspection (HRSD Target 3,300 LF)	0	0	11,796	0	11,796	24,175	33,133	10,570	10,570	10,570		

I. Strategic Measurement Data

1. Education and Outreach Events: 7

- a. 04/07/2022 –National Science Foundation, Engineering Directorate Advisory Committee Presentation and Meeting – Charles Bott
- b. 04/11/2022 – Session Moderator, International Water Association, Wastewater, Water, and Resource Recovery Conference, Mainstream Anammox – Stephanie Klaus
- c. 04/12/2022 - Invited Keynote Presentation, International Water Association, Wastewater, Water, and Resource Recovery Conference, Water reuse practice using granular activated carbon: SWIFT – Charles Bott
- d. 04/13/2022 – Career Day at Tabb High School – Kevin Ketchum
- e. 04/19/2022 – New Horizons Technical Center meeting – Rick Raike
- f. 04/26/2022 – Nansemond Treatment Plant and SWIFT Tour for Commissioner Nancy Stern – Steve de Mik, Christel Dyer, Seth Luma, Frank Matesig, Germano Salazar-Benites
- g. 04/27/2022 - National Water Research Institute, Peer Review Panel, Anne Arundel County OurWAater Program – Charles Bott

2. Community Partners: 3

- a. Chesapeake Bay Foundation-Oyster Cage Maintenance at BHTP for Oyster Garden Project
- b. DOE Jefferson Lab
- c. Old Dominion University (ODU)

3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	April 2022
M-1.4a	Training During Work Hours per Full Time Employee (FTE) (538) – Current Month	Hours / FTE	2.13
M-1.4b	Total Training During Work Hours per FTE (538) – Cumulative Year-to-Date	Hours / FTE	27.24
M-2.3a	Planned Maintenance Total Maintenance Hours	Total Recorded Maintenance Labor Hours	34,575.05
M-2.3b	Planned Maintenance – Preventive and Condition Based	percent of Total Maintenance Hours	62.06%
M-2.3c	Planned Maintenance - Corrective Maintenance	percent of Total Maintenance Hours	15.39%
M-2.3d	Planned Maintenance - Projects	percent of Total Maintenance Hours	22.55%
M- 4.1a	Energy Use: Treatment *Reported for April 2022	kWh/MG	2,348
M-4.1b	Energy Use: Pump Stations *Reported for April 2022	kWh/MG	262
M-4.1c	Energy Use: Office Building *Reported for April 2022	kWh/MG	84
M-5.2	Educational and Outreach Events	Number	7
M-5.3	Number of Community Partners	Number	3

Respectfully submitted,
Steve de Mik
 Director of Operations

TO: General Manager
 FROM: Director of Talent Management (TM)
 SUBJECT: Monthly Report for April 2022
 DATE: May 11, 2022

A. Talent Management Executive Summary

1. Recruitment Summary

New Recruitment Campaigns	18
Job Offers Accepted – Internal Selections	10
Job Offers Accepted – External Selections	11
Internal Applications	52
External Applications	156
Average Days to Fill Position	75

2. Employee Separation Summary

Career/Better Opportunity	1
Content of work	1
Family circumstances	0
Dismissal	1
Going to school	1
Lack of Opportunity for Advancement	0
Moving from the area	1
Salary	1
Retirement	1
Unknown	0

3. The following activities were performed in response to the COVID-19 pandemic:

- a. Continued addressing and monitoring suspected COVID-19 cases and potential exposures based on Virginia Department of Health (VDH) guidelines:

Description	April 2022	Total (March 2020 – April 2022)
Quarantines due to illness or direct exposure (household or external)	1	424
Work Related Quarantines	0	59
Personal Travel Quarantines	0	59
Confirmed Employee COVID-19 Cases	4	201
Work Related Confirmed COVID-19 Cases	0	6
Contractor COVID-19 Cases on HRSD Sites*	0	12
Vaccine Acknowledgements	5	854
Booster Acknowledgements	13	369
HRSD vaccination rate	98%	

4. Human Resources continued work with the consultant on system changes to benefit interfaces and benefit plan changes.
5. Compensation and Benefits
 - a. The Compensation and Classification (C&C) team evaluated one position based on Department requests.
 - b. Finalized open enrollment materials with our benefit consultant for the 2022/2023 medical, vision and dental plans. Open enrollment occurs in the month of May, and we have 12 meetings scheduled.

6. Wellness Program

a. Participation

Year Nine Participation Activities	Unit	April 2022	Year to Date (March 2022–February 2023)
Biometric Screenings	Number	1	51
Preventive Health Exams	Number	2	46
Preventive Health Assessments	Number	9	25
Online Health Improvement Programs	Number	4	10
Web-MD Online Health Tracking	Number	58	125
New Challenges “Team to Team”	Number	0	30
Fit-Bit Promotion	Number	29	11

- b. The Wellness Specialists worked with Optima Health to finalize incentive and health insurance deductible files that were sent to HRSD.
- c. The year nine wellness year appeal process was completed with 79 approved appeals.
- d. Wellness collaborated with Optima EAP for Stress Awareness month. Materials and resources were focused on stress management and burnout. Deb Kopecky prepared and presented an April virtual presentation on *Stress Relieving Tips and Tricks*. 97 people watched the session.
- e. National Walking Day was promoted on April 6th.
- f. A new Clinical Corner was added to the Wellness Wednesday email. Topics included:
 - Testicular Cancer Screening Month
 - National Donate Life Month
 - National Healthcare Decisions Day

- 2022 County Health Rankings show how Virginia continues to improve and Virginia’s plan for well-being.

