



COMMISSION MEETING MINUTES
December 17, 2019

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Sam also contributed to HRSD community outreach programs, helping plan and execute the 2019 Earth Action Day at Atlantic Treatment Plant. In addition to his HRSD commitments, he has also volunteered at the WaterJAM Conference for the past four years.

b. Promotion Announcement

Mr. Henifin introduced Mr. Jack Denby who was promoted to Water Quality / Operations Quality Assurance Manager on November 16, 2019. Jack was hired in 2012 as a Water Quality Investigator in the Technical Services Division (TSD) of the Water Quality Department. He was promoted to TSD Technician in the Special Projects and Air section of TSD in 2013. He was promoted again in 2015 to TSD Specialist in the Storm water section of TSD and again to TSD supervising specialist in the storm water section in 2018. Prior to his employment with HRSD, Jack worked for the Suffolk County Water Authority in Suffolk County, New York as an Environmental Field Technician. Jack attended the State University of New York, College at Oneonta and graduated in 2008 with a Bachelor of Science in Environmental Science. In 2016 Jack graduated from Christopher Newport University with a Master of Science degree in Environmental Science. Jack has been attending William and Mary's Raymond A. Mason's school of Business since 2017 and will be graduating in the summer of 2020 with master's degree in business administration. Jack has extensive field sampling experience working in all sections of TSD and has been a leader and mentor to many of the division's current employees. In 2015 he joined the pathogen program in its early stages and has been a consistent part of the development of the program as it has grown over the past four years.

c. Commending Resolution

The Commission expressed its gratitude and best wishes to Mr. William A. "Bill" Cox of Kellam, Pickrell, Cox and Anderson, PC, who served with distinction as HRSD's General Counsel since 1989. He continued his family's legacy of service to HRSD with his father, William A. Cox, Jr. serving as Commissioner from 1972 through 1982 and as Commission Chair from 1975 through 1977. Bill has enjoyed a distinguished career in Virginia Beach as a member of the law firm of Kellam, Pickrell, Cox and Anderson and has served the Hampton Roads region through his participation on various boards, community groups and professional associations, including a term as President of the Virginia Beach Bar Association. During his tenure as General Counsel he has provided outstanding legal advice and counsel to 28 Commissioners appointed by nine Governors, three General Managers and two Commission Secretaries. Bill is retiring on December 31, 2019 after providing legal advice to the Hampton Roads community for over 50 years.

Attachment #1: [Resolution](#)

Public Comment: None



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2. **CONSENT AGENDA**

Action: Approve the items listed in the Consent Agenda.

Moved: Stephen Rodriguez **Ayes:** 7
Seconded: Willie Levenston **Nays:** 0

Brief:

- a. Approval of minutes from previous meeting.
- b. Contract Awards
 - 1. [Closed-Circuit Television Gravity Sewer Inspection and Cleaning Services](#) \$2,421,606
 - 2. [AvN Aeration Control Pilot Study Research Study Contract Renewal](#) \$0
- c. Task Orders
 - 1. [Cisco SmartNet Core Switch and Line Card Replacement](#) \$238,047
- d. Change Orders
 - 1. [Army Base Treatment Plant Miscellaneous Improvements](#) \$80,059

Item(s) Removed for Discussion: None

Attachment #2: [Consent Agenda](#)

Public Comment: None



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3. **APPRENTICESHIP PROGRAM AND OUTSTANDING APPRENTICE RECOGNITION**

Action: No action required.

Brief: The HRSD Apprenticeship Program is in its 41st year of operation and continues to see growth and development. Since inception, the Apprenticeship Program has graduated over 500 apprentices and has resulted in a 95 percent graduate retention rate. In addition to maintaining the traditional aspects of an apprenticeship, the Apprenticeship Program has also implemented several improvements that has allowed the program to achieve continued success and to be a valuable resource for other organizations seeking to establish their own apprenticeship. Staff [presented](#) a short background on the program, current developments being implemented, challenges being addressed, and future goals of the program.

Every year, the Division of Registered Apprenticeship selects 25 apprentices across the Commonwealth to honor with the Virginia Department of Labor and Industry Outstanding Apprentice Award. This year, HRSD had two employees who received this award.

Mr. Benjamin Elliott, Plant Operator at Nansemond Treatment Plant: Ben was nominated by HRSD staff for his commitment to excellence and his demonstrated leadership capabilities. In addition, Ben was awarded the first-ever Apprenticeship Program Salutatorian Award at the 2019 Apprenticeship Program Graduation with a GPA of 3.964. Ben completed his apprenticeship in three years and has been with HRSD for 3 ½ years.

Mr. David Wood, Electrical & Instrumentation Specialist at North Shore Electrical: David was also recognized by the Department of Labor and Industry for his hard work and dedication while an apprentice. David was nominated by HRSD staff for his consistently innovative approach to problem solving and his enthusiasm for challenging and engaging projects. David completed his first apprenticeship in the Maintenance Operator trade in 2016 and graduated in 2019 in the Instrumentation Specialist Trade. The Electrical and Instrumentation Specialist trades were combined in 2019. David is the last apprentice to graduate in the Instrumentation Specialist Trade. David has been an apprenticeship instructor for three years and has been with HRSD for 8 ½ years.

Discussion Summary: Staff discussed cost of the current program; obligation of employees to complete program to retain employment; retention rate; the curriculum and available textbooks. Staff also explained incorporation of SWIFT. SWIFT processes are being used at other facilities for wastewater treatment and are not considered specific to water treatment. The regulators have determined wastewater licenses are enough for operating SWIFT and therefore, staff is not required to hold a waterworks license. Staff also shared the goals of expanding the HRSD Apprenticeship Program statewide and nationwide; administration of an expanded program; recouping costs; and requirements from Department of Labor to provide training to other agencies.

Attachment #3: [Presentation](#)

Public Comment: None



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4. **NANSEMOND TREATMENT PLANT LAND ACQUISITION – LAND STABILIZATION AND NANSEMOND TREATMENT PLANT LAND ACQUISITION – STRUCTURE DEMOLITION REJECTION OF ALL BIDS**

Action: Approve rejection of all bids submitted for the Nansemond Treatment Plant Land Acquisition – Land Stabilization and Nansemond Treatment Plant Land Acquisition – Structure Demolition projects

Moved: Stephen Rodriguez **Ayes:** 7
Seconded: Willie Levenston **Nays:** 0

CIP Project: NP013500 and NP0136500

Type of Procurement: Competitive Bid

Bidder	Bid Amount
Allan Myers Virginia, Inc.	\$3,993,760
Curtis Contracting Inc.	\$4,444,495
Conquest USA, Inc.	\$4,599,470
Paxton Construction Corporation	\$4,995,170
Henry S. Branscome, LLC	\$6,463,043

Engineer Estimate: \$5,424,000

Project/Contract Description: This contract is for construction of both the Nansemond Treatment Plant Land Acquisition – Land Stabilization and Nansemond Treatment Plant Land Acquisition – Structure Demolition projects. The Land Stabilization project includes stabilization of approximately 1,000 linear feet of eroding shoreline on the northern portion of the property mentioned above, along with construction of access and maintenance roads. The project also includes stabilization of eroding channel banks and support for the influent force main where it crosses a tributary of Skeeters Creek just south of Nansemond Treatment Plant. The Structure Demolition project consists of demolishing 16 building structures on the HRSD owned land adjacent to the Nansemond Treatment Plant.

Bids were opened for this project on December 3, 2019 and five bids were received. After careful review of the results it became evident that there was confusion about several of the bid items associated with mobilization due to inconsistencies between the bid form and the specifications. The bids received were relatively close in value and interpretation of the mobilization bid items could have changed the outcome of the apparent low bidder. As such, HRSD staff recommends working with the consultant to clarify these issues in the bidding documents and rebid the project in January.



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Discussion Summary: Staff [presented](#) a summary of the problematic bid items related to mobilization and demolition and described how they were listed differently in the HRSD Enterprise Resource Planning (ERP) system (electronic bidding environment) as compared to the bid specifications. In addition to the typos, the engineer provided clarification to one bidder, however an addendum was not issued to provide clarification to all potential bidders.

Staff explained the Virginia Public Procurement Act states "...all procurement procedures shall be conducted in a fair and impartial manner with avoidance of any impropriety or appearance of impropriety..." and it defines an informality as "*a minor defect or variation of a bid or proposal from the exact requirements...which does not affect the price, quality, quantity or delivery schedule for the goods, services or construction procured.*" Staff said it is very important to be fair and do the right thing. They believe the problems with this bid are not an informality, but are significant mistakes made by HRSD, not the contractors. HRSD strives for pure integrity that bidders can count on to be treated fairly. Staff will add internal processes to avoid these types of mistakes in the future.

The Commission asked several clarifying questions related to changing bids, bid results being open to the public after opening, and contingency for unknown issues found during construction. Commissioner Ward said she was impressed with staff's extreme transparency but thinks there is no choice except to start over.

Public Comment: Mr. Ed Hilferty, Vice President of Allan Myers, addressed the Commission. Mr. Hilferty has been with Allan Myers for 22 years and is responsible for the pursuit of the work and construction operations in Hampton Roads. The company has been in Hampton Roads since 2009, has 300 craft and 50 professional employees who live in Hampton Roads, as well as an asphalt plant in Chesapeake that opened in the last two years. This area is a big part of their business. Their company has done work for HRSD through VDOT contracts and is familiar with HRSD. Allan Myers has reviewed and agrees with staff's interpretation of the bids. Their price is \$440,000 below the next bidder. If the bids are repriced, their price would likely go up. They don't want to see that happen. Their staff is ready and able to start the work in January which is the best time for their company to keep their employees working during the winter months. Mr. Hilferty stated their company has had past projects with other agencies with similar informalities and were able to agree to any type of language change in the contract by issuing a change order prior to award to resolve these issues from a contractual standpoint. They are willing to do that. They believe the procurement provisions allow HRSD to make decisions that are in the best interest of HRSD. He asked the Commission to reconsider and award the project to Allan Myers and allow staff to make a decision on the best interest to HRSD.

The Commission then asked questions about Allan Myers' past experience with bid errors. Mr. Hilferty stated they have worked through other issues but none like this.

The Commission also asked clarifying questions if the contract could move forward with a change order so that their bid could be accepted.



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After an extensive discussion by staff and the Commission, Commissioner Willie Levenston made a motion to adjourn to closed meeting for further discussion with counsel. Commissioner Maurice Lynch seconded the motion and it carried unanimously.

Certification of Proceedings: Pursuant to Section 2.2-3712.D of the Code of Virginia, a roll call vote was conducted 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.

Roll call vote to return to Open Session: **Ayes:** 7 **Nays:** 0

Elizabeth Taraski
Willie Levenston
Steve Rodriguez
Maurice Lynch
Rick Eloffson
Molly Ward
Mike Glenn

After discussion with staff and legal counsel in the closed meeting, Commissioner Stephen Rodriguez made a motion to accept staff's recommendation to reject all bids submitted. Commissioner Levenston seconded the motion and it carried unanimously.

Mr. Henifin thanked Mr. Hilferty for taking the time to share his comments with the Commission.

Attachment #4: [Presentation](#)



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5. **NEW POSITION IN THE CENTRAL ENVIRONMENTAL LABORATORY**

Action: Approve the creation of one new full-time position to support additional work load at the Central Environmental Laboratory.

Moved:	Maurice Lynch	Ayes:	7
Seconded:	Willie Levenston	Nays:	0

Background: The Pathogen Program was implemented in 2015 with the goal of preventing pathogens from entering surface waters by identifying compromised sewer infrastructure using state-of-the-art molecular methods. HRSD’s advanced “find and fix” program began with three small projects and has since expanded to watershed-scale source tracking projects in almost every Hampton Roads municipality. Besides locating compromised sewer pipes, the Pathogen Program provides pathogen quantification in support for HRSD’s SWIFT and biosolids programs, as well as research to fill knowledge gaps on local and national emerging water quality issues. To continue support of HRSD’s mission and vision, this program continues to evaluate and implement new technology to address emerging water quality issues.

This program requires support from two Water Quality divisions: Technical Services and the Central Environmental Laboratory (CEL). Technical Services performs sampling and data analysis and the CEL develops and optimizes analytical techniques and produces data. Given the increases in demand for this work from HRSD’s jurisdictions and the ever-increasing complexity of this work the CEL cannot, with current staffing, meet the requests of HRSD’s localities. The CEL, therefore, requires the addition of a full-time Supervising Chemist position to meet these new challenges.

Funding: This position will be funded with existing fiscal year 2020 operating funds but will be included as an addition to the fiscal year 2021 budget at an approximate cost of \$102,602 (fully burdened). While new positions are typically only added during the annual budget process the Pathogen Program requires this position to be filled as soon as possible to meet the needs of HRSD’s jurisdictional customers. Staff will look to offset this cost with budget reductions in other areas during the fiscal year 2021 budget development process. This request is specifically for a new full-time Grade 8 position. This position will be added to the authorized positions as amended for fiscal year 2020.

Staff provided an [update](#) on the overall Pathogen Program including microbial source tracking, case studies, current status in the Hampton Roads region, spill response, future environmental DNA sequencing, emerging and trending microbial concerns, HRSD’s environmental surveillance, meeting current needs and preparing for the future.



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Discussion Summary: Staff explained through the Municipal Assistance Program, HRSD shares technical expertise and resources with other agencies at cost. Commissioner Taraski shared her experience through the Nansemond River Preservation Alliance prior to becoming a Commissioner. She said it is a rewarding experience to collaborate and to find positive results.

Attachment #5: [Presentation](#)

Public Comment: None



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6. ATLANTIC SERVICE AREA AUTOMATED DIVERSION FACILITIES – PHASE I
NEW CIP AND INITIAL APPROPRIATION

Actions:

- a. Approve a new CIP project for the Atlantic Service Area Automated Diversion Facilities – Phase I project.
- b. Appropriate total project funding in the amount of \$3,250,000.

<u>Moved:</u>	Willie Levenston	<u>Ayes:</u>	7
<u>Seconded:</u>	Elizabeth Taraski	<u>Nays:</u>	0

CIP Project: CE011850

Project Description: The project will involve installing a new control valve at Lynn Shores Drive and adding automated control to an existing valve near North Hessian Road in Virginia Beach to provide greater operational flexibility and system diversion capabilities during wet weather events when flow from Chesapeake-Elizabeth Treatment Plant is diverted. The project will include near real-time communication and control logic between multiple remote and pump station sites. The new controlled facilities will adapt to variable system conditions in order to maximize capacity of the existing interceptor system infrastructure. The project also reduces risk by providing a reliable means of isolation in the event of an emergency. This project is the result of a recent study which recommended these improvements and postponed the Oceana Offline Storage Facility (\$12 million construction).

Funding Description: The total cost for this project is estimated at \$3,250,000 based on a Class 5 cost estimate and a 50 percent contingency included in the requested appropriation. The initial PER effort will be provided by Kimley-Horn (SSIP) and is not anticipated to exceed \$200,000.

<u>Schedule:</u>	Design	February 2020	
	Construction	December	2020
	Project Completion	August	2021

Discussion Summary: The final Regional Wet Weather Management Plan, when submitted, will determine if the Oceana Offline Storage Facility will be required.

Attachment: None

Public Comment: None



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7. **CHESTERFIELD HEIGHTS SANITARY SEWER SYSTEM IMPROVEMENTS
NEW CIP, INITIAL APPROPRIATION AND AGREEMENT**

Actions:

- a. **Approve a new CIP project for the Chesterfield Heights Sanitary Sewer System Improvements project.**
- b. **Appropriate total project funding in the amount of \$1,500,000.**
- c. **Approve the terms and conditions of the agreement with the City of Norfolk for the reimbursement of construction costs associated with the construction of gravity sanitary sewer and the abandonment of the HRSD gravity sewer, HRSD Chesterfield Heights Pump Station #147, and HRSD force main; 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.**

Moved: Stephen Rodriguez
Seconded: Maurice Lynch

Ayes: 7
Nays: 0

CIP Project: VP018600

Project Description: The City of Norfolk will construct the replacement of approximately 6,500 linear feet of sanitary sewer gravity main in accordance with Sewer Alternative No. 1 with the approximate location of the new facilities as shown on Exhibit 1. This work is part of a larger City of Norfolk project known as “NDR Ohio Creek Watershed Project.” This will eliminate the need for the HRSD gravity sewer, HRSD Pump Station #147, and HRSD force main in this area. The City of Norfolk will also be responsible for all construction costs associated with abandonment of HRSD infrastructure and Pump Station #147 at Chesterfield Boulevard.

Funding Description: The City of Norfolk will pay the Engineer and Contractor to complete the work and HRSD will reimburse the City. The estimated reimbursement to the City is based on costs HRSD would have incurred to relocate the existing facilities in conflict with the proposed project and are based on an Engineer’s Opinion of Probable Construction Costs.

Agreement Description: The [attached agreement](#) between HRSD and the City of Norfolk addresses the terms under which HRSD will reimburse the City for administering the design and construction of the work. The agreement has been reviewed by HRSD legal counsel.

Attachment #6: [Agreement](#)
Public Comment: None



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8. **PROPOSAL COMPENSATION FOR DESIGN-BUILD PROJECTS BRIEFING**

Action: Provide direction for use of proposal compensation for future Design-Build projects.

Brief: The use of the Design-Build process has been a successful procurement method for HRSD to deliver some of the most challenging and high-profile projects over the last ten years. As HRSD begins to deliver the SWIFT Full-Scale Implementation Program, a number of very large projects which will likely use the Design-Build method, will be delivered. One technique many progressive Public Sector Owners use to facilitate this process is to provide proposal compensation to those firms short-listed but not selected. This compensation typically covers only a small part of the effort by the submitting firms to pursue these projects. Staff provided a [briefing](#) reviewing the HRSD procurement process, use of design-build project delivery, the position statement from the Design-Build Institute of America (DBIA) on stipends, use of stipends by other public sector organizations, possible use of stipends with SWIFT projects, internal and external factors on project decisions, and pros and cons for the use of stipends.

Discussion Summary: The Commission agreed with staff's recommendation to develop a flexible policy that has a range of percentages to be tailored to specific projects.

Attachment #7: [Presentation](#)

Public Comment: None



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9. **UNFINISHED BUSINESS**

Watershed Implementation Plan (WIP III) Update – Mr. Henifin informed the Commission that comments on the WIP III are due on January 9, 2020. He plans to contact the Secretary of Natural Resources to suggest the deadline be extended to allow more time for comments after the holidays.

Johnson et al. v City of Suffolk and HRSD (Oystermen) Litigation – Mr. Henifin said our lawyers filed a brief objecting to the appeal and requested the court not grant the appeal. He will continue to provide updates to the Commission.

10. **NEW BUSINESS** – None

11. **COMMISSIONER COMMENTS**

Commissioner Lynch thanked staff for the very informative briefing on the Apprenticeship Program. He is very interested in this type of innovation.

12. **PUBLIC COMMENTS NOT RELATED TO AGENDA** – None

13. **INFORMATIONAL ITEMS**

Action: No action required.

Brief: The items listed below were presented for information.

- a. [Management Reports](#)
- b. [Strategic Planning Metrics Summary](#)
- c. [Effluent Summary](#)
- d. [Air Summary](#)

Attachment #8: [Informational Items](#)

Public Comment: None

Next Commission Meeting Date: January 28, 2020 at the HRSD North Shore Operations Center, 2389 G. Avenue, Newport News, VA

Meeting Adjourned: 11:45 am.