7. Worked with Organizational Development consultant Hicks Carter Hicks (HCH) on the following:
 - a. Worked with the HRSD sponsor on several Diversity, Equity and Inclusion (DE&I) strategies.
 - b. Worked on the Leadership Ethical Accountability Program (LEAP) supervisor training program. The program began on March 8.
 - c. Continued working on the Leadership and Management Academy (LAMA) Cohort 2 program which began April 22.
 - d. Continued work with the Customer Care Division to curate online learning paths and integration of available Corporate Training courses.
 - e. Continued work with the Water Quality Department to increase quality assurance training courses.
8. Coordinated a cross-sectional team to advance the functionality of Canvas.
9. Apprenticeship Program
 - a. The *Youth Summer Intensive (YSI) Program* is a new internship opportunity that will place six youth interns at two treatment plant work centers. Organizational Development & Training (ODT) staff are currently working with apprenticeship instructors and work center staff to develop and prepare for the summer internship.
 - b. Work continued on the following:
 - (1) Apprenticeship Mentoring Program
 - (2) Request for Proposals for a Student Information System and Attendance and Assessment applications
 - (3) Developing Standard Operating Procedures for ODT responsibilities
 - (4) Trade curricula revisions and course development to update and enhance course offerings

10. Mishaps and Work-Related Injuries Status to Date (OSHA Recordable)

	<u>2021</u>	<u>2022</u>
Mishaps	33	14
Lost Time Mishaps	12	1
<i>Numbers subject to change pending HR review of each case.</i>		

11. Safety Division Monthly Activities

Safety Training Classes	13
Work Center Safety Inspections	11

Reported Accident Investigations	1
Construction Site Safety Evaluations	4
Contractor Safety Briefings	7
Hot Work Permits Issued	0
Confined Space Permits Issued/Reviewed	110
Industrial Hygiene Monitoring Events	0

B. Monthly Strategic Planning Metrics Summary

1. Education and Outreach Events: (1)
2. Community Partners: (0)
3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	April 2022
M-1.1a	Employee Turnover Rate (Total)	Percentage	0.91
M-1.1b	Employee Turnover - Service Retirements	Percentage	0.0013%
M-1.4a	Total Training Hours Per Full Time Employee (17)	Total Training Hours/ FTE	2.4
M-1.4b	Total Training During Work Hours Per Full Time Employee (17) – Cumulative Fiscal Year-to-Date	Hours / FTE	20.7
M-5.2	Educational and Outreach Events	Number	1
M-5.3	Community Partners	Number	0

Respectfully submitted,

Dorissa Pitts-Paige

Director of Talent Management

TO: General Manager
FROM: Director of Water Quality (WQ)
SUBJECT: Monthly Report for April 2022
DATE: May 11, 2022

A. General

1. The Pretreatment and Pollution (P3) Division issued no civil penalties this month.
2. HRSD received approval for a Limited Use Alternative Test Procedure for online Chlorine monitoring at the Nansemond Treatment Plant (NTP). This procedure will be used to report regulatory total chlorine residual analysis of the contact tank and has been an ongoing collaborative effort with EPA Office of Water/Science and Technology/ Environmental Analysis Division staff, contractors, vendors, NTP and Water Quality staff. Implementation of this automated procedure will allow the NTP to optimize operational staffing.
3. The Central Environmental Laboratory (CEL) initiated a systematic corrective action for Biochemical Oxygen Demand (BOD) robotics in response to errors made following maintenance. The errors resulted in invalid data for multiple plants spanning three weeks in April and impacted low level BOD data, further resulting in weekly monitoring requirements not being met in several instances. The corrective action included changes in maintenance and verification procedures to prevent future occurrences.
4. The York River Treatment Plant Virginia Pollution Discharge Elimination System (VPDES) permit was reissued with an effective date of May 1, 2022. Influent monitoring for BOD/Chemical Oxygen Demand (COD) and Total Suspended Solids (TSS) was included in the reissuance for the purposes of demonstrating compliance with percent removal requirements based on secondary treatment standards.
5. Water Quality worked with Operations, General Manager and Communications staff to address ongoing odor issues at the Atlantic Treatment Plant (ATP). Technical Services Division (TSD) staff increased odor surveillance, worked with ATP staff to identify and mitigate odor sources, and assisted with community outreach activities.
6. P3 and Operations staff met to review data trends regarding Fats, Oils and Grease (FOG) loading at TP facilities and to discuss short and long-term strategies for effective management of FOG.

7. Advocacy and external activities:
 - a. Stacie Crandall, Chief of the CEL was appointed chair of the *Standard Methods for the Examination of Water and Wastewater* Task Group for the development of Online Analytical Methods.
 - b. Director of Water Quality participated in Water Research Foundation Planning Summit meetings held throughout April.
7. Ashley Roberts, CEL Supervising Chemist was promoted to Laboratory Manager.

B. Quality Improvement and Strategic Activities

1. The Sustainability Environment Advocacy (SEA) Group performed the following:
 - a. Jon Nelson, SEA Team leader, presented the *Boat Harbor Treatment Plant (BHTP) Trash Collector Project* to Hampton Roads Planning District Commission's (HRPDC) Regional Environmental Committee. The trash collector was designed and built by HRSD employees across numerous work centers and pulls trash from the waterway daily. BHTP, TSD and the SEA Team are collaborating to quantify and track quantities of trash collected and removed from the harbor.
 - b. Sponsored nine cleanup events throughout Hampton Roads and at several HRSD TPS, including Earth Day cleanup events:

Location	Date	Participants	Trash Bags Collected	Approximate Weight (lbs.)	Distance Covered (miles)
Elizabeth River Park, Chesapeake	04/02/2022	14	14	140	0.5
Chatham Trail, Newport News	04/09/2022	4	26	260	2.0
Indian River Park	04/16/2022	12	18	150	0.5
Boat Harbor TP	04/22/2022	4	3	25	0.5
Atlantic TP	04/22/2022	8	15	150	2.0
Nansemond TP	04/22/2022	11	10	250	0.5
Air Rail Avenue	04/22/2022	18	30	300	0.5
NS P3	04/22/2022	5	3	30	0.5
Little Neck Road	04/22/2022	1	1	8	1.5
TOTAL:	9 Events	77	120	1313	8.5

C. Municipal Assistance Program (MAP)

HRSD provided sampling and analytical services to Northumberland, Stafford and Westmoreland counties, the City of Hopewell, the Town of Lawrenceville, and the Western Virginia Water Authority (WVWA) to support monitoring required for their respective VPDES permits.

D. Microbial Source Tracking (MST)

1. Hampton Roads Projects

HRSD provided sampling and analytical services to City of Norfolk (Mason Creek), City of Virginia Beach (Thalia Creek), City of Chesapeake (Southern Branch), City of Hampton (New Market Creek), City of Suffolk (downtown), City of Newport News (Lucas Creek/Southeast Newport News)

2. Virginia MST Projects

HRSD provided analytical services to the City of Roanoke

E. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 2

- a. 04/13/2022 – Attended the Tabb Middle School Science Expo.
- b. 04/23/2022 – Attended City of Virginia Beach's Mount Trashmore Earth Day event.

2. Community Partners: 5

- a. The City of Chesapeake, Chesapeake Local Health District and the Virginia Department of Health - Local COVID-19 wastewater surveillance
- b. Lynnhaven River Now – provided water quality trend analysis of citizen monitoring data
- c. Hampton Roads Planning District Commission - Fats, Oils & Grease subcommittee
- d. York County Public Schools Tabb Middle School
- e. City of Virginia Beach

3. Odor Complaints:

See attached [Effluent and Air Emissions Summary](#).

4. Monthly Metrics

Item #	Strategic Planning Measure	Unit	April 2022
M-1.4a	Training During Work Hours Per Full Time Employee (119) (Current Month)	Total Hours / # FTE	5.43
M-1.4b	Total Training During Work Hours Per Full Time Employee (119) (Cumulative Fiscal Year-to-Date)	Total Hours / # FTE	48.55
M-2.5	North Shore/South Shore Capacity Related Overflows	# within Level of Service	0
M-3.1	Permit Compliance	# of Exceedances: # of Permitted Parameters	8:50,733
M-3.2	Odor Complaints	#	3
M-3.4	Pollutant Removal (Cumulative Fiscal Year-to-Date)	Total Pounds Removed	149,315,621
M-3.5	Pollutant Discharge (Cumulative Fiscal Year-to-Date)	% Pounds Discharged/ Pounds Permitted	15%
M-5.2	Educational and Outreach Events	#	2
M-5.3	Community Partners	#	5
	Average Daily Flow	Total MGD for all Treatment Plants	135.42
	Pretreatment Related System Issues	#	0

Respectfully submitted,
Paula A Hogg
 Director of Water Quality

EFFLUENT SUMMARY FOR APRIL 2022

PLANT	FLOW mgd	% of Design	BOD mg/l	TSS mg/l	FC #/UBI	ENTERO #/UBI	TP mg/l	TP CY Avg	TN mg/l	TN CY Avg	CONTACT TANK EX
ARMY BASE	8.56	48%	2	2.6	2	2	0.44	0.33	3.8	3.7	7
ATLANTIC	40.26	75%	13	8.4	5	1	NA	NA	NA	NA	8
BOAT HARBOR	12.04	48%	8	5.9	4	2	0.57	0.49	25	22	1
CENT. MIDDLESEX	0.010	38%	<2	<1.0	<1	1	NA	NA	NA	NA	NA
JAMES RIVER	13.10	65%	6	9.2	1	2	0.83	0.95	13	10	0
KING WILLIAM	0.070	70%	<2	<1.0	NA	<1	0.025	0.23	2.2	2.9	NA
NANSEMOND	15.46	52%	5	7.8	2	1	0.81	0.58	4.4	4.1	3
NASSAWADOX	0.023	23%	<2	6.4	<1	1	0.40	0.53	12	15	NA
ONANCOCK	0.174	23%	<2	<1.0	1	4	0.15	0.21	0.35	0.82	NA
SURRY, COUNTY	0.046	71%	14	9.8	NA	1	NA	NA	NA	NA	0
SURRY, TOWN	0.047	79%	8	15	NA	11	NA	NA	NA	NA	NA
URBANNA	0.059	59%	7	12	5	9	1.1	0.84	15	14	NA
VIP	23.85	60%	4	2.6	2	2	0.33	0.25	2.4	2.9	6
WEST POINT	0.415	69%	23	10	2	5	2.4	2.8	15	18	1
WILLIAMSBURG	8.51	38%	4	3.2	5	4	0.42	0.58	2.6	3.3	4
YORK RIVER	12.81	85%	<2	<1.0	<1	1	0.36	0.33	4.4	4.7	1
	<u>135.42</u>										