SUBMITTED:

Jennifer L. Cascio

Jennifer L. Cascio
Secretary

APPROVED:

Frederick N. Elofson

Frederick N. Elofson, CPA
Chair

HRSD COMMISSION MEETING MINUTES
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ATTACHMENT #1

AGENDA ITEM 1. COMMENDING RESOLUTION



RESOLUTION

Commending the Service of General Counsel William A. Cox, III

WHEREAS, William A. Cox, III has served the HRSD Commission with distinction as General Counsel since 1989; and

WHEREAS, he has continued his family's legacy of service to HRSD with his father, William A. Cox, Jr. serving as a Commissioner from 1972 through 1982 and as Chair from 1975 through 1977; and

WHEREAS, he has enjoyed a distinguished career in Virginia Beach as a member of the law firm of Kellam, Pickrell, Cox and Anderson and has served the Hampton Roads region through his participation on various boards, community groups and professional associations, including a term as President of the Virginia Beach Bar Association; and

WHEREAS, during his tenure as General Counsel he has provided outstanding legal advice and counsel to 28 Commissioners appointed by nine Governors, three General Managers and two Commission Secretaries; and

WHEREAS, he has announced his retirement, effective December 31, 2019; now, therefore, be it

RESOLVED by the HRSD Commission that it hereby commend William A. Cox, III for his outstanding service as General Counsel 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 William A. Cox, III as an expression of the Commission's appreciation, esteem and best wishes.

Adopted by the HRSD Commission on the seventeenth day of December 2019.


Frederick N. Elofson, CPA
HRSD Commission Chair



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ATTACHMENT #2

AGENDA ITEM 2. CONSENT AGENDA

CONSENT AGENDA ITEM 2.b.1. – December 17, 2019

Subject: Closed-Circuit Television Gravity Sewer Inspection and Cleaning Services Contract Award (>\$200,000)

Recommended Action: Award a blanket purchase contract for Closed-Circuit Television (CCTV) Gravity Sewer Inspection and Cleaning Services to Tri-State Utilities in the estimated amount of \$484,321 for year one with four annual renewal options and an estimated cumulative value in the amount of \$2,421,606.

Type of Procurement: Competitive Bid

Bidder	Bid Amount
Tri-State Utilities	\$2,421,606
Hydrostructures, PA	\$2,964,750

HRSD Estimate: \$2,575,000

Contract Description: This contract is an agreement for performing, coordinating and managing all operations required for gravity sewer line inspections. Services include sewer line cleaning, internal television inspections, sonar and laser inspections, manhole inspections and flow control.

Analysis of Cost: Costs are determined to be fair and reasonable based on the competitive solicitation results and previous contract pricing. This is an estimated use contract. Bid prices are based on the entire linear footage of HRSD pipelines, with the inspection work split up over the five years.

CONSENT AGENDA ITEM 2.b.2. – December 17, 2019

Subject: AvN Aeration Control Pilot Study
Research Study Contract Renewal

Recommended Action: Award a renewal contract to Universite Laval for the existing AvN Aeration Control Pilot Study.

Contract Description: This contract is an agreement for the purposes of comparing several forms of AvN control including intermittent and continuous aeration to determine the extent to which nitrifying bacteria are able to adapt to low dissolved oxygen conditions in a large formal pilot study. Details of the study are included in the attached research [proposal](#).

The initial contract dates for this study were February 2019 through December 2019. The study will be renewed through June 2020, exceeding a 12-month term for this agreement. The renewal will be at no additional cost nor change in the scope of work. The project schedule was renewed due to problems with control system modifications and tuning on the Laval pilot.

Research Proposal

By: **Université Laval**, a private corporation duly incorporated under the provisions of an act of the National Assembly, sanctioned on December 8, 1970 (S.Q. 1970, c. 78), having its head office in Québec, Province of Québec, herein represented by Mrs Line Lapointe, Associate Dean, Development and Research, Faculty of Science and Engineering and who declares that she is duly authorized to act as representative of the University;

(Hereafter designated as the "University");

To: **Hampton Roads Sanitation District**, a corporation duly incorporated, having its head office at 1434 Air Rail Avenue, Virginia Beach, Virginia, 23455 herein represented by Mr Charles B. Bott, who declares that he is duly authorized to act as representative for the purpose;

(Hereafter designated as the "Company");

(Hereafter designated individually the "Party" or collectively as the "Parties").

WHEREAS the University, by virtue of its role as a research and teaching institution, is regularly and continuously involved in scientific research;

WHEREAS the Company wishes to support part of the costs related to a research project entitled: "AvN ammonia cascade control -Evaluation" (the "Project");

WHEREAS another company, DC Water will also contribute to this Project, therefore results of the Project will be shared between Université Laval, HRSD and DC Water;

WHEREAS a similar agreement will be concluded between Université Laval and DC Water;

WHEREAS the technology that will be evaluated during the Project, AvN ammonia cascade control (the "Technology") was developed by HRSD and DC Water;

WHEREAS the pilEAUte facility of the University will be used to evaluate the Technology;

WHEREAS the University accepts, under these conditions, to undertake the project;

THEREFORE, in light of the conditions, commitments and agreements set forth herein, the Parties agree to the following:

PREAMBLE

The above preamble is an integral part of this Proposal, and shall be instrumental in its interpretation.

Article 1 – DEFINITIONS

"Intellectual Property Rights" shall mean all registered and/or unregistered intellectual property rights including all rights relating to patents, copyrights, industrial designs, integrated circuits, inventions (whether or not they may be patentable), new plant varieties, discoveries, commercial secrets, know-how, domain names, trademarks, brand names and all other rights recognized under statutory law or common law as applied above, including all requests for protection.

"External Intellectual Property Rights" shall mean all Intellectual Property Rights designed, developed, acquired or otherwise obtained by one or the other of the Parties prior to the effective date of this Proposal or beyond the scope of this Project under this Proposal.

"New Intellectual Property Rights" shall mean all Intellectual Property Rights designed, developed, acquired or otherwise obtained for the first time within the framework of this Project under this Proposal.

"Confidential Information" shall mean all information disclosed by any verbal, written, or electronic form, particularly information concerning customers and suppliers, details of agreements, conventions, commitments, offers, options, proposed contracts and contracts, banking data, financial data, sales data, relations with existing and future customers, sales operations, services, marketing data, plans, research results, production formulae and methods, technologies, inventions, improvements and perfection, and intellectual properties, the Parties agree that this list is neither exhaustive nor limitative.

"Project" shall mean the research project entitled "AvN ammonia cascade control -Evaluation" which is more completely described in Appendix I of this Proposal.

"Results" shall mean any data, invention and information, whether or not they may be patentable, related to the Project.

Article 2 – OBJECT

- 2.1 The Company accepts to finance the research work related to the Project, which the University commits to execute in Québec.
- 2.2 The University shall take all reasonable measures required to undertake the research in accordance with recognized state-of-the-art procedures concerning university research, but can offer no guarantee on Results to the Company nor any guarantee that the research will yield marketable results.

Article 3 – EXPIRY

This Proposal shall become effective on February 1st 2019 and shall expire on June 30, 2019 unless it is terminated earlier, in accordance with the provisions contained herein.

Article 4 – PRINCIPAL INVESTIGATOR

- 4.1 For the purposes of this Proposal, the University shall appoint Peter Vanrolleghem of the *Département de génie civil et de génie des eaux de la Faculté des sciences et de génie*, as Principal Investigator. The Principal Investigator shall take all measures required to assign sufficient material and physical resources to undertake and complete the Project while respecting the Project's budget
- 4.2 In the advent of the resignation, departure, incapacity or death of the Principal Investigator, the University, acting in the Company's best interests, may reassign Principal Investigator responsibilities to another person. The Company shall accept this reassignment unless there is just cause for refusal which should be provide to the University, in writing, no more than ten (10) days following the receipt by the Company of the information regarding the reassignment.

Article 5 – COSTS AND TERMS OF PAYMENT

- 5.1 For the purpose of this Proposal, the Company shall pay forty-two thousand American dollars [\$42 000USD] to the University, including the applicable taxes. A first payment of twenty-five thousand two hundred American dollars [\$25 200USD] shall be made within thirty (30) days after the University has issued an invoice following the signature of this Agreement. Thereafter, a final payment of sixteen thousand eight hundred American dollars [\$16 800USD] shall be made following the transmission of the progress report on Results under two tested conditions scheduled on May 31, 2019.
- 5.2 The breakdown of the Company financial contribution will be as presented in budget section in Appendix I:
- 5.3 All supporting vouchers concerning Project expenses shall remain the property of the University and may be consulted as required, during normal working hours of the University offices, after receipt of a written, ten (10) day notice.

Article 6 – PROGRESS REPORTS

The University and the Principal Investigator shall submit scientific reports concerning the progress of the Project and the Results obtained.

Article 7 – EQUIPMENT

All equipment and material acquired by the University in conjunction with this Project shall remain the exclusive property of the University.

Article 8 – CONFIDENTIALITY

- 8.1 In order to accomplish the research required for this Project, the Parties agree that they may be called upon to exchange Confidential Information. Considering the nature of this Confidential Information, and subject to Article 10 (Publication of the Results), the Parties agree to take all reasonable measures required to ensure the confidential nature thereof, to prevent any inopportune disclosure thereof, and to allow access only to persons who have a right and a need to know for purposes of the Project.
- 8.2 Each Party shall use its best efforts to prevent the unauthorized disclosure, publication or dissemination of the Confidential Information and, in any case, the effort deployed shall not be less than the effort utilized to protect its own confidential information.
- 8.3 The Parties shall limit the disclosure of any Confidential Information to their employees, administrators, directors, students, mandatories or representatives who have a need to know the Confidential Information for the purposes of the Project. These persons shall be notified of the confidential nature of the Confidential Information and the fact that they must comply with such confidentiality.
- 8.4 The Parties acknowledge that the disclosure of the Results may be prejudicial to their value and may limit their protection so that they shall maintain the confidentiality of the Results until they become of public knowledge pursuant to Article 8.5, that proper measures for its protection have been adopted or until the Parties authorize their disclosure.
- 8.5 Neither Party shall have any obligation for confidentiality concerning information that:
- (a) Was already lawfully in its possession before it was received from the other Party;
 - (b) Is or becomes public knowledge through no fault or action of the Party;
 - (c) Is legally received by the Party from a third party who has no obligation for confidentiality;
 - (d) Is independently developed by the Party without using the Confidential Information delivered under the terms and conditions of this Proposal;
 - (e) Is disclosed following a court order or in accordance with the requirements of a particular legislative provision provided that, the disclosing Party is contacted by the receiving Party prior to the disclosure of the disclosing Party's Confidential Information in order to permit the disclosing Party the opportunity to contest such disclosure or obtain an appropriate protective order or;
 - (f) May be disclosed under the terms and conditions of a written disclosure authorization delivered by the disclosing Party.

Article 9 – INTELLECTUAL PROPERTY RIGHTS

- 9.1 All External Intellectual Property Rights shall remain the property of the Party that owns, developed or acquired them. This Proposal shall not transfer, in any way, in whole or in part, any External Intellectual Property Rights to the other Party or to any third party, unless specifically stipulated by mutual consent of the Parties.
- 9.2 The Parties acknowledge that all Results, including New Intellectual Property Rights, developed individually by a Party will belong solely to that Party.
- 9.3 Notwithstanding Article 9.2, a student is and shall remain owner of all copyrights relevant to his essay, master's thesis or doctoral dissertation, as applicable, that incorporates in whole or in part any applicable Intellectual Property Rights arising from the Research Project.
- 9.4 Each Party shall grant to each other a non-exclusive, perpetual, free of royalties right to use the Results and New Intellectual Property Rights, whether or not they may be patentable, within the limits of their internal R&D activities, excluding any commercial activities.

Article 10 – PUBLICATION OF THE RESULTS

- 10.1 The Company acknowledges and accepts that the University has a role of education, training and research. In respect thereof, and insofar as adequate measures have been established to protect the New Intellectual Property Rights or the Confidential Information of the Company, the University is authorized to use the Results for teaching and research purposes, and to publish them in the normal course of the dissemination of knowledge, including the publication of essays, masters' theses and doctoral dissertations.
- 10.2 The University acknowledges that the disclosure of some technical information could be prejudicial to the commercial value of the product, process or Results that is wholly or partially based on the Project. The University, therefore, shall inform the Company of any proposed disclosure concerning the Project by forwarding a copy of the text (or texts) prior to any publication or dissemination. If the Company does not object, in writing, to the proposed disclosure within thirty (30) days following receipt of the text (or texts), the University may then disclose the information. If the Company does object to the disclosure, the Company shall set forth in writing the reasons for the objection, and the Parties shall, in a collaborative effort, protect the Results and ensure that disclosure of the Results shall not cause them to lose any commercial value or include Confidential Information of the Company. In case the Parties cannot agree, outside experts shall be consulted, including patent specialists, and the Parties shall share payment of all professional fees. Following objection, by the Company, to the disclosure and after the Parties agree to the text of disclosure, the information may be delayed for a period of no more than six (6) months.

- 10.3 In any event, the Company recognizes that it shall not delay the procedure for the evaluation of a thesis or dissertation, and that any publication delay it may demand must not delay or interfere with delivery of a diploma to a graduate student.

Article 11 – PUBLICITY

- 11.1 Neither Party shall make note of the participation of the other Party or of any of its human resources in any public announcement, publicity, application for financing, or information document to be made public unless the other Party has signified its prior authorization, in writing. Both Parties shall ensure that the publicity does not convey any understanding that either one or the other of the Parties supports any product, procedure or practice of any kind whatsoever.
- 11.2 For administrative purposes, each Party may make public at any time and without prior approval of the other Party, the following information regarding this Proposal: Project's title, Names and Cost estimates for each Party's involvement in the Project, duration, institute or Faculty or Department involved, and the names of the individuals who are Investigators.

Article 12 – COMPANY EMPLOYEES

It is agreed that Company employees called upon to work on the Project on University premises shall be subject to the University's current working conditions concerning working hours, statutory holidays, safety procedures, vacations. They shall respect University regulations and shall report to the Principal Investigator.

Article 13 – LIABILITY AND INDEMNIFICATION

- 13.1 The Company shall indemnify the University, its administrators, officers, employees, students or representatives and hold them harmless for any legal action, expense, or claim, including judicial and extra-judicial costs related to any such legal action or claim for damage that may result from the performance of the work specified in this Proposal for i) activities under the control of the Company, or ii) for the use by the Company, or any licensee, of the Results, or iii) for any damage resulting from the manufacture or sale of a product or the delivery of a service resulting from the exploitation of the Results by the Company, except if the aforementioned damage is caused by the negligence of the University or of a fault by a third party who is not under the control of the Company.
- 13.2 The University shall indemnify the Company, its representatives, employees, manager or officer and hold them harmless against any legal action, expense, or claim, including judicial and extra-judicial costs related to any such legal action or claim for damage that may result from the performance of the work specified in this Proposal for i) activities under the control of the University, or ii) for the use of the Results by the University, except and unless the aforementioned damage is caused by the negligence of the Company or of a fault by of a third party who is not under the control of the University.

- 13.3 The University shall not be held liable for any damage sustained by the Company, its representatives, employees, managers or officers or any other person, in the performance of the Project or following the utilization, by the Company, or any licensee, of the Results, including the use, manufacture or sale of a product or the delivery of a service resulting from the use of the Results.
- 13.4 The Company shall not be held liable for any damage sustained by the University, its administrators, officers, employees, students or any other person in the performance of the Project or following the utilization, by the University, of the Results.
- 13.5 The Parties shall not be liable to one another for damages arising out of this Proposal or relating to the Project, for incorrectness or inaccuracy of data supplied, advice given or opinions expressed. They shall not be liable to one another for indirect, consequential or contingent damages, except those arising from breach of Confidential Information or breach of obligations concerning the other Party's External Intellectual Property. The Parties will not include in the Project deliverables, without so stating, any technical information the commercial use of which is known by the Principal Investigator to infringe the rights of third parties. However, no Party warrants that technical information conveyed in the Project deliverables will not infringe the rights of other third parties prior to undertaking the due diligence process prior to filing a patent or copyright application.

Article 14 – ASSIGNMENT

Neither Party shall, in any way whatsoever, assign, transfer, or dispose of its rights or obligations under this Proposal without the prior written consent of the other Party.

Article 15 – TERMINATION

15.1 Termination without notice

15.1.1 The Proposal shall be terminated as of right without notice or letter of default, in any of the following cases:

15.1.1.1 If the Company undertakes procedures under any legislation regarding insolvency or bankruptcy or if any procedure under such legislation or otherwise is undertaken against the Company;

15.1.1.2 If a receiver, trustee, manager, or any other person having similar powers, is appointed to take control of the Company, its business activities, goods, or assets, either in whole or in part, leading thereby to a disruption of the normal activities of the Company;

15.1.1.3 If a lessor, or any other person, corporation or legal entity having a legal right to do so, takes possession of the Company, its business activities, immovables, or assets, either in whole or in part;

- 15.1.1.4 If a judgment is rendered or a resolution is adopted for the dissolution or liquidation of the Company;
- 15.1.1.5 If the Company adopts or attempts to adopt, or undertakes or attempts to undertake corporate procedures that will enable it to undertake procedures for its dissolution or liquidation;
- 15.1.1.6 If the Company is voluntarily or involuntarily wound up or liquidated;
- 15.1.1.7 If the Company becomes bankrupt.

15.2 Termination with notice

- 15.2.1 If either of the Parties to this Proposal is in default concerning any of its obligations hereunder, the other Party may terminate the Proposal by delivering a thirty (30) day written notice to the Party in default. If the Party in default refuses or neglects to correct the default within this time limit, the Proposal will be terminated with no further notice or.
- 15.2.2 Notwithstanding the above, the University can terminate this Proposal by delivering a thirty (30) day notice to the Company if the University deems that the Company wishes to orient the Project in a direction that would appear to cause prejudice to the University or would make it impossible for it to perform or attain the Project goals or if the University is no longer able to continue the Project.

Article 16 – EFFECTS OF TERMINATION AND EXPIRY

16.1 Notwithstanding the termination or expiry of this Proposal:

- 16.1.1 All Parties shall continue to be bound by the provisions of Articles 8 (Confidentiality), 9 (Intellectual Property Rights), 11 (Publicity) and 13 (Liability and Indemnification) of the Proposal.
- 16.1.2 The Company shall pay expenses related to the work of the members of the University involved in the Project, in addition to the reasonable commitments made by the University concerning the Project prior to cancellation date, up to amounts determined in Article 5.1.

Article 17 – NOTIFICATION

- 17.1 Any notice or communication hereunder shall be in writing and sent to the recipient by registered mail, or by e-mail, or be delivered by hand, using the contact information below:

FOR THE UNIVERSITY: Line Lapointe

Associate Dean, Development and Research
Faculty of Sciences and Engineering
1045 avenue de la Médecine
Pavillon Alexandre-Vachon, room 1036F
Université Laval
Québec (Qué) G1V 0A6
E-mail : vice-doyenne.recherche@fsg.ulaval.ca
Phone 418 656-7368

FOR THE COMPANY: Kenneth Stealing
Procurement Specialist
Hampton Roads Sanitation District Procurement Division
1434 Air Rail Avenue
Virginia Beach, Virginia, 23455-3002
E-Mail: kstealing@hrsd.com
Phone: 757- 460-7310
FAX: 757-460-7824

17.2 Unless otherwise stated in this Proposal, a notice to be delivered in accordance with the provisions of this Proposal shall be deemed to have been received by the addressee on the actual day of delivery, if delivered by messenger, or on the third (3rd) day following the date of mailing, if it is delivered by registered mail or following acknowledgement of receipt if sent by E-mail. Change of address notices are also covered by this article.

Article 18 – PARTIAL INVALIDITY

If a competent tribunal judges that one or more of the provisions of the present Proposal is invalid or unenforceable, only that portion of the Proposal declared invalid shall be invalidated, and the remaining provisions and the remainder of the present Proposal shall be integrally applied.

Article 19 – APPLICABLE LAWS

The Parties agree that the present Proposal shall be governed and interpreted in accordance with the laws in force in the Province of Québec, Canada.

Article 20 – DISPUTE SETTLEMENT

In the first case, the Parties will try to reach, in good faith, out-of-court settlement regarding any dispute arising out of this Proposal. If no settlement is reached after a period of sixty (60) days, a procedure for an injunction under the present Proposal may be brought before the competent courts in the judicial district of Québec, Province of Québec, Canada, to the exclusion of any other district likely to have jurisdiction.

Article 21 – COMPLETE PROPOSAL AND AMENDMENTS

The present Proposal and its Appendixes shall constitute the entire Proposal binding the Parties and replacing all previous oral and written communications, representations and agreements regarding the performance of the Project. Moreover, any addition or modification to the present Proposal shall be made in writing, and shall be acknowledged by both Parties.

Article 22 – WAIVER

The failure of either of the Parties to exercise one or more of its rights under this Proposal on any particular occasion, shall not be interpreted as a waiver of its rights and shall not affect either the Proposal, in any manner, or any of the Parties' rights hereunder.

Article 23 – FORCE MAJEURE

The Parties agree that neither Party shall be held liable for any default or delay in performance caused by force majeure, which is defined as an outside, unforeseeable, irresistible event. Examples of force majeure include, but are not limited to natural disasters, fires, labour unrest, and the imposition of regulations or ordinances by government authorities.

Article 24 – TIME LIMIT

If the Proposal does not specify a time limit applicable for the performance of one or more obligations contained herein, the Parties agree that the time limit for the performance shall be thirty (30) days.

Article 25 – INDEPENDENCE

The present Proposal shall not constitute an agency, partnership, joint venture, or temporary association between the Parties.

Article 26 – SUCCESSORS AND LEGAL REPRESENTATIVES

The present Proposal is of benefit to both Parties and binds their respective successors, assignees, heirs and legal representatives.

Article 27 – LANGUAGE

The Parties have expressly agreed that this Proposal be drawn up in English only. *Les parties aux présentes ont expressément requis que la présente proposition soit rédigée en anglais.*

Article 28 – INTERVENTION

Peter Vanrolleghem, Principal Investigator, having read the present Proposal and having accepted its terms and conditions, insofar as they are applicable to the Principal Investigator,

hereby intervenes in the present Proposal. The Principal Investigator acknowledges that he is bound thereby and that he shall take whatever steps are required to ensure that all members of his team at the University are informed of their obligations under the terms and conditions of the present Proposal.

Moreover, the Principal Investigator declares that he has completed the form entitled "Déclaration du chercheur", and has received, from the applicable ethics committees of the University, all required authorizations for the realization of the Project.

IN WITNESS WHEREOF, the University have signed this Proposal,

The University:

UNIVERSITÉ LAVAL

By: _____
Line Lapointe

Date :

Principal Investigator

Peter Vanrolleghem

Date :

APPENDIX I

PROJECT

CONTEXT

The AVN ammonia cascade control is a new control strategy developed by DC Water and HRSD for highly efficient nitrogen removal in wastewater treatment. It is meant to maintain high ammonia oxidizing bacteria (AOB) oxidation rates while achieving nitrite oxidizing bacteria (NOB) out-selection, using various strategies of:

- 1) controlling ammonia through the use of ammonia setpoints;
- 2) setting operational DO through the use of DO setpoints;
- 3) bioaugmentation of Anammox and AOBs; and
- 4) imposing transient anoxia

in several reactor configurations and conditions for removal of oxidized nitrogen using anammox or heterotrophic organisms. The AVN controller maximizes nitrogen removal at minimal aeration, through control of transient anoxia and aerobic SRT, out-selection of NOB, and control of DO concentrations or aeration interval by keeping the reactor ammonia (NH₄) and oxidized nitrogen (NO_x) concentrations approximately equal, and maximizes total inorganic nitrogen (TIN) removal through nitrification, limited nitritation, nitritation, denitrification, denitritation or deammonification making use of the aforementioned strategies.

So far, this strategy has been evaluated on a few installations, but a rigorous comparison of the standard AVN controller with a modified version, is lacking.

The pilEAUte N-removing treatment plant at Université Laval (see short description in attach) is particularly suited for such comparison because it is running two identical process lanes on the same wastewater. Moreover, it is highly instrumented and is equipped with a state-of-the-art, industry standard SCADA system (Allen-Bradley).

PROJECT SCOPE

The proposed AVN-evaluation project aims at rigorously comparing the performance of two versions of the AVN-controller:

- 1) Standard AVN-controller based on aerobic fraction of alternating aeration
- 2) Modified AVN-controller based on varying DO setpoints

The evaluation is to be performed on two parallel running N-removing activated sludge plants (“pilot” and “co-pilot”) fed with the same wastewater and similar (short) sludge age. The 2 M\$ pilEAUte facility at Université Laval allows performing such experiments under the following different experimental conditions to be selected among:

- 1) Sludge age (Ekama-wastage strategy)

- 2) Temperature (15-25 °C)
- 3) Raw influent, primary effluent, or chemically enhanced primary treatment effluent

Given the short sludge age, each experimental condition will attain stability within a month, which means that it can be expected that three conditions can be evaluated over the period of 3 months the project will run. The transients from one to the other condition will be monitored too as this gives especially interesting dynamic information.

The pilEAUte's measurement set-up will provide background information on the performance of the pilot and co-pilot lanes whereas standard off-line analyses of composition of influent, effluent, MLSS and settling properties will be collected too.

The implementation of the standard and modified-AVN controllers on the pilEAUte's SCADA system will require some work that needs to be studied in detail.

Budget (all expenses in USD)

<u>Personnel</u>	<u>\$19,000</u>
- MSc Romain Philippe (3 months)	\$4,000
- Postdoc Elena Torfs (3 months)	
- Technician Sey-Hana Saing (3 months)	\$10,000
	\$5,000
<u>Sensor maintenance (cost x 0,2)</u>	<u>\$6,500</u>
- NH ₄ – ISE (\$500) x 2	\$1,000
- NO ₃ – ISE (\$500) x 2	
- NO ₂ – Analyser (\$2,000) x 1 (multiplex)	\$1,000
- COD _{tot} , COD _{sol} , TSS – UV-Vis (\$2,000) x 1 (influent)	\$2,000
- DO – LDO (\$250) x 2	\$2,000
	\$500
<u>pilEAUte (value 2 M\$)</u>	<u>\$13,000</u>
(includes monitoring station with extra water quality sensors)	
General maintenance (\$1,000/week) x 13 weeks)	
Total budget (incl. university overhead)	\$38,500

PLANNING

- February, 1st 1, 2019 Evaluation of Standard and Modified AVN under standard conditions
- March, 1st 2019 Evaluation under condition 1
- April 1st 2019 Reporting on standard condition results + definition of condition 2
- April 1st 2019 Evaluation under condition 2
- May 31st 2019 Reporting on results under all tested conditions

DELIVERABLES

Two progress reports on the results obtained with the two controller versions under two conditions.

pilEAUte: Wastewater treatment pilot plant for the development of efficient control systems for nutrient removal

*Responsibles: Elena Torfs and Peter A. Vanrolleghem, modelEAU – Université Laval,
elena.torfs.1@ulaval.ca*

General

The pilot plant set-up allows **parallel experimentation** on the efficacy of control systems for nutrient removal. The pilot was configured to represent the current **mainstream** nitrification/predenitrification plant design. However, it is prepared for future extension towards enhanced biological P-removal and addition of carriers to study biofilm-enhanced treatment.

Also, primary treatment has received extensive attention in the design, with room for alternative treatments such as rotating belt filters and chemical addition, all this in view of sending more organics and other materials to sludge treatment for resource recovery.

Traditional and innovative measurement systems are connected to a state-of-the-art industrial process control system with ample actuators and options for control strategy extension. This allows for example temperature control of the bioreactors.

All online data (and their metadata) are automatically stored in an extensive SQL database.

Moreover, also other custom-made changes in piping and configuration are feasible.

Current treatment line configuration and operation

Figure 1 provides an overview of the pilot configuration. The system is continuously fed with municipal-like wastewater from the on-campus student housing by means of a pumping station (with two shredder pumps) in the sewer. From there wastewater is fed to a 5m³ storage tank. Pre-treatment consists of a primary settling tank of 2,8m³ (influent flow = 1,1m³/h). The pre-treatment step can be bypassed as well.

The biological treatment contains two parallel treatment lines which each receive 0.5m³ primary effluent per hour. Each treatment line has 5 biological reactors in series (total volume = 6.5m³), a secondary settling tank (2.8 m³), an internal recycle loop (1.5m³/h) and a sludge recycle loop (0.5m³/h). The first two reactors (1.1 and 1.4m³ resp.) are anoxic and the last three reactors (1.1, 1.1 and 1.9m³ resp.) are aerated by disk diffusers. Aeration is controlled in the 4th reactor at 3mg/l.

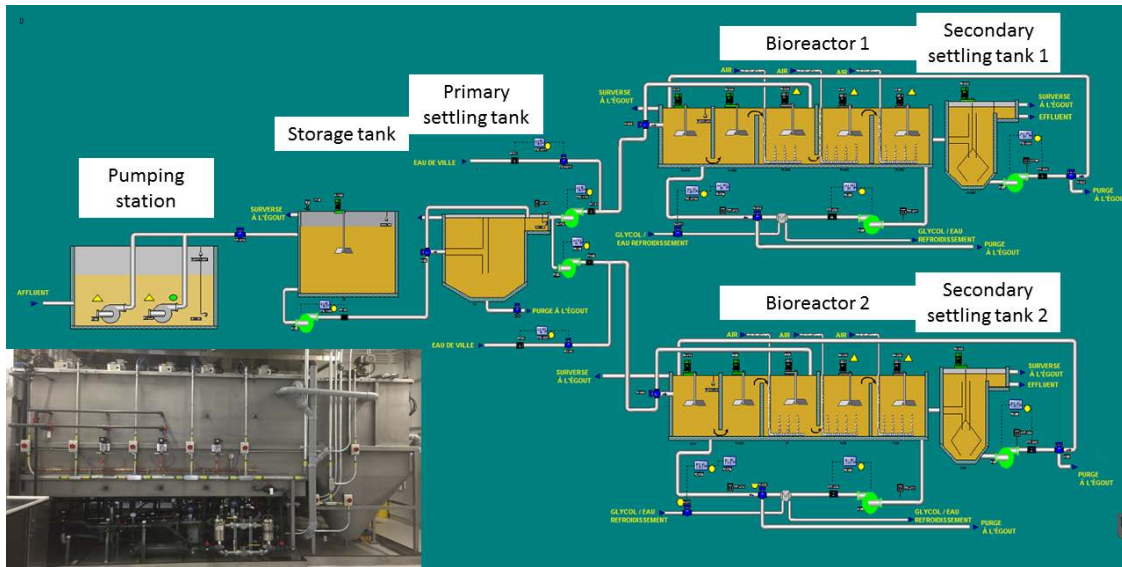


Figure 1: Overview of modelEAU pilot plant.

Influent characterisation

Average influent values collected over a 24 hour measurement campaign on July 4, 2016.

Storage tank		
Parameter	Unit	Values
TSS	[mg/L]	165
COD _{tot}	[mg/L]	460
N _{tot}	[mg/L]	57
pH	-	7,60
alkalinity	[mg/l]	120

Primary Effluent		
Parameter	Unit	Values
TSS	[mg/L]	66
COD _{tot}	[mg/L]	324
COD _{sol}	[mg/L]	127
N _{tot}	[mg/L]	53
NH ₄	[mg/L]	43
pH	-	7,30

On-line monitoring

Location	Parameter	Principle
Primary effluent	TSS, COD _{tot} , COD _s , NO ₃	UV-VIS spectrophotometry
Primary effluent	NH ₄	ISE
Primary effluent	Conductivity	potentiometric
Primary effluent	pH	potentiometric
Primary effluent	BOD _{st} and toxicity	Respirometry (ROD _{TOX}) ¹
Secondary effluent	Turbidity	Nephelometric
Secondary effluent	NH ₄ , NO ₃	ISE
Secondary effluent	pH	potentiometric
ASU 2	TSS	Nephelometric
Sludge recycle line	TSS	Nephelometric
ASU4	DO	Luminescent
ASU2/ASU5	NH ₄ /NO ₃ /NO ₂	Trescon ² /Purcon ³

¹more info: <http://www.kelma.com/product/71/rodttox-ng>

²more info: <https://www.wtw.com/en/products/product-categories/analyzer/tresconr-analyzer.html>

³more info: <https://www.wtw.com/en/products/product-categories/analyzer/sample-preparation/purconr.html>

Operational and control parameters

- Level control in storage tank (flexible equalization capacity)
- Influent flow rate (to primary settling tank) can be increased to approx. 2m³/h
- DO set point control in ASU 4. Ratio of air flow rates to reactors 3 and 5 can be controlled.
- Bypass PST to feed one or more bioreactors with raw WW
- Step feed possible to reactor 3
- Internal recycle to 1st, 2nd or 3rd reactor
- Temperature control of bioreactor (10-25°C)
- Alternating aeration for improved denitrification
- Wet weather flow (dilution of primary effluent with drinking water)
- Wastage: both sludge recycle and aeration tank wastage is possible

CONSENT AGENDA ITEM 2.c.1. – December 17, 2019

Subject: Cisco SmartNet Core Switch and Line Card Replacement
Task Order (>\$200,000)

Recommended Action: Approve a task order with Savant Ltd in the amount of \$238,047.

Contract Status:	Amount
Original Contract with Savant Ltd.	\$50,000
Total Value of Previous Task Orders	\$376,821
Requested Task Order	\$238,047
Total Value of All Task Orders	\$614,868
Revised Contract Value	\$664,868

Task Order Description: This task order will provide replacement services on Cisco core switches that have reached their end of life in accordance with the existing HRSD Cisco Based Converged Infrastructure Annual Support Contract Agreement and the cooperative contract competitively solicited by Virginia Association of State & College University Purchasing Professionals (VASCUPP). This project provides for the replacement of the dated equipment and all required installation, configuration, and testing services for the Information Technology Department.

Analysis of Cost: The cost for this task order is based on the cooperative contract and found to be fair and reasonable. This is an estimated use contract. Pricing reflects a 50 percent discount on goods from Savant and a 35 percent discount on services from VASCUPP.

CONSENT AGENDA ITEM 2.d.1. – December 17, 2019

Subject: Army Base Treatment Plant Miscellaneous Improvements
Contract Change Order (>25% or \$50,000)

Recommended Action: Approve a change order with T.A. Sheets General Contractors, Inc. in the amount of \$80,059.

CIP Project: AB010100

Budget	\$124,521,000
Previous Expenditures and Encumbrances	(\$123,389,563)
Available Balance	<u>\$1,131,437</u>

Contract Status	Amount	Cumulative % of Contract
Original Contract with T.A. Sheets	\$2,644,800	
Total Value of Previous Change Orders	\$791,537	
Requested Change Order No. 3	\$80,059	
Total Value of All Change Orders	\$871,596	33%
Revised Contract Value	\$3,516,396	

Time (Additional Calendar Days)		152
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Project Description: This project completes the punch list left over from the Phase III Improvements contractor.

Change Order Description: This action adds additional Contract Time to allow for unforeseen field conditions and closes out the contract.

Analysis of Cost: The Engineer prepared an independent evaluation and recommends approval of this change.

Schedule: Project Completion November 2019

HRSD COMMISSION MEETING MINUTES
DECEMBER 17, 2019

ATTACHMENT #3

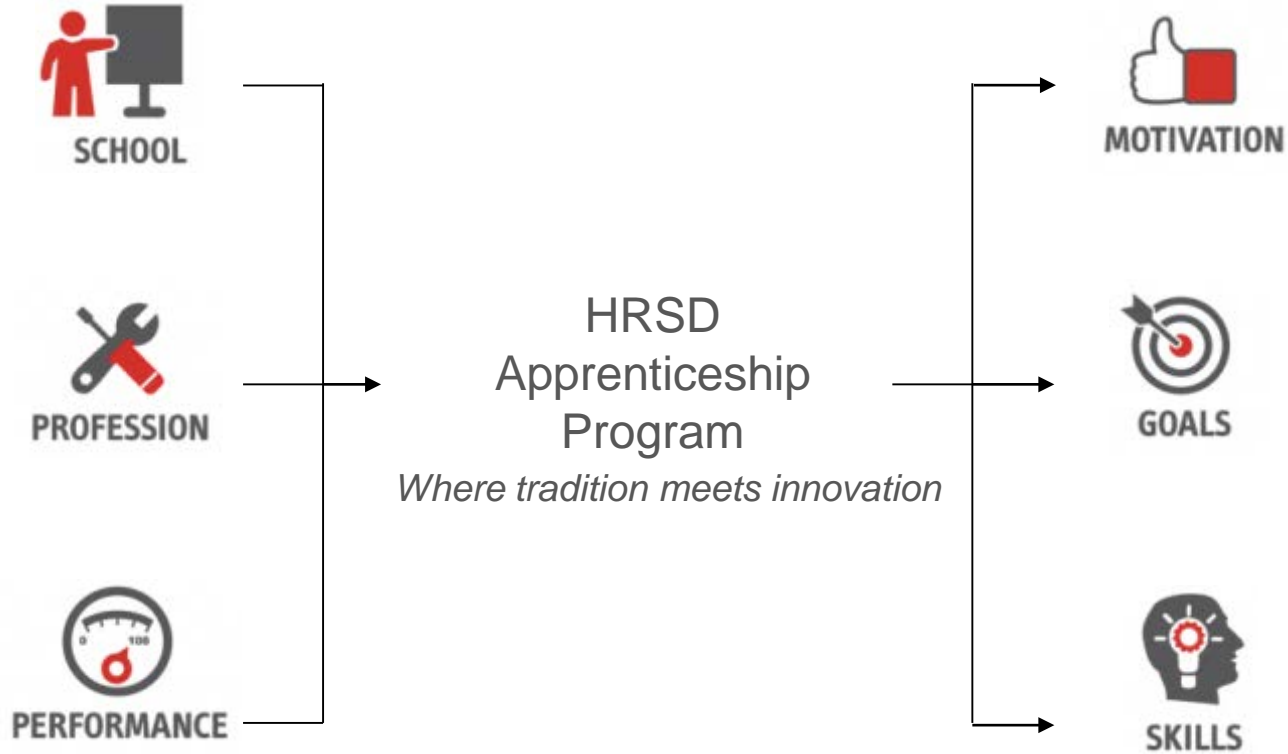
AGENDA ITEM 3. APPRENTICESHIP PROGRAM PRESENTATION



HRSD Apprenticeship Program Presentation

December 17, 2019

HRSD Apprenticeship Program



Why Apprenticeship?

For the best return on your money, pour your purse into your head.

- Benjamin Franklin



40 Year of Sustainable Success

- 37 graduating classes
 - Over 500 graduates
 - Approx. 95% retention
 - 8 trades / 5 active
 - Conceptual Learning
 - Practical Training
-
- *Automotive Technician*
 - *Carpenter*
 - *Electrical & Instrumentation Specialist*
 - *Interceptor Technician*
 - *Plant Operator*
 - *Machinist*
 - *Maintenance Operator*
 - *Small Communities Operator*

Example: Small Communities Operator Trade Curriculum

General Education Requirements

Bearings and Lubrication
Computer Concepts
Computerized Maintenance Management Systems (CMMS)
Fundamentals of Electricity for the Non-Electrician
Introduction to Wastewater Treatment & Maintenance 1
Introduction to Wastewater Treatment & Maintenance 2
Math 1
Math 2
Math 3
Math 4
Preliminary and Primary Treatment
Pumping Systems 1
Pumping Systems 2
Shop Prints and Schematics
Valves and Piping Systems

Small Communities Operator Trade Requirements

Approved Electives (must complete one)

Biological Nutrient Removal 1
Biological Nutrient Removal 2
Biological Treatment Processes 1
Biological Treatment Processes 2
Disinfection
Geographic Information Systems (GIS)
Pipe and Pipefitting
Pipeline Condition and Assessment
Treatment Plant Math 1
Treatment Plant Math 2
Trenching
V-Belt, Coupling and Drive Alignment
Welding 1
Welding 2
Welding 3
Welding 4



2018 Honoree

Hampton Roads Sanitation District, VA
Apprentice Program

An Agency of the Commonwealth of Virginia



Department Of
Labor And Industry

- Current Award Winners
 - 2019 – Benjamin Elliott
 - 2019 – David Wood
- Previous Award Winners
 - 2010 – Tim Scott
 - 2018 – Travis Stevens



- Traditional/Industry Training
 - Job-specific skills
 - Structured, face-to-face learning
 - Paper, pen, and textbook
- Educational Institutes
 - Learning for the future
 - Flexible, dynamic learning
 - Learning that's convenient for adults

Learning at any time

Learning with familiar devices

Learning for growth.