	% of Capacity
North Shore	56%
South Shore	53%
Small Communities*	46%

Tributaries	Tributary Summary					
	Annual Total Nitrogen			Annual Total Phosphorus		
	Discharged	Operational		Discharged	Operational	
	YTD	Projection	CY22	YTD	Projection	CY22
	%	Lbs	%	%	Lbs	%
James River	18%	2,466,691	69%	14%	231,586	73%
York River	25%	251,960	87%	30%	16,991	88%
Rappahannock	18%	NA	NA	4%	NA	NA

Permit Exceedances: Total Possible Exceedances, FY22 to Date: 8:50,733
Pounds of Pollutants Removed in FY22 to Date: 149,315,621
Pollutant Lbs Discharged/Permitted Discharge FY22 to Date: 15%

	Rainfall (inch)		
	North Shore (PHF)	South Shore (ORF)	Small Communities (FYJ)
Month	3.72"	2.52"	3.31"
Normal for Month	4.13"	3.29"	4.08"
Year to Date Total	16.39"	14.10"	13.69"
Normal for YTD	14.49"	12.74"	13.90"

*Small Communities includes Eastern Shore

AIR EMISSIONS SUMMARY FOR APRIL 2022

	No. of Permit Deviations below 129 SSI Rule Minimum Operating Parameters								Part 503e Limits		
	Temp 12 hr ave (F)	Venturi(s) PD 12 hr ave (in. WC)	Precooler Flow 12 hr ave (GPM)	Spray Flow 12 hr ave (GPM)	Venturi Flow 12 hr ave (GPM)	Tray/PBs Flow 12 hr ave (GPM)	Scrubber pH 3 hr ave	Any Bypass Stack Use	THC Mo. Ave (PPM)	THC DC (%)	BZ Temp Daily Ave Days >Max
MHI PLANT											
ARMY BASE	0	0	0	0	0	0	1	3	56	100	0
BOAT HARBOR	0	0	0	n/a	0	0	0	1	15	99	0
VIP	0	0	0	n/a	0	0	0	0	28	99	0
WILLIAMSBURG	0	0	0	n/a	0	0	0	1	17	98	0

ALL OPERATIONS

DEQ Reportable Air Incidents:	0
DEQ Request for Corrective Action:	0
DEQ Warning Letter:	0
DEQ Notice of Violation:	0
Other Air Permit Deviations:	1
Odor Complaints Received:	3
HRSD Odor Scrubber H2S Exceptions:	0

Items of Interest – April 2022

MULTIPLE HEARTH INCINERATION (MHI)

Total Hydrocarbon (THC) monthly averages (not to exceed 100 ppm) were met by all four MHI plants (Army Base, Boat Harbor, Virginia Initiative, and Williamsburg) with a THC continuous emissions monitoring (CEM) valid data captured of greater than 98%.

The MHIs had one deviation from the required 129 SSI rule minimum operating parameters and five minor bypass events (<60 minute). One other 129 permit deviation occurred at Boat Harbor wherein the continuous monitoring requirement was not met for a six-hour period after the operator failed to select the burn zone once the combustion of solids started. This error was subsequently recognized, corrected, and monitoring of the MHI and off gas system resumed. All indications are that during this six-hour period the minimum 129 operating parameters were being met.

Army Base and Boat Harbor passed their MHI 129 emission limits stack tests that were performed in early March. Final reports have been submitted to DEQ accordingly.

April 7 DEQ Air inspected James River and determined the plant in compliance with their state operating permit.

April 14 submitted to DEQ the annual emission inventories for HRSD's major sources of air emissions.

April 25 submitted to DEQ the 129 annual compliance certifications for the MHI plants.

AIR PERMITS and ODOR CONTROL

HRSD received three odor complaints and had no hydrogen sulfide (H₂S) plant odor wet scrubber exceptions in April.

Atlantic received two odor complaints from both Ocean Lakes neighbors directly and through the online neighborhood social media site Nextdoor.com. On April 11 and April 25, Plant Ops and TSD responded with the following observations, the first complaint was associated with heavy activity from the land app program and the hauling of solids over a multiple day period. The second complaint was identified to be from a leak identified on the THP system. This leak was addressed by plant operators ending this odor event. However, ongoing odor monitoring along with previous complaint investigations continue to identify offsite odors from the plant. The source of offsite odors at the time of observation varies depending on plant process activity and the prevailing meteorological conditions. HRSD is communicating with our Ocean Lakes neighbors to address their immediate concerns, monitoring plant odor, and taking immediate corrective action (where possible) while working on a new plant odor management and mitigation action plan.

York River received an odor complaint on April 18 from a neighbor across the street from the plant on Back Creek Road. She said she smelled strong sewer odors inside and outside of her house for a few hours. She contacted the plant directly real time and plant staff responded immediately. While TSD responded the next morning. Neither of these responses identified the direct source of odor. The timing of the complaint did dovetail with a significant rain event that sent a surge of flow for several hours to the

plant that may have increased potential odors. While the wind direction was NW and put the complainant directly downwind of the plant. Future similar events could be minimized by increasing iron feed at the plant. The response and investigation of the event was explained to our neighbor. She was satisfied with HRSD's response to her complaint. No further complaints have been received.

TREATMENT

DEQ was notified of the following reportable events:

Atlantic

On April 14 it was discovered that the daily Total Residual Chlorine (TRC) meter Quality Check (QC) was not completed the previous day. The meter was immediately checked using the standards and read within normal range. Treatment was stable. This event resulted in 12 samples that did not meet the QC requirements.

Williamsburg

On April 2 insufficient sodium hypochlorite dosage created conditions for 3 consecutive contact tank residuals below 0.50 mg/L. Dosage was increased and chlorine residuals returned to normal range.