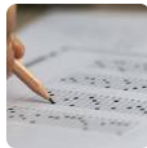
- Identifying the issues
 - Lack of mathematical skills
 - Lack of reading comprehension
 - Lack of critical thinking skills

WP Washington Post

U.S. students continue to lag behind peers in East Asia and Europe in reading, math and science, exams show

Reading and math scores for U.S. students have not changed ... the exams to teenagers have encountered serious motivation issues.

3 days ago



Q Quartz

Only 9% of 15-year-olds can tell the difference between fact ...

In the US, 13.5% of 15-year-olds can distinguish between fact and opinion ... to the latest results of PISA, or the Programme for International Student ... able to separate fact from opinion, "based on implicit cues pertaining to

3 days ago



Apprenticeship Program Mission & Vision



Mission

To create a workforce with diverse skill sets to prepare for an ever-changing industry

Vision

To provide learning centered around work, life, health, water, and innovation.

Developments



Surface Pro devices
all for convenient
access to materials.



Canvas provides
learning platform to
create an effective
learning environment.



Simulation software
provides real-time,
scenario-based
learning.



New recitation course
provides additional
learning resources for
math.

Looking to the Future

- Innovative learning methods
- Leveraging partnerships
- *HRSD is not the only organization facing these issues*
 - Short-term Idea
 - Long-term Goal



HRSD COMMISSION MEETING MINUTES
DECEMBER 17, 2019

ATTACHMENT #4

AGENDA ITEM 4. NANSEMOND TREATMENT PLANT LAND ACQUISITION – LAND
STABILIZATION AND NANSEMOND TREATMENT PLANT LAND
ACQUISITION – STRUCTURE DEMOLITION
REJECTION OF ALL BIDS PRESENTATION



Nansemond Treatment Plant Land Acquisition:
Land Stabilization and Structure Demolition
Rejection of All Bids

December 17, 2019

Project to make improvements to the vacant property owned by HRSD adjacent to the Nansemond Treatment Plant. Three areas of work:

1. Force Main Stabilization
2. Access Road Construction
3. Shoreline Stabilization and Building Demolition

Project Description (cont.)



- Project advertised as a unit price contract thru HRSD's ERP System
- Bids were received on December 3rd
- 5 proposers provided bids
 - Allan Myers Virginia
 - Curtis Contracting
 - Conquest USA
 - Paxton Contractors
 - Henry S. Branscome

Virginia Public Procurement Act

“... all procurement procedures be conducted in a fair and impartial manner with avoidance of any impropriety or appearance of impropriety...”

“ informality means a minor defect or variation of a bid or proposal from the exact requirements of the Invitation to Bid or the Request for Proposal, which does not affect the price, quality, quantity or delivery schedule for the goods, services or construction procured.”

Bid Items As Listed in the ERP System

Item 1 – Mobilization and Site Preparation (Force Main) Lump Sum Amount – Not To Exceed 6%.

Item 12 - Mobilization and Site Preparation (Access Road).

Item 39 - Mobilization and Site Preparation (Shoreline Stabilization).

Item 51 – Demolition of Buildings (Lump Sum Amount – Not to exceed 6%).

Mobilization as Defined in the Specifications

1. Measurement:

- a. Mobilization will be paid for at the contract lump sum price. The price shall include demobilization.
- b. A payment of 50% of the total mobilization cost will be made as an initial progress payment and 50% will be paid at substantial completion of mobilization.
- c. The lump sum price paid for mobilization will be subject to the following limitations:

<u>Original Contract Amount Including Mobilization</u>	<u>Maximum Lump Sum Bid for Mobilization</u>
From \$0 to < 200,000	8% of total contract amount
From \$200,000 to \$1,000,000	7% of total contract amount
Greater than \$1,000,000	6% of total contract amount

2. Incidental Items:

- a. No additional payment will be made for demobilization and remobilization because of shutdowns, suspensions of work, or other mobilization activities.

3. Basis of Payment: Payment shall be made at the contract lump sum price.

Summary of Problematic Bid Items

Mobilization Bid (Total of Items 1, 12 and 39)		
Contractor Name	Bid	% of Total Bid Price
Alan Myers Virginia	\$ 408,000	10.22%
Curtis Contracting	\$ 174,000	3.91%
Conquest USA	\$ 314,000	6.83%
Paxton Contractors	\$ 640,000	12.81%
Henry S. Branscome	\$ 105,387	1.63%
Max. Requirement		6%

Summary of Problematic Bid Items (Cont.)

Demolition of Buildings (Item 51)		
Contractor Name	Bid	% of Total Bid Price
Alan Myers Virginia	\$ 200,000	5.00%
Curtis Contracting	\$ 1,100,000	24.75%
Conquest USA	\$ 580,000	12.61%
Paxton Contractors	\$ 548,550	10.98%
Henry S. Branscome	\$ 587,341	11.07%
Max. Requirement		6%

Reject all bids for the Nansemond Treatment Plant Land Acquisition – Land Stabilization and the Nansemond Treatment Plant Land Acquisition – Structure Demolition projects due to multiple errors in the bidding documents which resulted in bids that were not in conformance with the intended project requirements.

HRSD COMMISSION MEETING MINUTES
DECEMBER 17, 2019

ATTACHMENT #5

AGENDA ITEM 5. NEW POSITION IN THE CENTRAL ENVIRONMENTAL
LABORATORY – PATHOGEN PROGRAM PRESENTATION



HRSD's Pathogen Program: An Update

December 17, 2019

2015
2 lab staff

- Watershed-Scale Source Tracking
- Virus R & D
- Pathogen Enumeration

Future

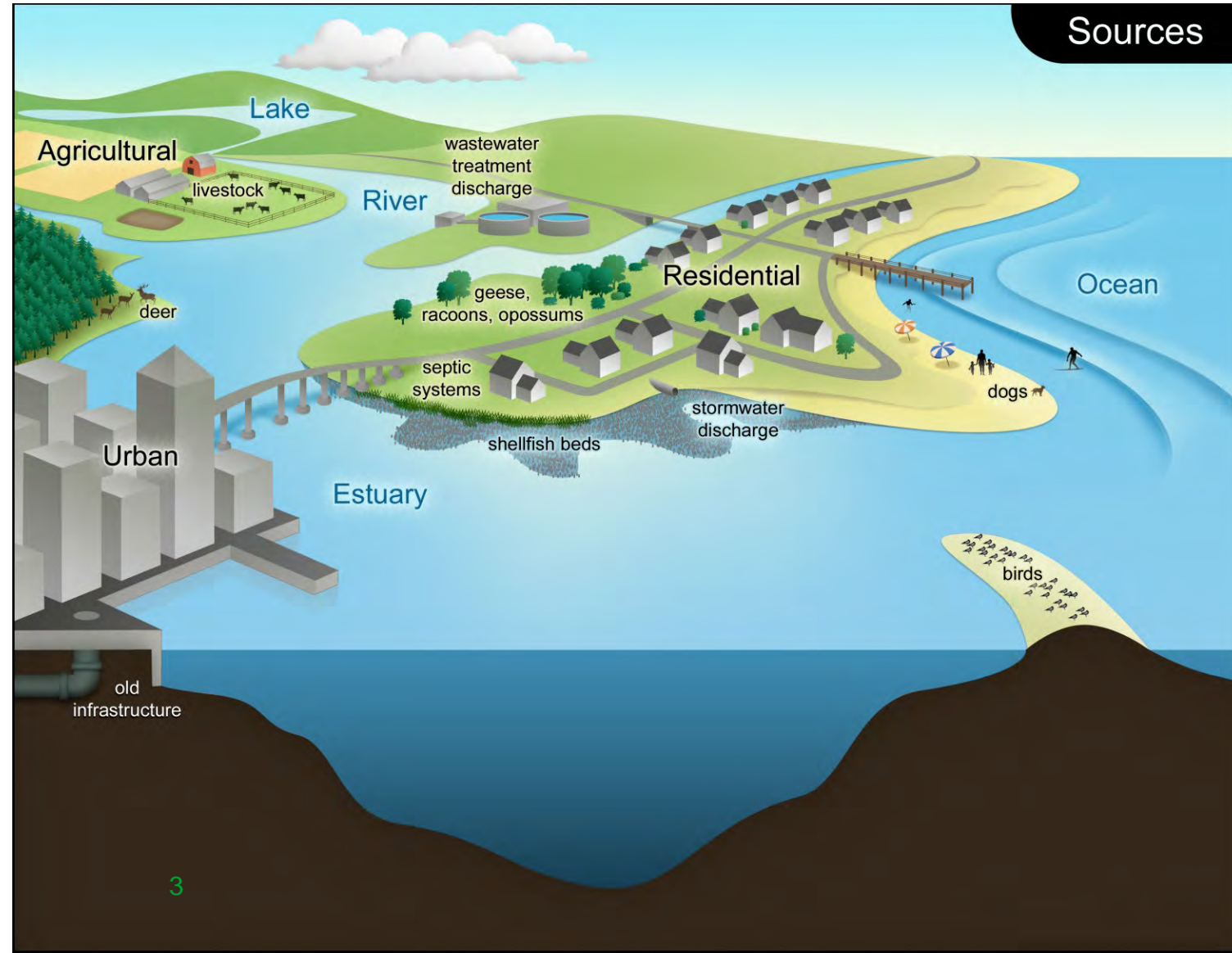
- Source Tracking

Current
2 lab staff

- DNA Sequencing
- Spill Response
- Watershed-Scale Source Tracking
- Virus R & D
- Pathogen Enumeration

Current Indicator Shortcomings

- Ubiquitous
 - native & anthropogenic
- Not host-specific
 - humans
 - wildlife
 - domestic pets
 - livestock
- Persist and grow in the environment

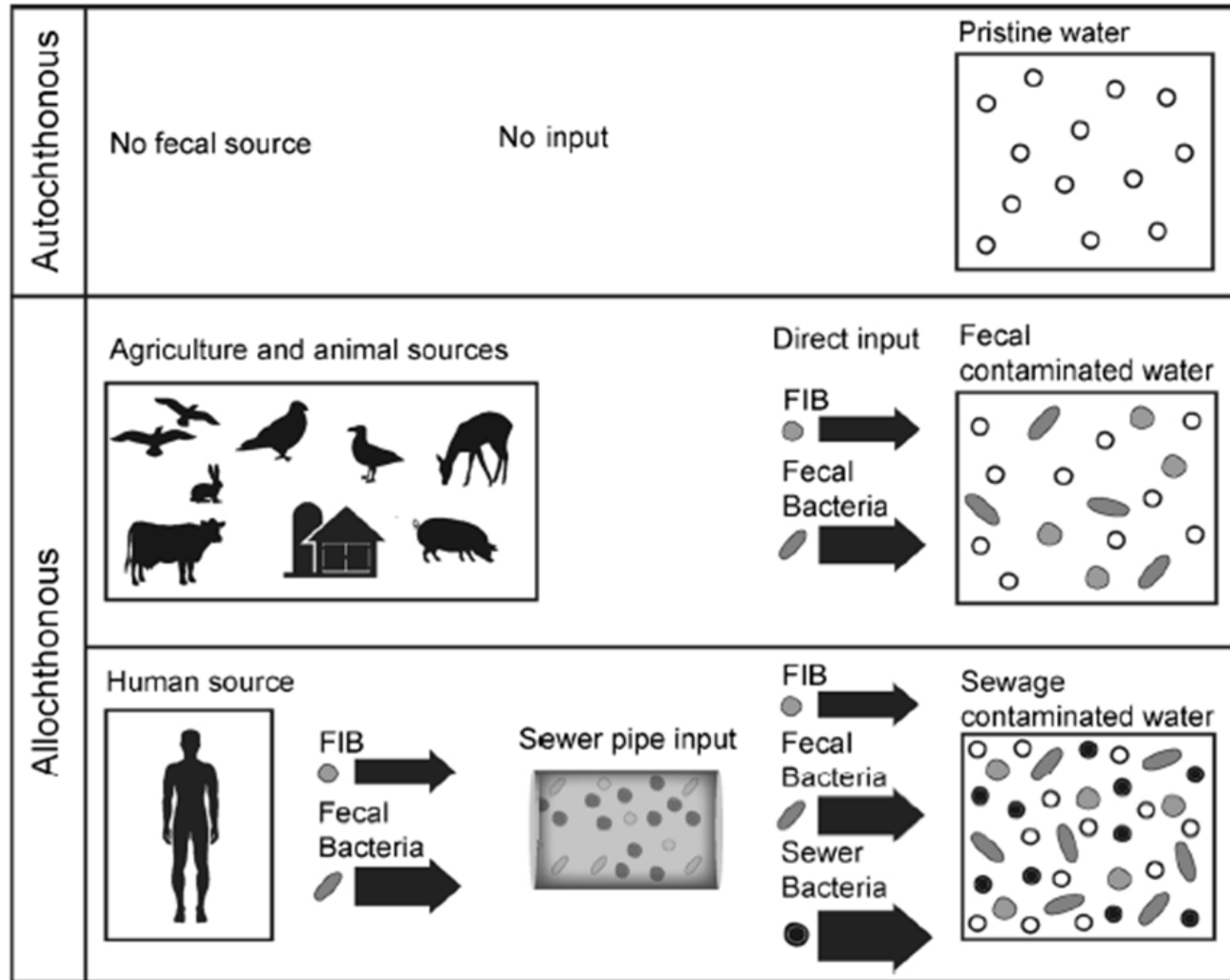


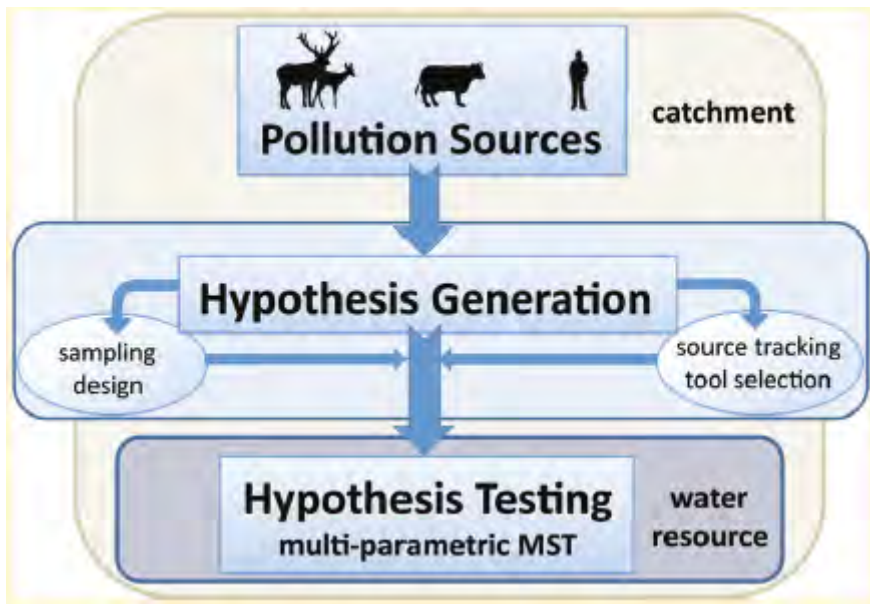
A set of techniques used to discriminate the sources of fecal contamination in the environment

Why do we care about the source?

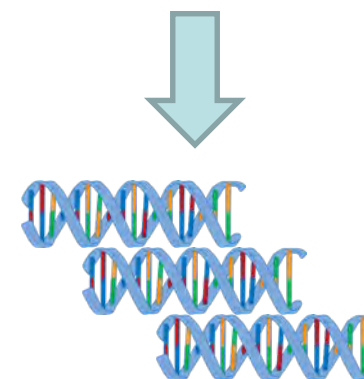
HF183 marker

- DNA-based method
- Human-specific
- Cannot survive long outside the gut
- Presence indicative of recent sewage contamination
- Quantitative





Reischer et al. 2011

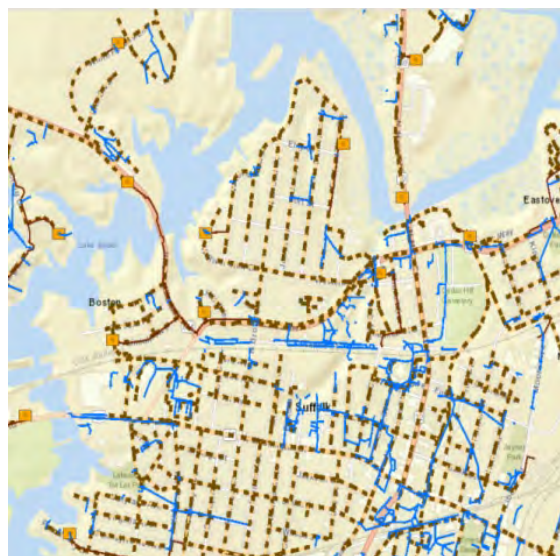


Extract
Total
DNA



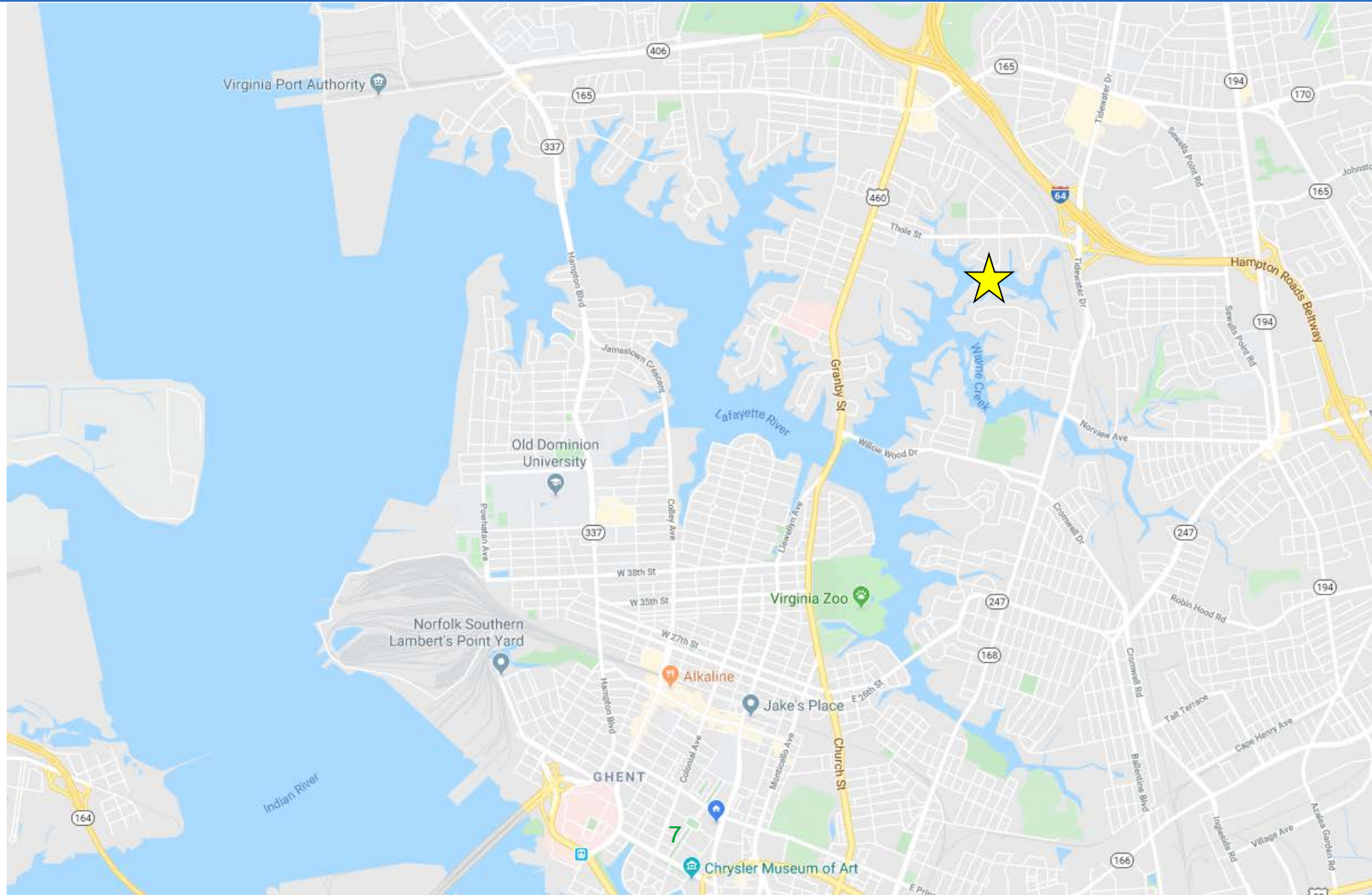
Marker
Quantification

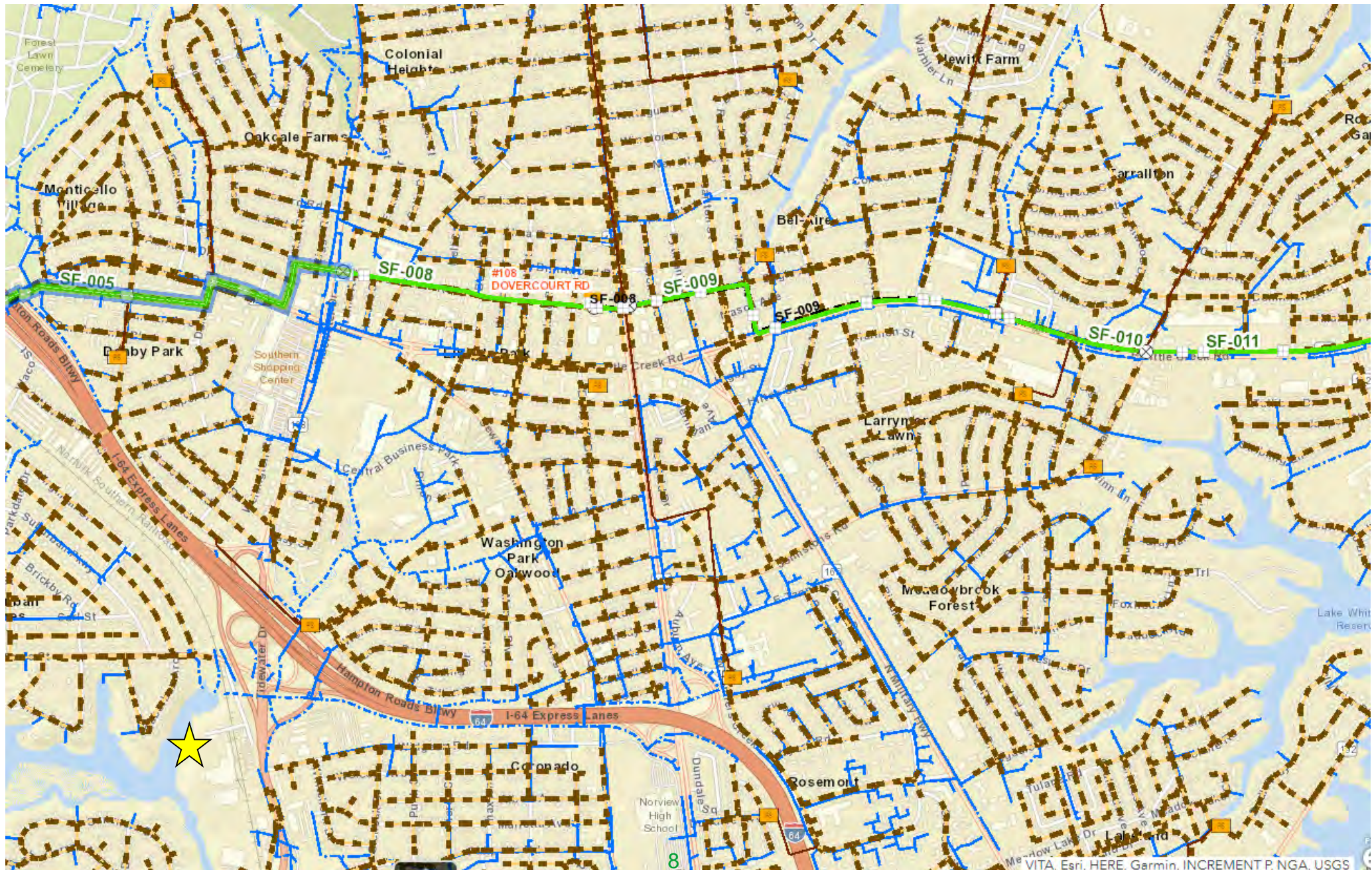
Human
Fecal #'s
Animal
Fecal #'s



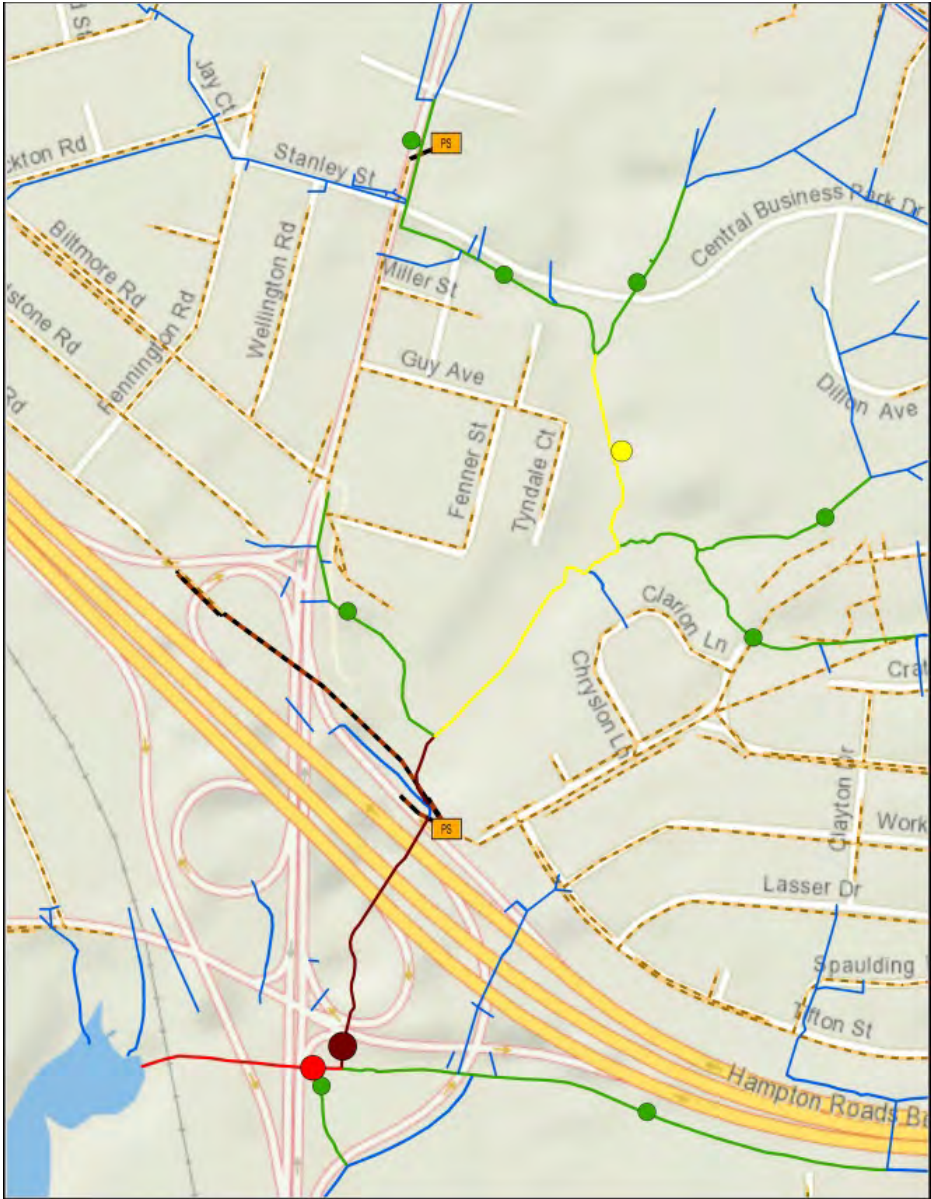
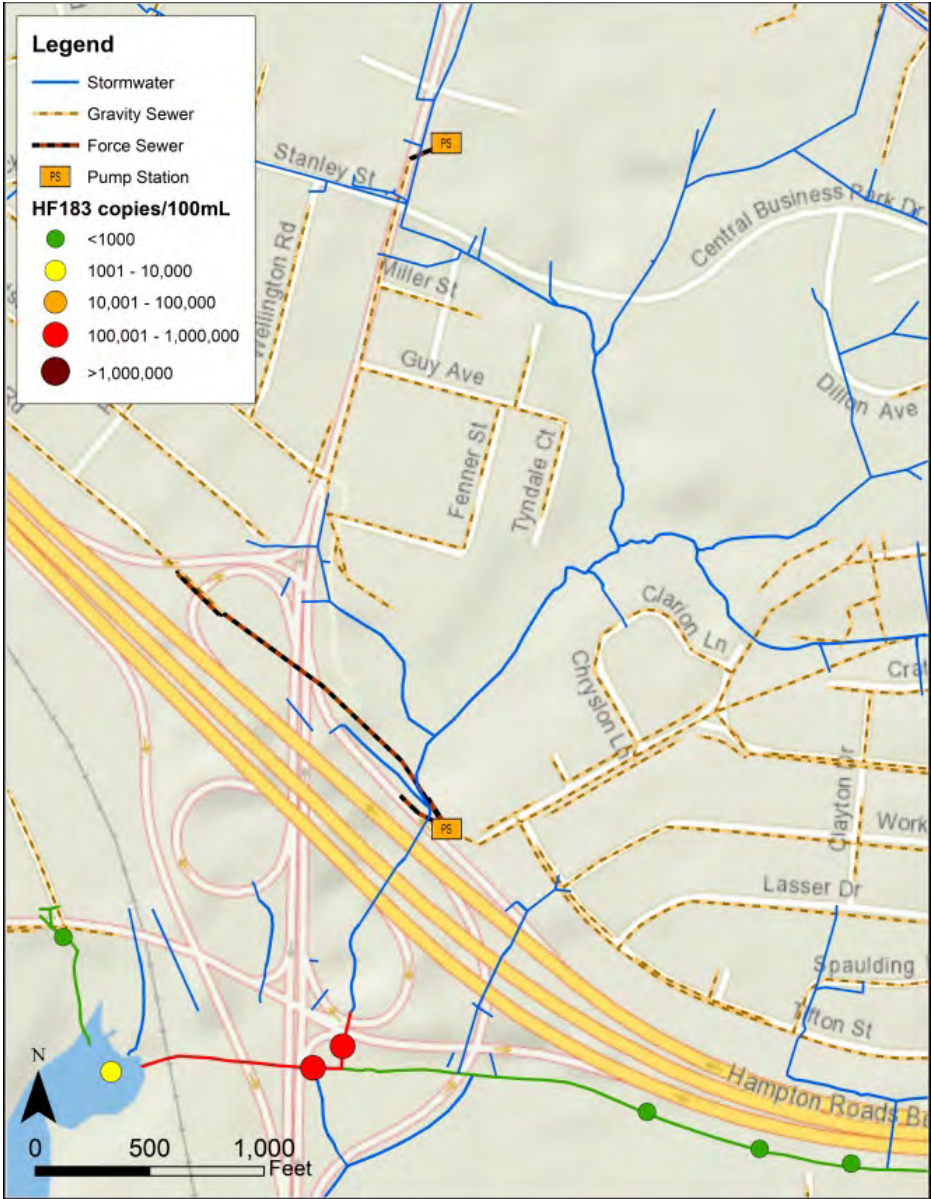
Interpret with respect to Infrastructure

The First Case Study – The Lafayette River (2015)

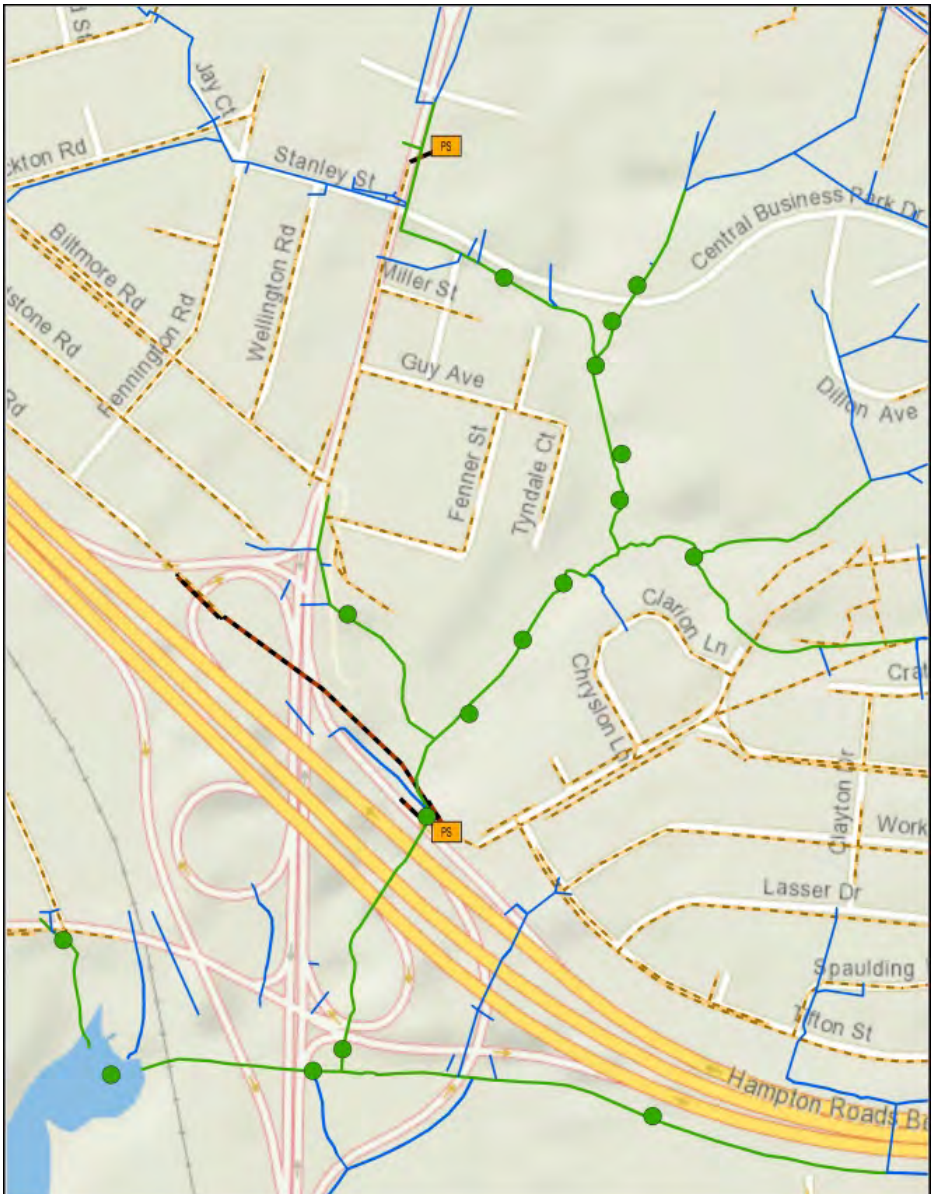
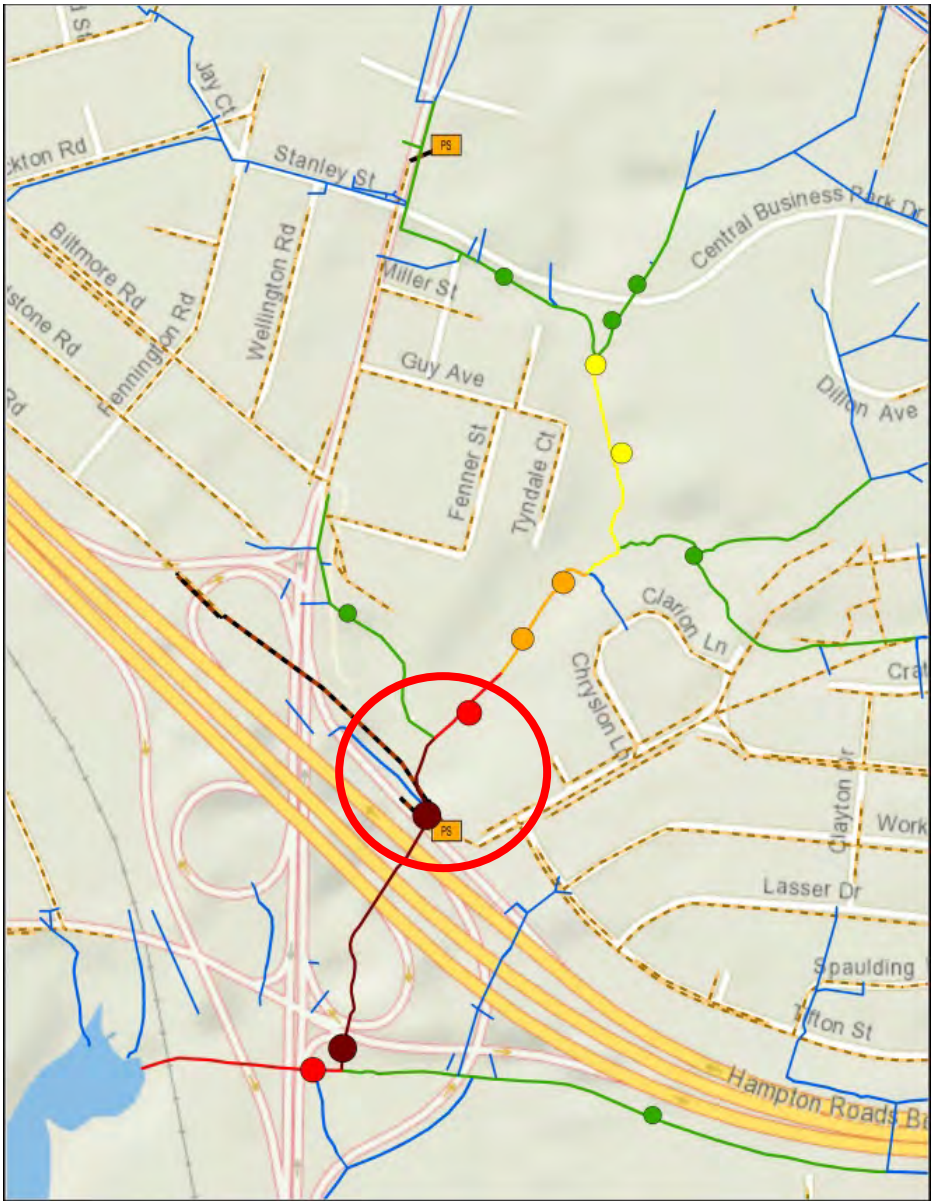