CENTRAL ENVIRONMENTAL LABORATORY

An analytical procedural error occurred on BOD analysis during the month of April resulting in an IA2 flag for many low-level analyses completed during that time. The laboratory immediately corrected the error upon discovery. The following facilities did not meet the minimum valid data frequency requirements:

Army Base – weeks of April 10, 17, and 24

Nansemond - week of April 17

Williamsburg – week of April 24

York River – weeks of April 10, 17, and 24

SYSTEM

On April 23 a failure occurred on a 36-inch ductile iron pipe force main just west of I-664 near 3025 Gum Court, Chesapeake. The failure was caused by external corrosion resulting in graphitization on the exterior of the pipe and was repaired with a full circle clamp. Impacted areas were cleaned and treated with lime. Approximately 472,000 gallons of wastewater were released, with 20,000 gallons recovered. The remaining 452,000 entered a drainage ditch draining to Drum Point Creek / Western Branch of the Elizabeth River.

SYSTEM/TREATMENT, SMALL COMMUNITIES, SURRY, AND EASTERN SHORE

Surry County

On April 27 the sequencing batch reactor (SBR) float switch assembly failed which prevented the SBR from decanting, and with additional filling from the pre-equalization tank, caused an overflow of the SBR tank to the drain pump station. With the mixed liquor solids from the SBR, the drain pump station return to the headworks blinded the influent screens and caused an overflow of the digester tank for a duration of approximately 2 hours until the problems were corrected. Approximately 500 gallons of partially treated wastewater were released, with 100 gallons recovered. The remaining 400 gallons drained to Dark Swamp.

During the month of April the Surry County Treatment Plant reported 1 weekly average exceedance and a monthly average exceedance for cBOD concentration.

The exact cause of the high cBOD levels is still being investigated. There have been small amounts of suspended solids entering the Post EQ tank from the SBR during the start of the decant process. Sussex Service Authority (SSA) has inspected the decant seal and adjusted the travel limits. Aqua Aerobics has been contacted about replacement seals and troubleshooting the issue. The plant also experienced a mechanical issue with the wash assembly for the sand filter and the filter was down from April 11th through April 28th. SSA will seed the digester during the month of May to improve settling in an attempt to further reduce cBOD levels.

	Parameter	Limit (mg/L)	Reported (mg/L)
Week of 4/3	cBOD Weekly Maximum Concentration	15	17
Month of April	cBOD Monthly Average Concentration	10	14

2022 Metals, Ammonia, and TKN

		Limit	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Central Middlesex	Ammonia	0.56	0.03	NA	NA	0.23								
	TKN	3.0	<0.50	NA	NA	<0.50								
King William	Zinc	*	75	NA	NA	18								
	TKN	3.0	1.3	2.6^	0.44	0.40								
Nassawadox Riverside	Cadmium	2.0	<0.50	<0.50	<0.50	<0.50								
	Copper	23	<5.0	<5.0	<5.0	<5.0								
	Nickel	38	17	23	14	15								
	Zinc	150	<50	<50	<50	<50								
	Ammonia	1.7	2.2^	0.09	0.07	0.09								
Onancock	Copper	12	2.0	NA	NA	1.3								
	Ammonia	0.90, 2.0	0.29	0.16	0.02	0.04								
Surry County	Copper	5.9	3.0	2.0	1.0	4.0								
	Zinc	56	24	33	11	31								
	Ammonia	0.77	NA	NA	NA	NA	NA					NA	NA	
	TKN	3.0	0.55	NA	0.57	NA								
Town of Surry	Copper	12	2.0	6.0	3.0	5.0								
	Zinc	39	14	12	12	14								
	Ammonia	4.5	0.11	0.10	0.11	0.11								
	TKN	6.7	2.0	1.9	1.8	1.3								
Urbanna	Ammonia	3.83, 9.08	7.76	0.05	1.26	0.08								

*No limit. Treatment objective 53 ug/L

Units: TKN, Ammonia: mg/L. Metals: ug/L

^ NR Monthly average 2.2, weekly Jan 23 3.4

^ KW Monthly average 2.6, weekly Feb 6 9.95

2022 MONTHLY FLOW AVERAGES

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YR AVG	FY AVG
Army Base	8.38	8.29	9.13	8.56									8.59	8.14
Atlantic	42.47	42.46	42.81	40.26									42.00	34.42
Boat Harbor	15.64	13.78	13.31	12.04									13.69	11.82
C.Middlesex	0.005	0.006	0.006	0.010									0.007	0.006
Ches-Eliz	0.00	0.00	0.00	0.00									0.00	6.37
James River	14.47	13.70	14.65	13.10									13.98	13.05
King William	0.064	0.050	0.066	0.070									0.062	0.067
Lawnes Point	0.000	0.000	0.000	0.000									0.000	0.000
Nansemond	16.32	15.78	16.16	15.46									15.93	15.57
Nassawadox	0.020	0.013	0.022	0.023									0.019	0.014
Onancock	0.177	0.160	0.208	0.174									0.18	0.189
Surry, County	0.047	0.043	0.057	0.046									0.048	0.043
Surry, Town	0.043	0.044	0.057	0.047									0.048	0.038
Urbanna	0.041	0.034	0.038	0.059									0.043	0.048
VIP	25.64	26.17	27.83	23.85									25.87	23.86
West Point	0.433	0.385	0.429	0.415									0.416	0.378
Williamsburg	8.25	7.59	8.41	8.51									8.19	8.20
York River	14.08	12.97	13.66	12.81									13.38	11.57
North Shore	52.45	48.03	50.03	46.45									49.24	44.64
South Shore	92.81	92.70	95.93	88.13									92.39	88.37
Small Communities	0.83	0.73	0.88	0.84									0.82	0.78
TOTAL	146.09	141.47	146.85	135.42									142.46	133.79

Bold values indicate monthly plant flow average >95% of permitted design flow



The following Internal Audit Status document has been prepared by SC&H for the HRSD Commission. Below is a summary of projects in process, upcoming audits, and the status of current management action plan monitoring.

I. Projects in Process

Unifier/ERP Integration

- **Tasks Completed (April 2022)**
 - Finalized testing
- **Upcoming Tasks (May 2022)**
 - Validate findings
 - Issue draft report for management review

Risk Assessment Refresh

- **Task Completed (April 2022)**
 - Finalized risk assessment activities
 - Presented internal audit plan to the Finance Committee

Family Medical Leave Act (FMLA)

- **Task Completed (April 2022)**
 - 4/28/22: Conducted entrance meeting
- **Upcoming Tasks (May 2022)**
 - Perform process walkthroughs and document procedures
 - Develop audit program to perform test procedures

Freedom of Information Act (FOIA)

- **Task Completed (April 2022)**
 - 4/21/22: Conducted entrance meeting
- **Upcoming Tasks (May 2022)**
 - Perform process walkthroughs and document procedures pertaining to oversight and administration of the FOIA process
 - Develop audit program to perform test procedures



II. Management Action Plan Monitoring

SC&H is performing on-going management action plan (MAP) monitoring for internal audits previously conducted for HRSD. SC&H begins MAP follow-up approximately one year following the completion of each audit and will assess bi-annually.

For each recommendation noted in an audit report, SC&H gains an understanding of the steps performed to address the action plan and obtains evidence to confirm implementation, when available.

The following describes the current project monitoring status. This listing does not include audits which were determined by HRSD Management and the Commission to include confidential or sensitive information.

Audit	Report Date	Next Follow-up	Recommendations		
			Closed	Open	Total
Biosolids Recycling	10/8/16	June 2022	7	1	8
Treatment Plant Operations	10/15/18	July 2022	8	1	9
Safety Division	9/12/19	May 2022	0	2	2
SWIFT Program	2/24/2021	April 2022	9	3	12
Fleet Services	2/24/2021	May 2022	0	17	17
Succession Planning	6/4/2021	July 2022	0	4	4
Emergency Repairs	1/18/2022	February 2023	0	3	3
D&C: CIP Project Management	5/11/16	Closed	13	0	13
HR Benefits	11/22/16	Closed	15	0	15
Inventory	4/20/17	Closed	5	0	5
Procurement/ProCard	8/23/17	Closed	11	0	11
Engineering Procurement	4/20/18	Closed	8	0	8
Corporate Governance: Ethics Function	3/21/18	Closed	5	0	5
Permitting	2/4/20	Closed	2	0	2
Payroll	3/27/20	Closed	3	0	3
Customer Care Division	7/26/19	Closed	4	0	4
Pollution Source Control	6/2/20	Closed	8	0	8
Totals			98	31	129