Textbook Investigation



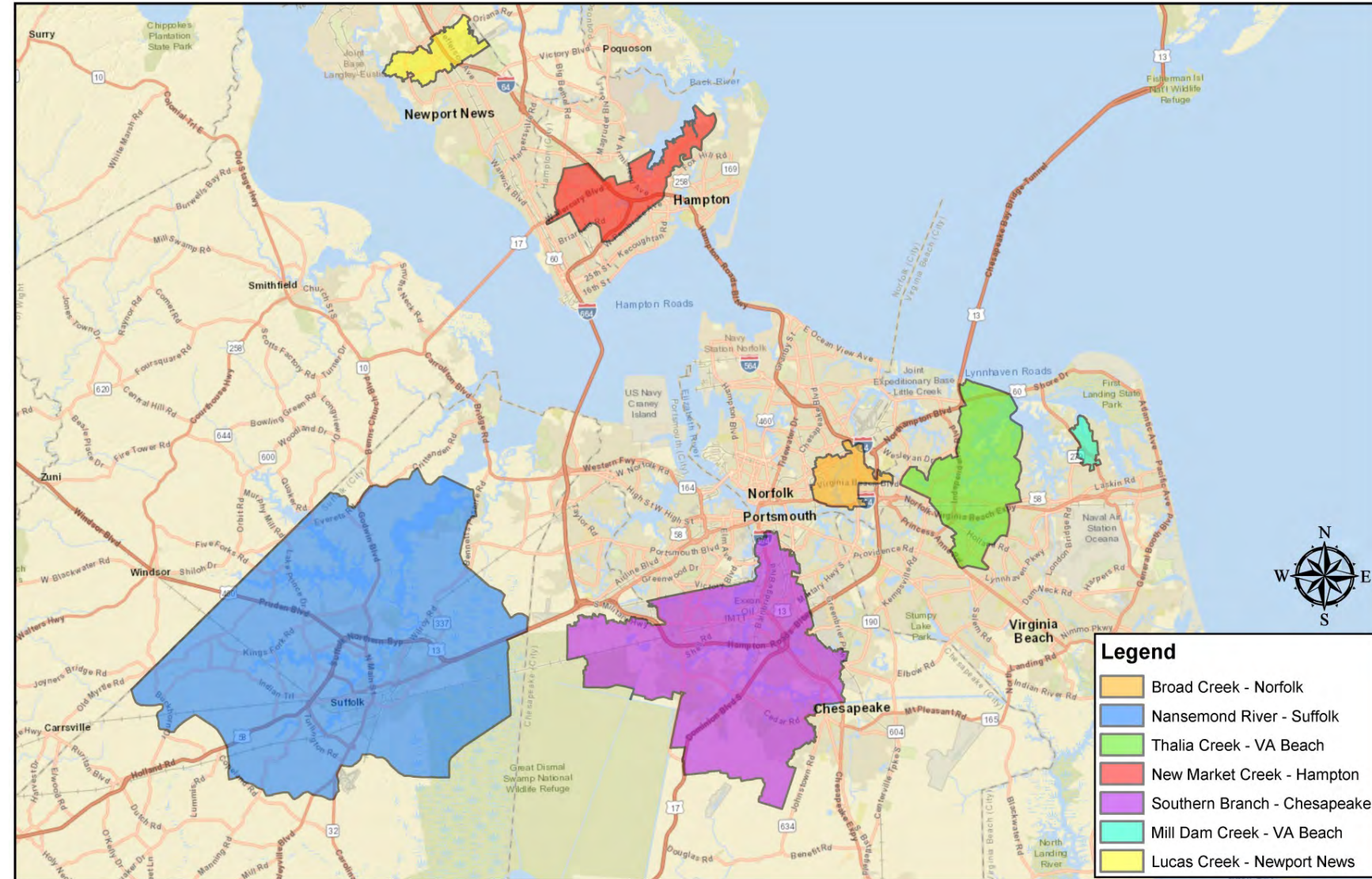
Textbook Investigation cont.



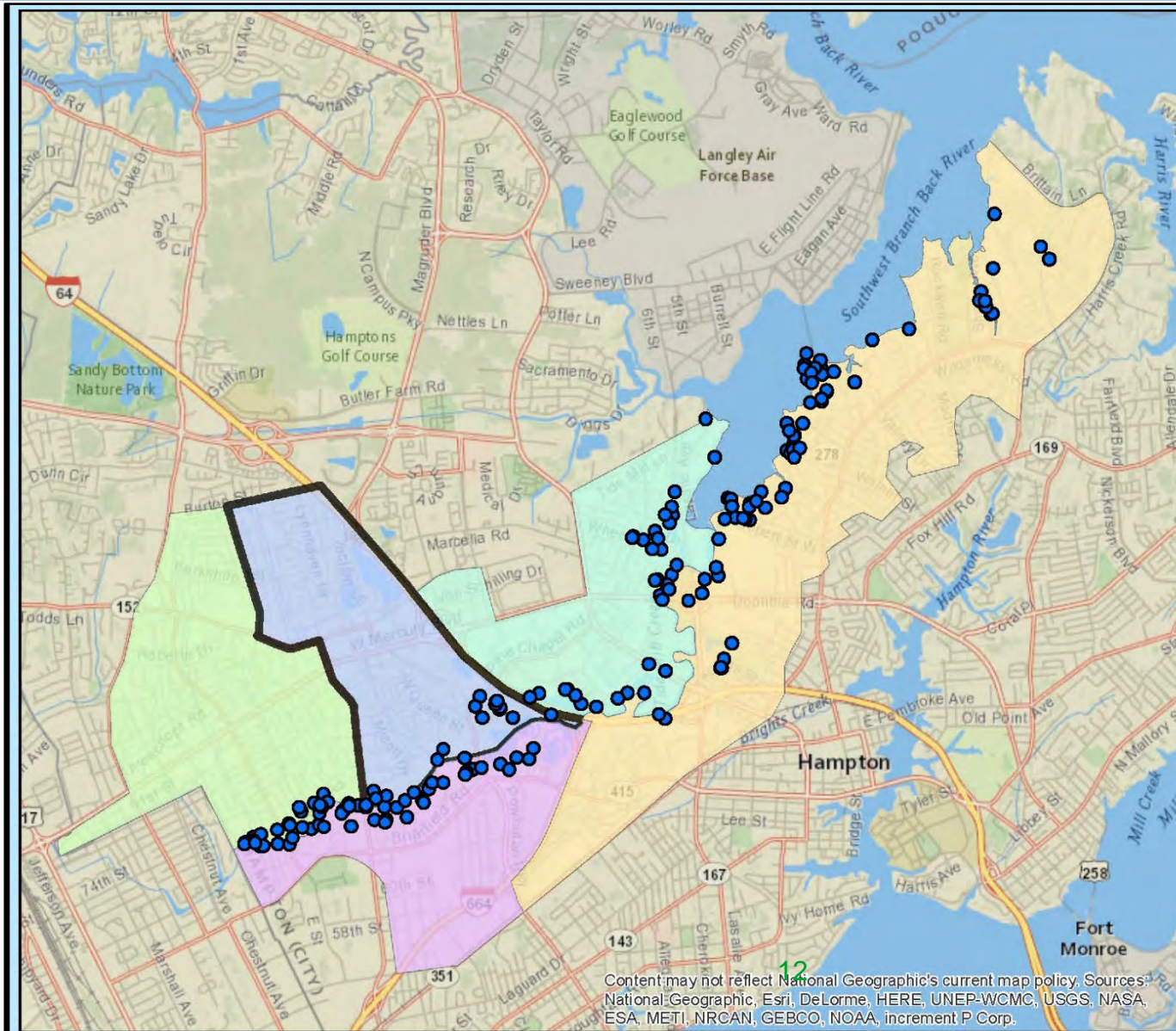
Where are we now?

- 5 human assays
- 5 animal markers
- 13 alternative indicators
- 27 pathogens

- Released guidance document
- Interpretation document



Hampton Microbial Source Tracking



Legend

● New Market Creek Outfalls

Sub-Basins

■ Mary Peake

■ Riverdale

■ Lake Shore

■ Briarfield

■ King St



0 0.5 1 2 Miles



N

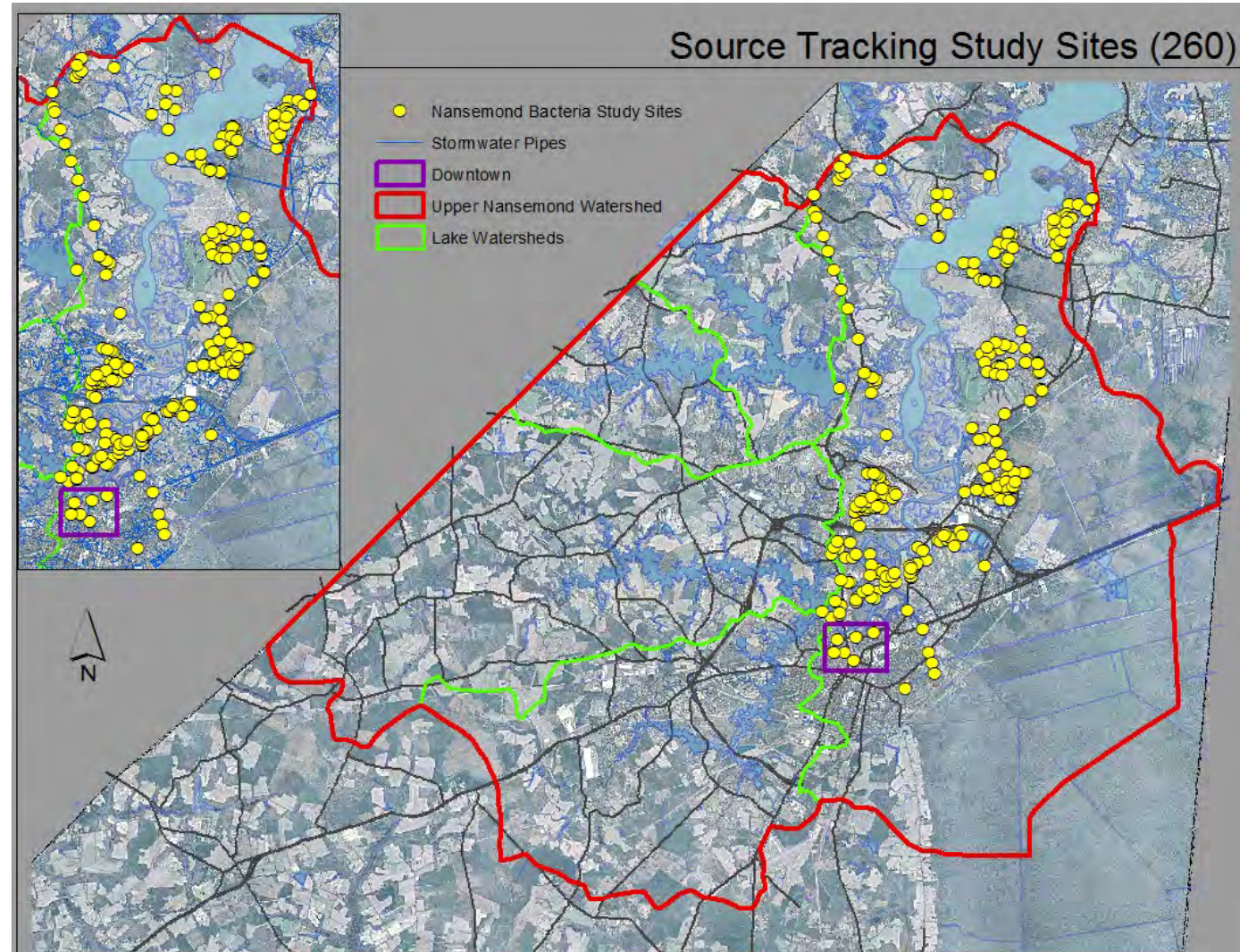


Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

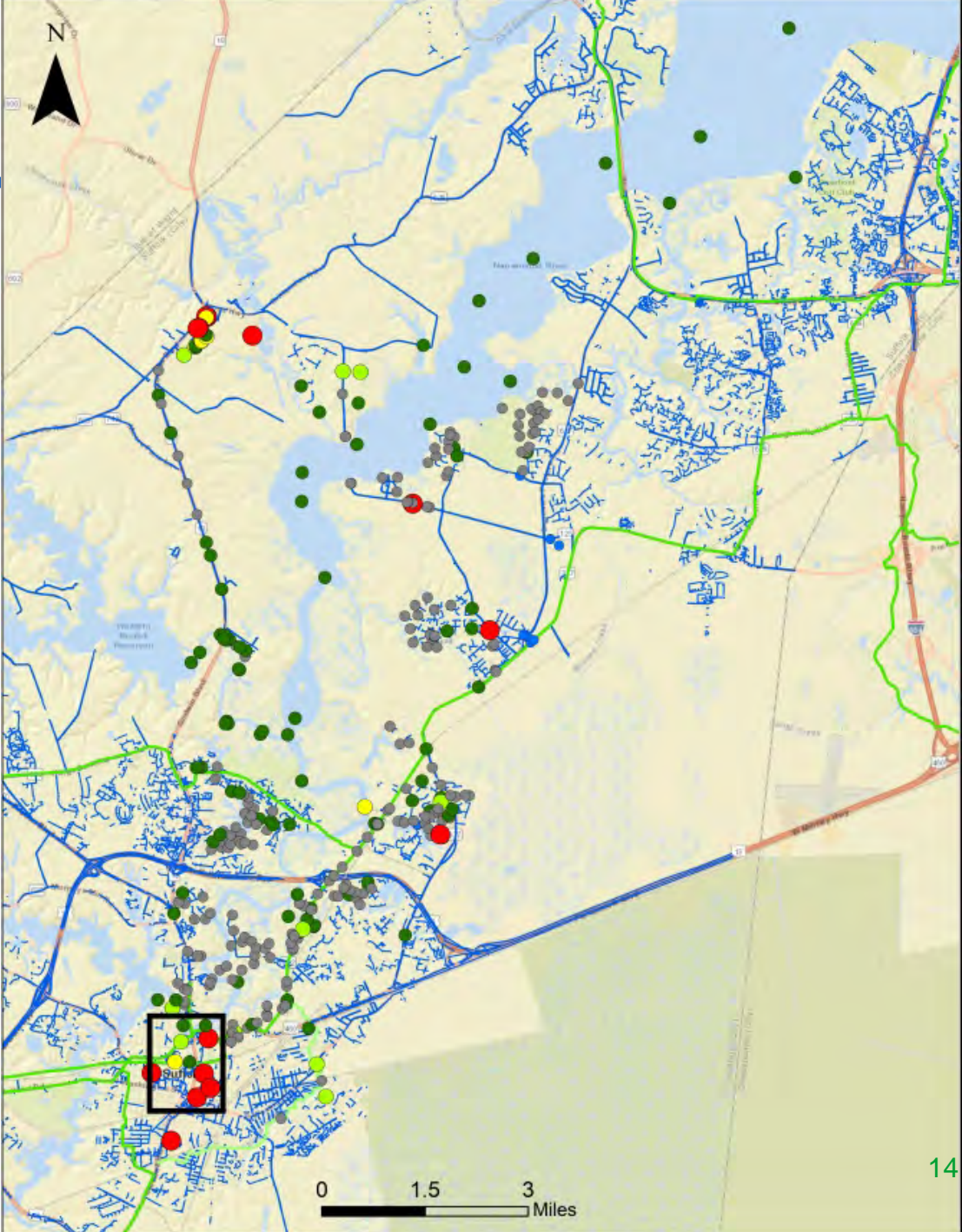


Phase 1: dry weather screening

- Objective: To identify, repair, and confirm remediation of human inputs of fecal contamination
- Approach:
 - Delineate all infrastructure
 - Sampling campaign
 - Targeted MST
 - Repair
 - Follow-up sampling campaign



Upper NR Infrastructure Screening



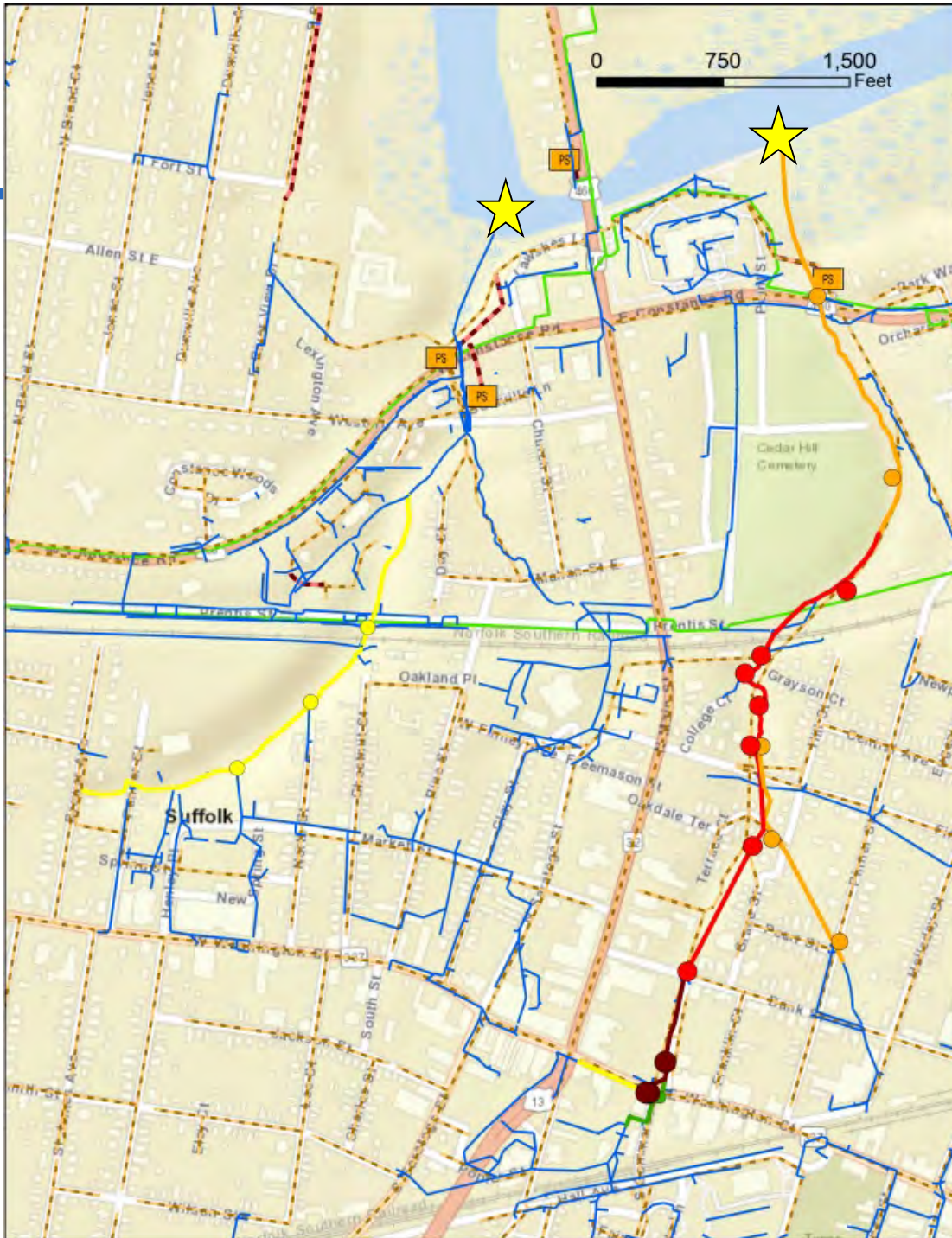
Legend

- Stormwater
- Gravity Sewer
- Force Sewer
- ⚡ Pump Station
- HRSD Force Interceptor
- HRSD Gravity Interceptor
- HRSD Siphon

HF183 copies/100mL

- No Sample
- Dry
- 1 - 1000
- 1001 - 10,000
- 10001 - 100,000
- 100,001 - 1,000,000
- >1,000,001

Downtown Examples

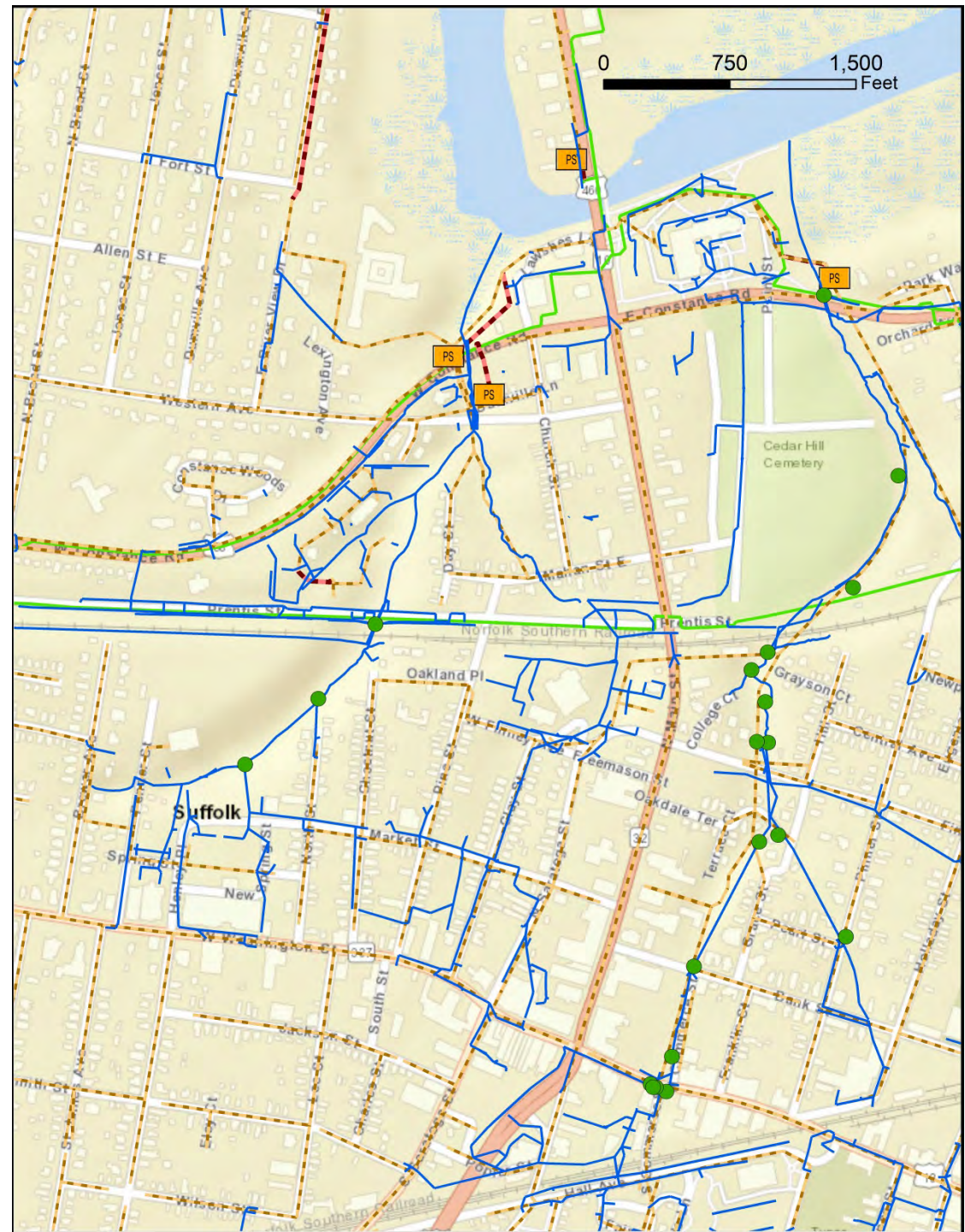
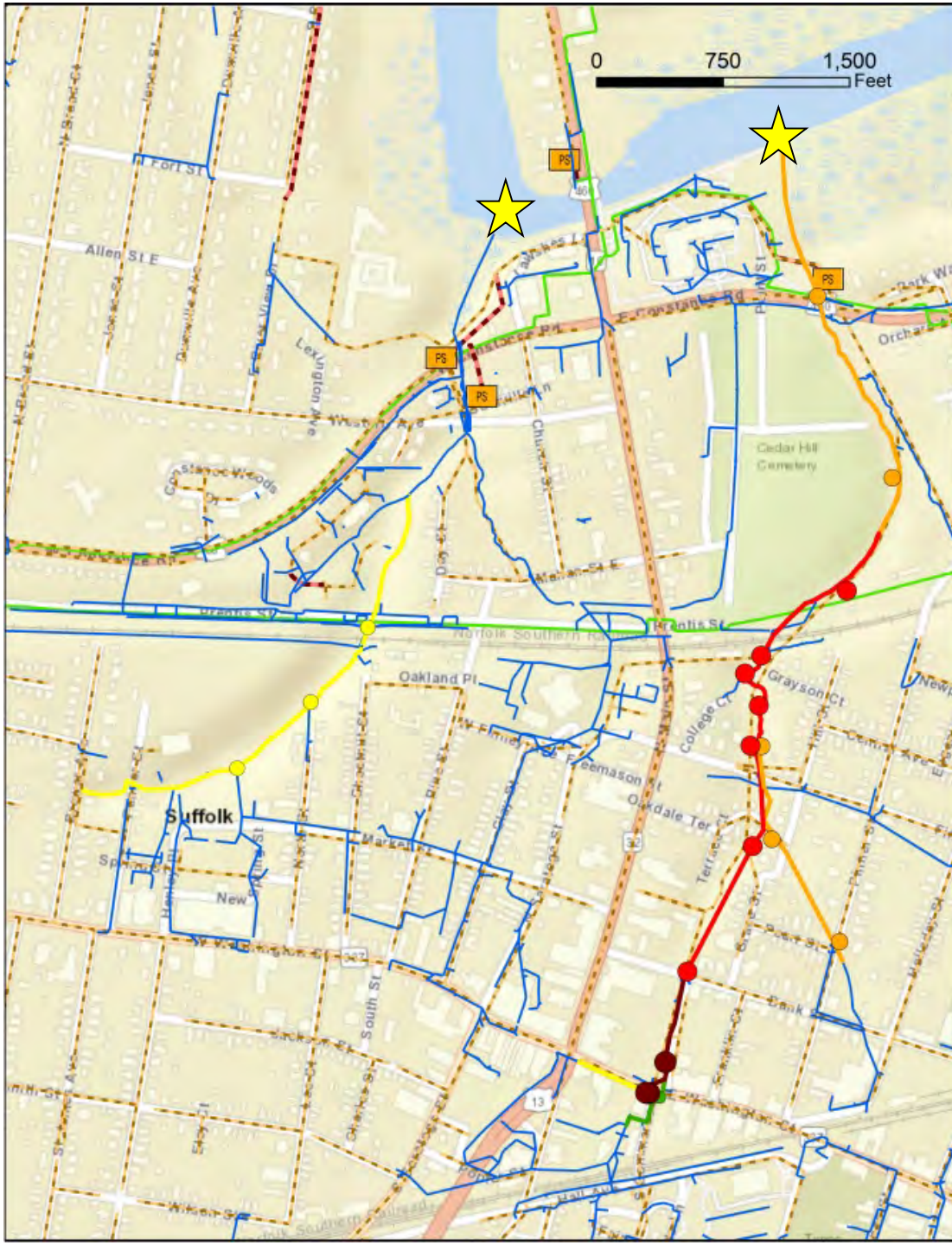


Legend

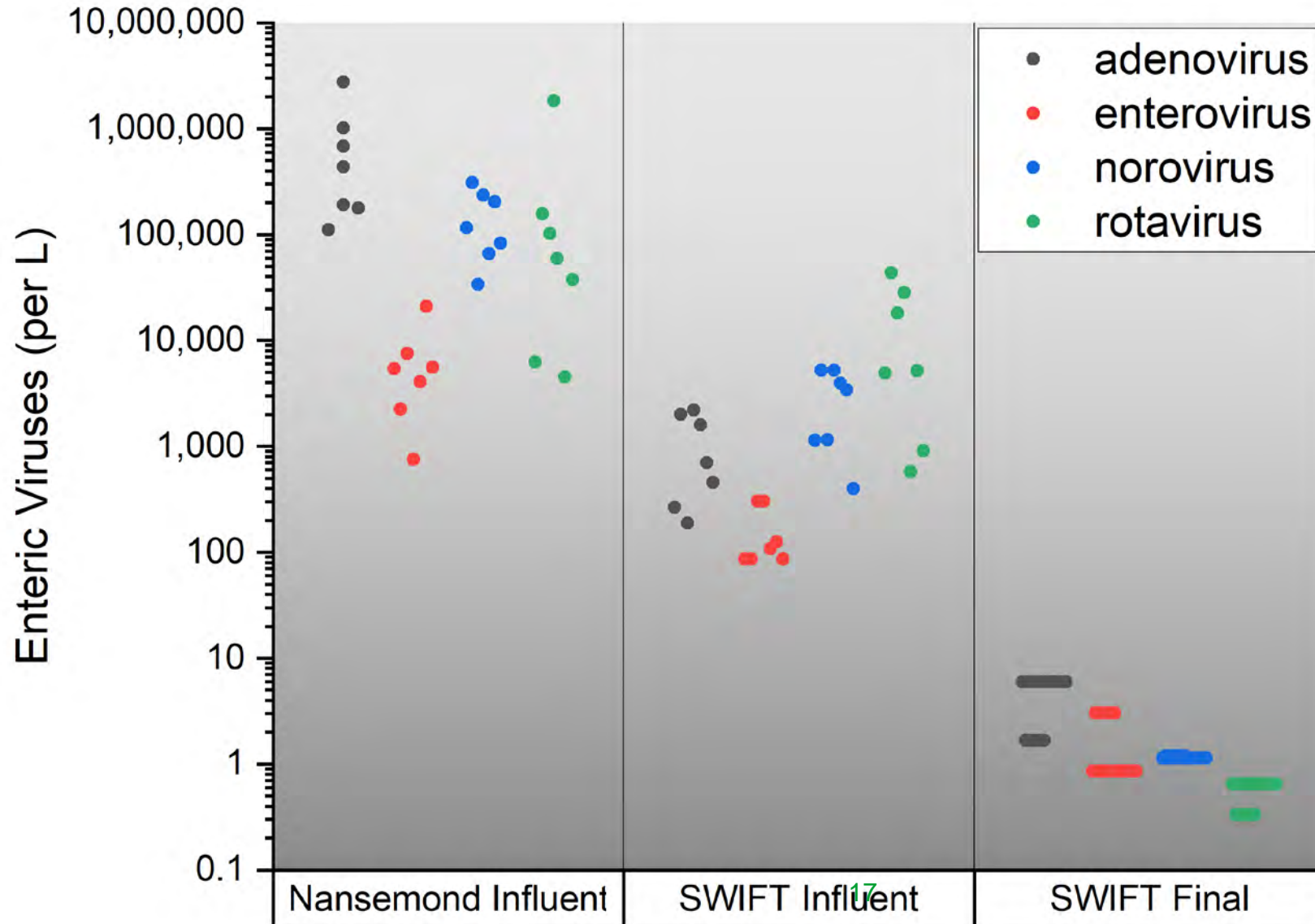
- Stormwater
- Gravity Sewer
- - - Force Sewer
- PS Pump Station
- HRSD Force Interceptor
- - - HRSD Gravity Interceptor
- HRSD Siphon

HF183 copies/100mL

- No Sample
- Dry
- 1 - 1000
- 1001 - 10,000
- 10001 - 100,000
- 100,001 - 1,000,000
- >1,000,001

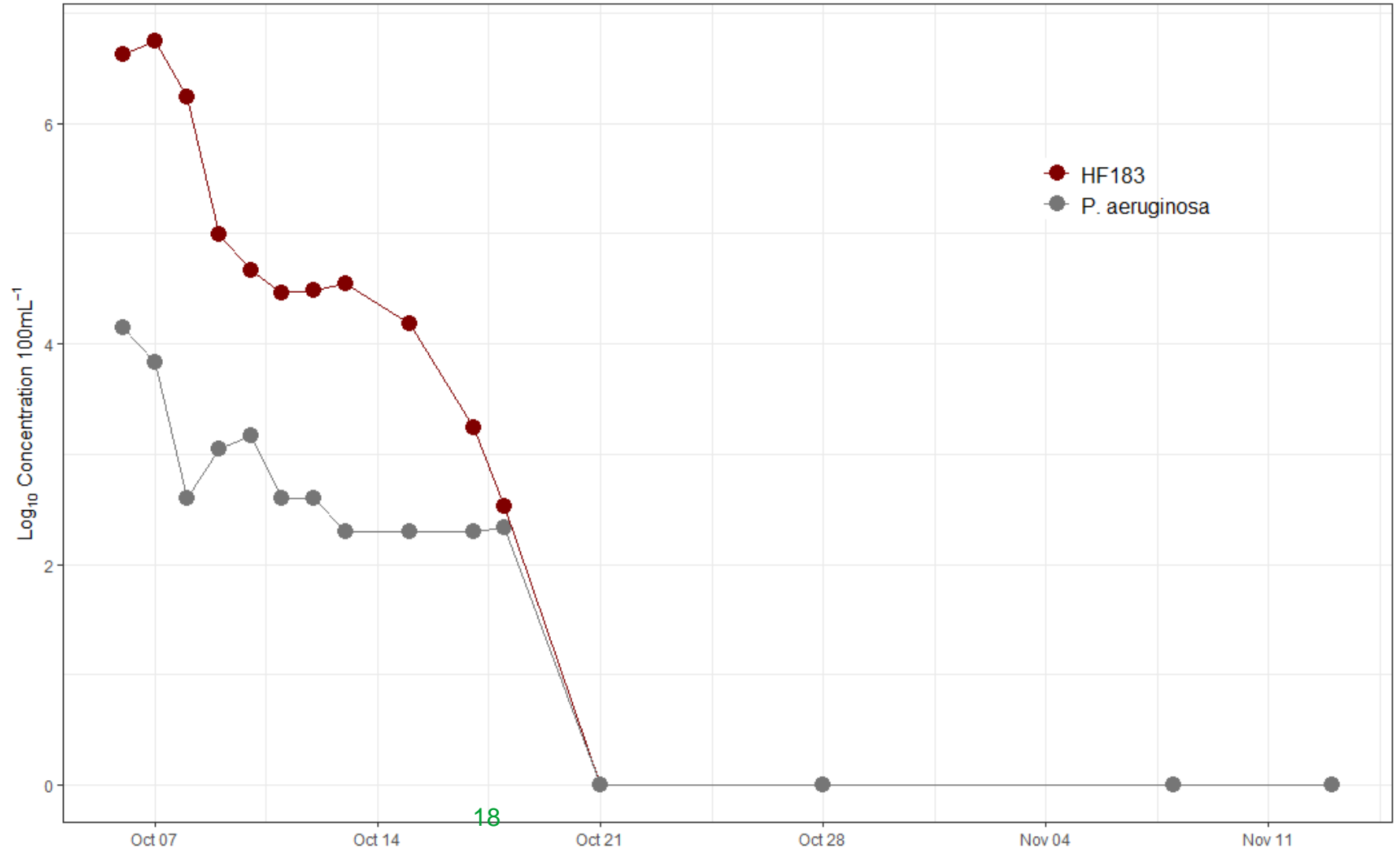


Example Special Project



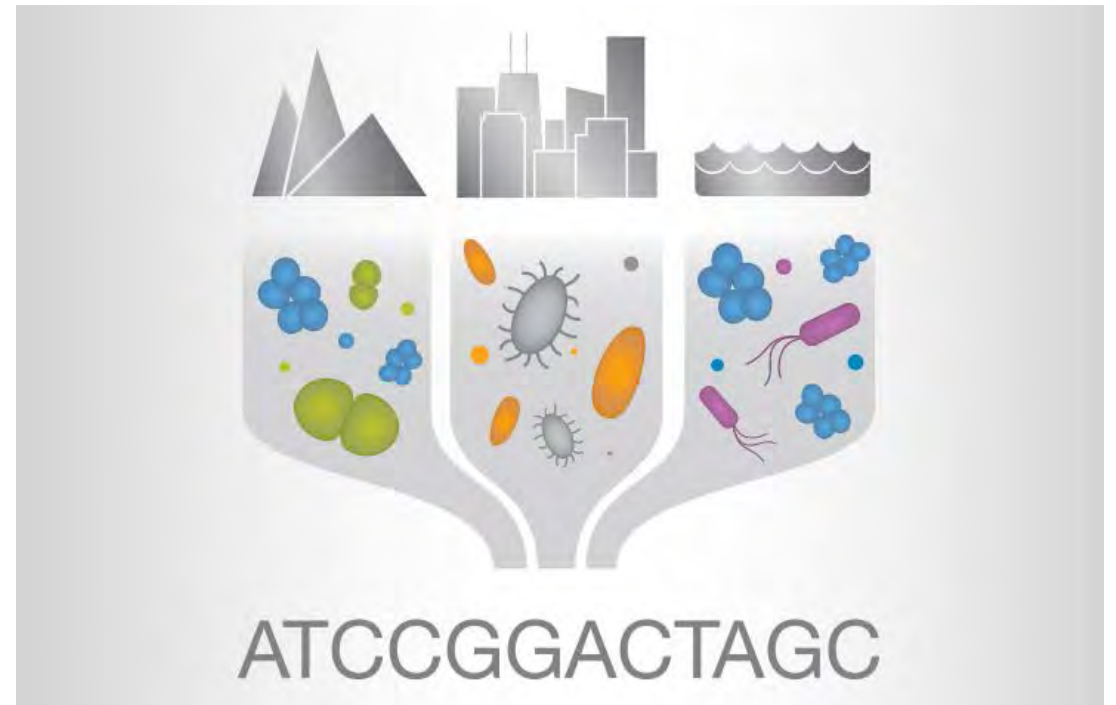
Spill Response

Sewage Spill Surveillance 10/6-11/13



The Future? Environmental DNA Sequencing

The study of organisms in a microbial community based on analyzing the DNA within an environmental sample



Emerging and Trending Microbial Concerns



NEWS

HEALTH NEWS

Is It Safe to Bring Ebola Victims to the U.S.?

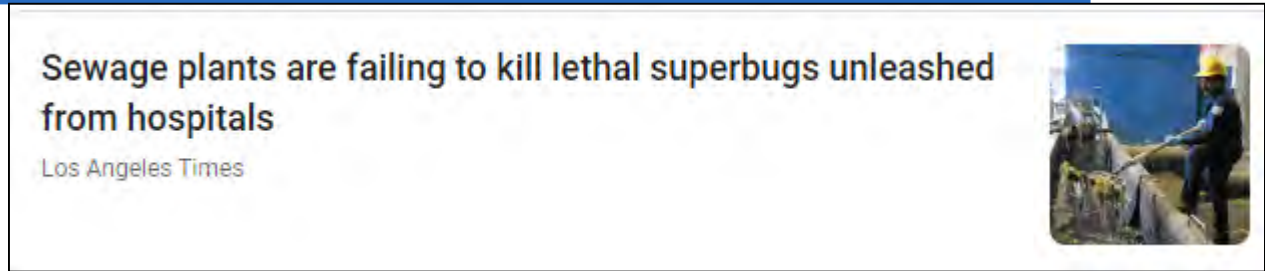


NEWS

Home | Video | World | US & Canada | UK | Business | Tech | Science | More ▾


US & Canada

Ebola crisis: Infected doctor Kent Brantly lands in US



Sewage plants are failing to kill lethal superbugs unleashed from hospitals

Los Angeles Times



Los Angeles Times

LOG IN 🔍

BUSINESS

Deadly superbugs from hospitals get stronger in the sewers and could end up in the Pacific Ocean



ENVIRONMENT & SCIENCE

Local sewage plants say they're not putting 'superbugs' into the ocean, but they don't really know



Superbug MRSA identified in US wastewater treatment plants

Science Daily



- Catalog all microbes in a sample
- Identify all antibiotic resistance
- Determine what the microbes can do

- Trend the data
 - What's new?
- Outbreak detection
- Mine the data

New CEL Chemist

- Increases in demand from jurisdictions and HRSD Research
- Ever-increasing complexity
- Planning for future watershed scale projects with localities
- Meeting the requests of HRSD's localities to continue identifying and improving Hampton Roads Waterways
- Implement and participate in development of cutting edge technology

Questions?