Annual Metrics

Item	Strategic Planning Measure	Unit	Target	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19	FY-20	FY-21
M-1.1a	Employee Turnover Rate (Total)	Percentage	< 8%	5.63%	4.09%	6.64%	7.62%	8.22%	9.97%	6.75%	6.66%	9.99%	6.63%	6.78%	6.31%
M-1.1b	Employee Turnover Rate within Probationary Period		0%		2.22%	8.16%	14.58%	9.68%	0.66%	0.13%	0.90%	1.01%	2.10%	3.08%	5.44%
M-1.2	Internal Employee Promotion Eligible	Percentage	100%		59%	80%	70%	71%	64%	69%	68%	85%	85%	63%	78%
M-1.3	Average Time to Fill a Position	Calendar Days	< 30		70	60	52	43.76		51	56	67	67	66	95
M-1.4	Training Hours per Employee - cumulative fiscal year-to-date	Hours	> 40		30.0	43.8	37.5	35.9	42.8	49.0	48.4	41.1	40.9	39.3	28.2
M-1.5a	Safety OSHA 300 Incidence Rate Total Cases	# per 100 Employees	< 3.5	6.57	6.15	5.8	11.2	5.07	3.87	7	5.5	5.7	4.1	4.8	4.1
M-1.5b	Safety OSHA 300 Incidence Rate Cases with Days Away	# per 100 Employees	< 1.1	0.74	1.13	1.33	0.96	1.4	0.82	1.9	1	1.1	0.8	1.34	1.3
M-1.5c	Safety OSHA 300 Incidence Rate Cases with Restriction, etc.	# per 100 Employees	< 0.8	3.72	4.27	2.55	4.5	2	1.76	3.6	2.8	2.8	1.8	1.6	4.1
M-2.1	CIP Delivery - Budget	Percentage			113%	96%	124%	149%	160%	151%	156%	160%	170%	170%	123%
M-2.2	CIP Delivery - Schedule	Percentage			169%	169%	161%	150%	190%	172%	173%	167%	159%	159%	155%
M-2.3a	Total Maintenance Hours	Total Available Mtc Labor Hours Monthly Avg			16,495	22,347	27,615	30,863	35,431	34,168	28,786	28,372	31,887	29,596	28,722
M-2.3b	Planned Maintenance	Percentage of Total Mtc Hours Monthly Avg			20%	27%	70%	73%	48%	41%	43%	44%	59%	59%	62%
M-2.3c	Corrective Maintenance	Percentage of Total Mtc Hours Monthly Avg			63%	51%	12%	10%	18%	25%	25%	24%	18%	19%	16%
M-2.3d	Projects	Percentage of Total Mtc Hours Monthly Avg			18%	22%	20%	18%	32%	34%	32%	32%	27%	25%	22%
M-2.4	Infrastructure Investment	Percentage of Total Cost of Infrastructure	2%		8.18%	6%	6%	4%	7%	7%	5%	5%	4	5%	7%
M-3	Carbon Footprint	Tons per MG Annual Total			1.61	1.57	1.47	1.46	1.44	1.45	1.58	1.66	1.58	1.7	1.75
M-3.6	Alternate Energy (Incl. Green Energy as of FY19)	Total KWH		0	0	0	5,911,289	6,123,399	6,555,096	6,052,142	5,862,256	47,375,940	56,473,800	58,044,110	
M-4.1a	Energy Use: Treatment	kWh/MG Monthly Avg		2,473	2,571	2,229	2,189	2,176	2,205	2,294	2,395	2,277	2,408	2,459	
M-4.1b	Energy Use: Pump Stations	kWh/MG Monthly Avg		197	173	152	159	168	163	173	170	181	174	170	
M-4.1c	Energy Use: Office Buildings	kWh/MG Monthly Avg		84	77	102	96	104	97	104	104	95	102	82	
M-4.2	R&D Budget	Percentage of Total Revenue	> 0.5%		1.0%	1.4%	1.0%	1.3%	1.0%	0.8%	1.3%	1.4%	1.8%	1.3%	1.4%
M-4.3	Total Labor Cost/MGD	Personal Services + Fringe Benefits/365/5-Year Average Daily Flow		\$1,028	\$1,095	\$1,174	\$1,232	\$1,249	\$1,279	\$1,246	\$1,285	\$1,423	\$1,348	\$1,487	\$1,545
M-4.4	Affordability	8 CCF Monthly Charge/ Median Household Income	< 0.5%		0.48%	0.48%	0.41%	0.43%	0.53%	0.55%	0.59%	0.60%	0.64%	0.71%	0.67%
M-4.5	Total Operating Cost/MGD	Total Operating Expense/ 365/5-Year Average Daily Flow		\$2,741	\$2,970	\$3,262	\$3,316	\$3,305	\$3,526	\$3,434	\$3,592	\$3,959	\$3,823	\$4,048	\$4,311
M-5.1	Name Recognition	Percentage (Survey Result)	100%	67%	71%	N/A	62%	N/A	60%	N/A	N/A	53%	N/A	53%	N/A
M-5.4	Value of Research	Percentage - Total Value/HRSD Investment			129%	235%	177%	149%	181%	178%	143%	114%	117%	143%	138%
M-5.5	Number of Research Partners	Annual Total Number		42	36	31	33	28	35	15	20	26	32	27	
	Rolling 5 Year Average Daily Flow	MGD		157.8	155.3	152	154.36	155.2	151.51	153.09	154.24	152.8	152.23	149.84	149.72
	Rainfall	Annual Total Inches		66.9	44.21	56.21	46.65	46.52	51.95	54.14	66.66	49.24	53.1	48.49	54.04
	Billed Flow	Annual Percentage of Total Treated		71.9%	82.6%	78%	71%	73%	74%	72%	73%	76%	72%	78%	72%
	Senior Debt Coverage	Net Revenue/Senior Annual Debt Service	> 1.5	2.51%	2.30%	2.07%	1.88%	1.72%	1.90%	2.56%	3.10%	3.59%	4.84%	5.80%	6.03%
	Total Debt Coverage	Net Revenue/Total Annual Debt	>1.4	1.67%	1.67%	1.46%	1.45%	1.32%	1.46%	1.77%	1.93%	2.03%	2.62%	2.81%	2.66%

*to be reported

Monthly Updated Metrics

Item	Strategic Planning Measure	Unit	Target	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19	FY-20	FY-21	FY-22	FY-22
	Average Daily Flow	MGD at the Plants	< 249		136	146.5	158.7	156.3	153.5	155.8	153.5	145.8	152.7	141.5	155.3	146.9	135.4
	Industrial Waste Related System Issues	Number	0		3	6	6	6	2	4	7	4	7	1	2	2	0
	Wastewater Revenue	Percentage of budgeted	100%		97%	96%	98%	107%	102%	104%	103%	103%	104%	104%	106%	103%	104%
	General Reserves	Percentage of Operating and Improvement Budget	75% - 100%		72%	82%	84%	92%	94%	95%	104%	112%	117%	119%	108%	107%	108%
	Accounts Receivable (HRSD)	Dollars (Monthly Avg)			\$17,013,784	\$17,359,488	\$18,795,475	\$20,524,316	\$20,758,439	\$22,444,273	\$22,572,788	\$22,243,447	\$23,900,803	\$27,335,100	\$34,060,154	\$33,156,194	\$36,254,846
	Aging Accounts Receivable	Percentage of receivables greater than 90 days			21%	20%	18%	19%	21%	20%	18%	18%	17%	18%	29%	31%	29%
M-2.5	Capacity Related Overflows	Number within Level of Service	0		25	1	30	5	11	16	6	10	5	2	25	0	0
M-3.1	Permit Compliance	# of Exceedances to # of Permitted Parameters			12:55,045	1:51995	2:52491	1:52491	2:52491	2:52491	9:53236	9:58338	2:60879	9:60879	23:60879	6:45649	8:50733
M-3.2	Odor Complaints	Number	0		6	2	7	11	5	9	7	6	9	15	31	2	3
M-3.4	Pollutant Removal (total)	Total Pounds Removed			178,163,629	171,247,526	176,102,248	185,677,185	180,168,546	193,247,790	189,765,922	190,536,910	187,612,572	182,759,003	183,123,855	135,508,338	149,315,621
M-3.5	Pollutant Discharge (% of permitted)	Pounds Discharged/Pounds Removed	< 40%		25%	22%	25%	22%	20%	22%	17%	17%	17%	18%	15%	15%	15%
M-5.2	Educational and Outreach Events	Number			302	184	238	322	334	443	502	432	367	256	145	78	61
M-5.3	Number of Community Partners	Number			280	289	286	297	321	354	345	381	293	230	128	15	14

AGENDA ITEM 27.c. – May 24, 2022

Subject: Bowers Hill Interceptor Force Main Section I Emergency Repair
Emergency Declaration

CIP Project: NP015200

Regulatory Requirement: None

Budget	\$500,000
Previous Expenditures and Encumbrances	(\$0)
Available Balance	\$500,000

Recommended Action: No action is required. Information Only

Brief: On April 23, a 36-inch ductile iron force main failed on Gum Court in Chesapeake. Because of the location in the system, isolating and diverting the flow was not possible. After much effort, a contractor found a four-inch hole in the bottom of the pipe that was caused by external corrosion. The contractor installed a full circle clamp and restored the impacted area. The failure leaked approximately 452,000 gallons into stormwater ditches that drain to Drum Point Creek, a tributary of the Elizabeth River. The contractor performed further condition assessment immediately adjacent to the failure and found additional external corrosion on the pipe. As a result, the contractor installed appurtenances for a bypass near the failure to facilitate future pipeline replacement.

An emergency declaration was authorized on May 3, 2022.

Staff used the Prompt Repair On-Call Services contractor, Bridgeman Civil, Inc., to prepare the area, complete repairs on the force main, and restore the area impacted by the failure and construction. Bridgeman Civil, Inc. also excavated upstream and downstream of the repair to complete further condition assessment and additional connections and appurtenances were installed for future pipeline replacement. Staff also utilized the On-Call General Engineering consultant, Hazen and Sawyer, to provide construction administration and inspection while Bridgeman Civil, Inc. completed the repair.

The estimated cost of this work is \$500,000 and will be funded from the CIP NP015200 appropriation.

AGENDA ITEM 28. – May 24, 2022

Subject: Closed Meeting

Recommended Action: Approve a motion to go into closed meeting to consider the following items as provided for in Code of Virginia §2.2-3711A and §2.2-3705.2:

- | | | |
|---------------------|---|--|
| Item a. | : | Business continuity and disaster recovery |
| Purpose | : | Briefing by staff and auditors on plans to protect public safety and vulnerabilities |
| Specific Exemptions | : | §2.2-3711.A19 |
| Item b. | : | Cybersecurity |
| Purpose | : | Briefing by staff on specific threats |
| Specific Exemptions | : | §2.2-3711.A19 and §2.2-3705.2, subsections 2 and 14 |

Brief:

Specific Exemptions: §2.2-3711.A19 - Discussion of plans to protect public safety as it relates to terrorist activity or specific cybersecurity threats or vulnerabilities and briefings by staff members, legal counsel, or law-enforcement or emergency service officials concerning actions taken to respond to such matters or a related threat to public safety; discussion of information subject to the exclusion in subdivision 2 or 14 of § 2.2-3705.2, where discussion in an open meeting would jeopardize the safety of any person or the security of any facility, building, structure, information technology system, or software program; or discussion of reports or plans related to the security of any governmental facility, building or structure, or the safety of persons using such facility, building or structure.

Specific Exemptions: § 2.2-3705.2 subsection 2. Information that describes the design, function, operation, or access control features of any security system, whether manual or automated, which is used to control access to or use of any automated data processing or telecommunications system

Specific Exemptions: § 2.2-3705.2 subsection 14. Information contained in (i) engineering, architectural, or construction drawings; (ii) operational, procedural, tactical planning, or training manuals; (iii) staff meeting minutes; or (iv) other records that reveal any of the following, the disclosure of which would jeopardize the safety or security of any person; governmental facility, building, or structure or persons using such facility, building, or structure; or public or private commercial office, multifamily residential, or retail building or its occupants:

- a. Critical infrastructure information or the location or operation of security equipment and systems of any public building, structure, or information storage facility, including ventilation systems, fire protection equipment, mandatory building emergency equipment or systems, elevators, electrical systems, telecommunications equipment and systems, or utility equipment and systems;
- b. Vulnerability assessments, information not lawfully available to the public regarding specific cybersecurity threats or vulnerabilities, or security plans and measures of an entity, facility, building structure, information technology system, or software program;
- c. Surveillance techniques, personnel deployments, alarm or security systems or technologies, or operational or transportation plans or protocols; or
- d. Interconnectivity, network monitoring, network operation centers, master sites, or systems related to the Statewide Agencies Radio System (STARS) or any other similar local or regional public safety communications system.

AGENDA ITEM 29. – May 24, 2022

Subject: Reconvened Meeting

Recommended Action: Pursuant to Section 2.2-3712.D of the Code of Virginia, we will now have a roll call vote to certify that to the best of each Commission member's knowledge: (i) only public business matters lawfully exempted from open meeting requirements under this chapter, and (ii) only such public business matters as were identified in the motion by which the closed meeting was convened were heard, discussed or considered. Any Commissioner who believes there was a departure from these two requirements shall so state prior to the vote, indicating the substance of the departure.