HRSD COMMISSION MEETING MINUTES
DECEMBER 17, 2019

ATTACHMENT #6

AGENDA ITEM 7. CHESTERFIELD HEIGHTS SANITARY SEWER SYSTEM
IMPROVEMENTS AGREEMENT

**AGREEMENT FOR PAYMENT OF COSTS OF REPLACEMENT
OF
NORFOLK UTILITIES, CHESTERFIELD HEIGHTS SANITARY SEWER**

THIS AGREEMENT, between the CITY OF NORFOLK (CITY), a municipal corporation of the Commonwealth of Virginia, and the HAMPTON ROADS SANITATION DISTRICT (HRSD), a political subdivision of the Commonwealth of Virginia, entered this 25th day of February, 2020.

WITNESSETH:

WHEREAS, certain HRSD facilities are located in whole within the rights-of-way of Norchester Street in the City of Norfolk (the "Norchester Street City Right-of-Way"); and

WHEREAS, the CITY is constructing its Chesterfield Heights Project (referred to as "Project") as part of its Capital Improvement Project; and

WHEREAS, the Project includes the replacement of CITY water and sewer facilities within Westminster Avenue, Victoria Avenue, Stanhope Avenue, Kimball Terrace, Marlboro Avenue, Chesterfield Blvd, also known as "NDR Ohio Creek Watershed Project" (depicted on Exhibit 1); and

WHEREAS, the Project will facilitate discontinuance of use of existing HRSD Facilities, the functions of which will be performed by the CITY improvements; and

WHEREAS, the CITY and HRSD considered various conceptual plans for the construction of new facilities and replacement, relocation, discontinuance, or abandonment of existing facilities and have agreed that construction of the facilities identified in Exhibit 1, hereinafter "Sewer Alternative No. 1," is in the best interests of the CITY and HRSD; and

WHEREAS, HRSD and the CITY agree that it is in their mutual best interests that the CITY construct the Project Facilities with the construction costs funded by HRSD and the CITY, in accordance with the description of the Facilities stated and referred to herein and under the terms and conditions hereinafter set forth.

THEREFORE, for and in consideration of the mutual promises set forth herein and other good and valuable consideration, the receipt of sufficiency of which are hereby acknowledged, the City and HRSD agree as follows:

I. DESIGN

The CITY will direct Arcadis (“Arcadis” or “Engineer”) to design the Facilities which include the relocation and replacement of approximately 6,500 linear feet of sewer gravity main with all related appurtenances and incidental work, as illustrated in **Exhibit 1** labeled “ADDITIONAL PROPOSED SEWER WORK TO ELIMINATE HRSD FACILITIES ALONG NORCHESTER AVENUE,” hereto attached.

II. DESCRIPTION OF FACILITIES

The CITY will construct the replacement of approximately 6,500 linear feet of sanitary sewer gravity main in accordance with Sewer Alternative No. 1 with the approximate location of the new facilities as shown on **Exhibit 1** and hereto attached and incorporated by reference. Facilities shall be inclusive of the above described wastewater gravity main together with all connections, valves, vents, incidental work and related appurtenances thereto.

III. CONSTRUCTION OF FACILITIES

A. Shared Cost of Construction:

The Facilities shall be described in detail in plans and specifications for the work, to be prepared by the Engineer for the City.

- a) The total cost for the Facilities shall include one hundred percent (100%) of the costs to construct the project submitted by the apparent low bidder and accepted by the City.
- b) The total cost of construction shall be shared by the parties, with HRSD contributing One Million Five Hundred Thousand and 00/100 Dollars (\$1,500,000) and the CITY contributing the remaining cost of construction.
- c) HRSD shall deposit its share of the construction costs into City Account Number _____ within thirty (30) days of the issuance of the notice of intent to award to the low bidder selected pursuant to Section III of this Agreement. The CITY shall notify HRSD when the notice of intent to award is issued. If HRSD fails to deposit its share of the construction costs into the City Account within thirty (30) days of issuance of the notice of intent to award, the City shall have the option to cancel the solicitation, and shall provide HRSD with timely notification of any such cancellation. The City's exercise of this option shall not operate as a waiver of other remedies the City may have under this Agreement or applicable law.

B. Procurement of Construction:

This work shall be contracted by the City under its CIP contract,

C. Approval of Facilities Plans, Specifications and Construction Activities:

The CITY shall be responsible for final approval and completion of all plans, specifications, and construction activities. The City shall make all construction bids, plans, and specifications available for inspection by HRSD upon request and will include HRSD in all scheduled construction meetings during Facilities construction as requested.

D. Ownership, Operation and Maintenance of Facilities:

The Facilities constructed hereunder shall be owned, operated and maintained by the City at its own expense, HRSD authorizes the City of Norfolk or its contractors to maintain/repair/inspect HRSD owned infrastructure within the designated City right of way during construction. These activities shall be consistent with HRSD standards, policies and procedures. HRSD infrastructure will be abandoned by both HRSD and the City of Norfolk at the completion of construction. The City will be responsible for all construction costs associated with abandonment of HRSD infrastructure and pump station #147 at Chesterfield Boulevard. This will include, but is not limited to, installation of flowable fill and removal of substructure.

IV. NOTICES

All notices given between parties shall be in writing and shall be considered properly sent by postage prepaid United States Mail to the persons identified below:

To HRSD:

If By U.S. Postal Service:
General Manager
P.O. Box 5911
Virginia Beach, VA 23471-0911
Telephone: (757) 460-4242.

If By Overnight Mail:
General Manager
1434 Air Rail Avenue
Virginia Beach, VA 23455

To City of Norfolk:

City Manager
City of Norfolk, Virginia
Telephone (757) 664-4240
810 Union Street, Suite 1101
Facsimile: (757) 664-4239
Norfolk, Virginia 23510

With Copy to:

City Attorney
810 Union Street
900 City Hall Building
Norfolk, Virginia 23510

V. GENERAL

A. Applicable Law and Venue

This Agreement is made in and shall be governed by the laws of the Commonwealth of Virginia. In the event of litigation, venue shall be in the Circuit Court of the City of Norfolk, Virginia.

B. Severability

If any provisions of this Agreement are held to be unenforceable, this Agreement shall be construed without such provisions.

C. Waiver

The failure by a party to exercise any right hereunder shall not operate as a waiver of such party's right to exercise such right or any other right in the future.

D. Changes

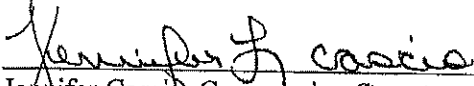
This Agreement may only be amended by a written document executed by a duly authorized representative of each of the parties. This Agreement may not be assigned.

IN WITNESS WHEREOF, the Hampton Roads Sanitation District has caused this AGREEMENT to be signed in its behalf by its General Manager in accordance with authorization granted at its regular meeting held on December 17, 2019.

HAMPTON ROADS SANITATION DISTRICT

By 
Edward G. Henifin, P.E., General Manager

ATTEST:


Jennifer Cascio, Commission Secretary

**AGREEMENT FOR PAYMENT OF COSTS OF REPLACEMENT
OF
NORFOLK UTILITIES, CHESTERFIELD HEIGHTS SANITARY SEWER**

IN WITNESS WHEREOF, the City of Norfolk has caused this AGREEMENT to be signed in its behalf by its City Manager in accordance with authorization granted at its regular meeting held on February 25, 2020.

CITY OF NORFOLK

DocuSigned by:
[Signature]
C45AA22E7B0047B...
Larry Filer, City Manager

ATTEST:
DocuSigned by:
[Signature]
C7685E09885734CE...
City Clerk

Approved as to Form and Correctness:
DocuSigned by:
[Signature]
80872E98E941472...
Deputy City Attorney

Approved as to Content:
DocuSigned by:
[Signature]
USC9760A128D4D6...
Director of Utilities

CERTIFICATE OF FUNDING

I hereby certify that the money required for this Agreement is in the City Treasury to the credit of the fund from which is to be drawn and not appropriated for any other purpose.
Facilities Planning & Construction

Account: 2500-9493-5582 / 2500-9493-4978
Amount: 1,500,000
Contract No. N/A
Vendor Code: N/A
Business License No.: _____

DS
SF

DocuSigned by:
[Signature] 5/20/2020
7E1DF338CFDD4D0...
Director of Finance Date

HRSD COMMISSION MEETING MINUTES
DECEMBER 17, 2019

ATTACHMENT #7

AGENDA ITEM 8. PROPOSAL COMPENSATION FOR DESIGN-BUILD PROJECTS
PRESENTATION



Proposal Compensation for Design-Build Projects

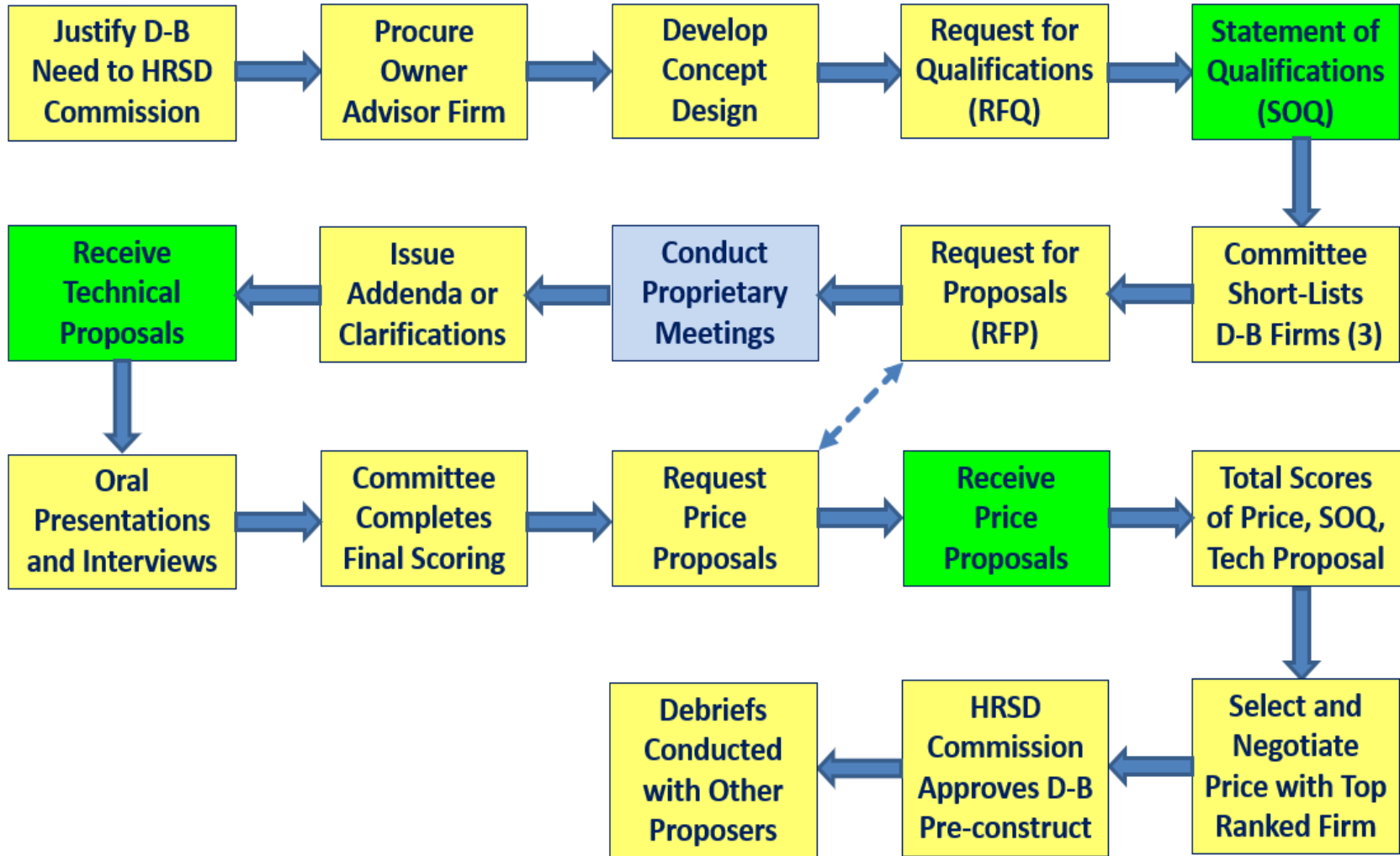
December 17, 2019

- Review of HRSD Procurement Process
- Use of Design-Build Project Delivery at HRSD
- DBIA Position Statement on Stipends
- Use of Stipends by Other Public Sector Organizations
- Possible Use of Stipends with SWIFT Projects
- Pros and Cons for the Use of Stipends

Review of HRSD Procurement Process

- Virginia Public Procurement Act
 - Fixed Price Design-Build
 - Two-step competitive negotiation process
 - Price is a critical basis for award
 - Does not address the issue of proposal compensation
- HRSD Procurement Policy
- Engineering Department Guidelines & Procedures Manual

Review of HRSD Procurement Process (cont.)



Key features of HRSD Design-Build Procurement Process

- Typically short-list three firms
- A conceptual design (Basis of Design Report) is provided by HRSD for pricing purposes
- Require a price proposal (contract cost limit) at the time of selection
- Firms are selected based on a combination of:

qualifications

technical proposal

price

Review of HRSD Procurement Process – Selection Results

- Six (6) Statements of Qualifications received
- Two (2) D-B firms short-listed

D-B Firm	Qualifications Score (30%)	Technical Proposal Score (30%)	Price Proposal Score / Cost (40%)	Total Scores (100%)	D-B Firm Ranking
Firm A	26.9	27.5	40 / \$14,124,500	94.4	1
Firm B	24.6	23.1	32.9 / \$16,996,000	80.6	2

Scoring for Price Proposals on “Basis of Design”

– Excludes Owner requested and/or D-B proposed additive or deduct price alternatives

Review of HRSD Procurement Process – Efforts Required by DB Teams

- Respond to RFQ with qualifications proposal
- Shortlisted teams respond to RFP with a technical proposal
 - Teams to review the Basis of Design Report (30% design) provided by HRSD
 - Look for opportunities for creative ideas and/ better solutions
- Shortlisted teams to provide a contract cost limit. Best estimate of price based on the Basis of Design Report.
- Alternatives proposed by the Design-Build Team are also priced and provided to HRSD.
- Shortlisted teams participate in proprietary meeting(s) and an interview.
- Shortlisted teams typically incur cost responding to fixed-price Design-Build procurement in the range of 0.7% to 1.0% of contract value.

Use of Design-Build Project Delivery at HRSD

- Early adopter of this project delivery method (2010)
- Completed the procurement of nine projects ranging in size from \$1.5M to \$35M
- Types of projects include:
 - Sewer collection system rehabilitation (stipend provided)
 - Sewer force mains
 - Treatment plant outfalls
 - Equalization tank
 - Administrative buildings
 - SWIFT Research Center



Design-Build Institute of America (DBIA) Position on Stipends

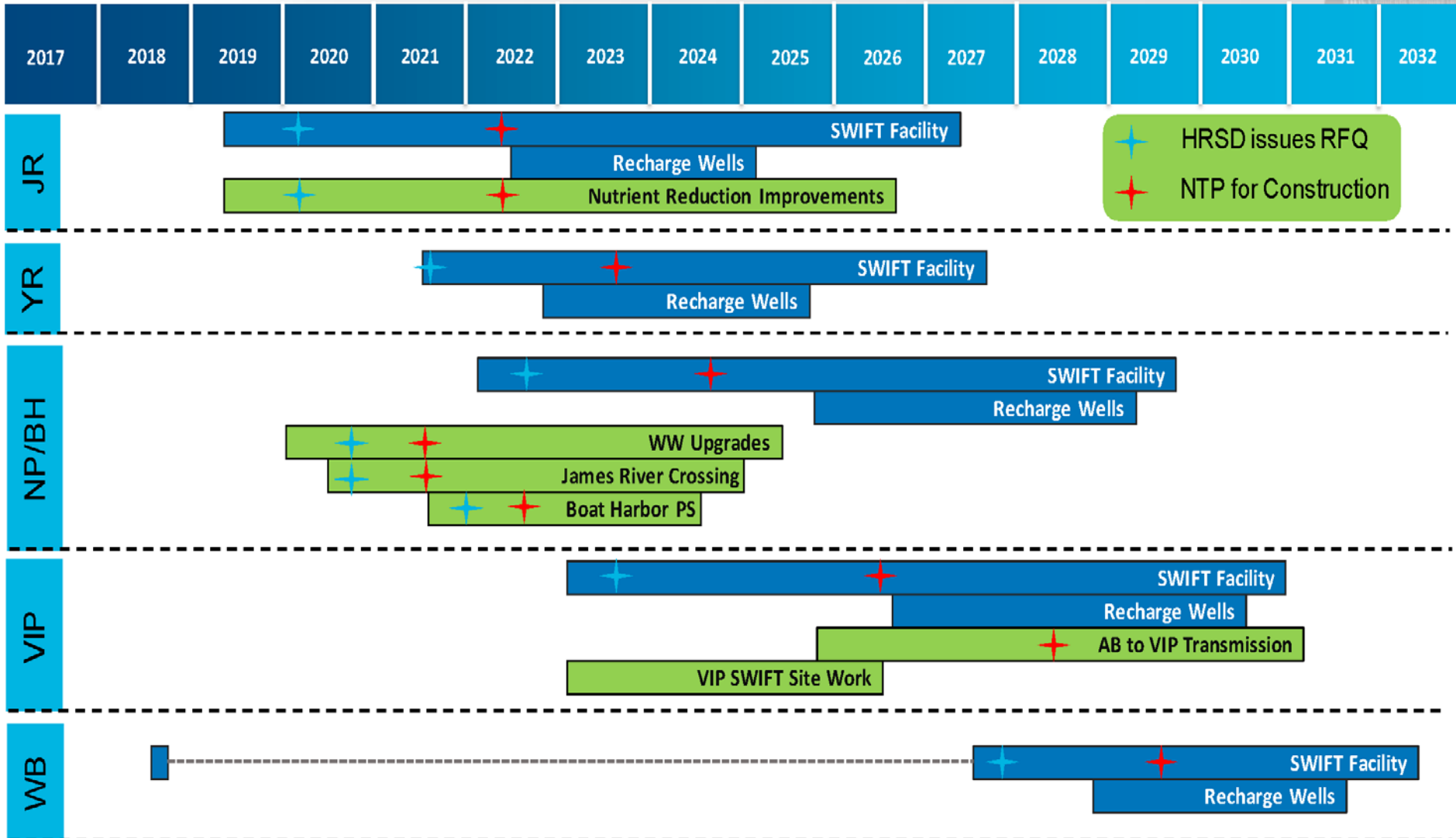
DBIA supports the use of stipends to help cover a portion of the Design-Build proposal costs and provide an effective financial incentive to increase competition.

- **Enhance competition** to generate market interest in the project from most highly qualified design-build teams;
- Help **defray costly proposal development** incurred by the design-build teams;
- Signal the intent that **owner is serious** about carrying the project forward;
- Encourage proposers to expend the time, money and resources to provide a more **creative and comprehensive solution**.

Use of Stipends by Other Public Sector Organizations

- VDOT – Uses stipends on all Design-Build projects over \$50M. Stipend amount is 0.1% of the contract amount. Provided a \$4M stipend on the recent HRBT Expansion.
- Chesapeake Bay-Bridge Tunnel Authority – Provided a \$1.25M stipend on recent tunnel project with a projected value of \$750M.
- DC Water – Provided \$250K stipends on two recent projects each with a value greater than \$200M.
- Alexandria Renew – Used stipend on first Design-Build project. Recently provided a \$500k stipend for a \$300M tunnel project.
- Prince William Service Authority – Provides stipends on a case by case basis.

Possible Use with SWIFT Design-Build Program



Possible Use with SWIFT Design-Build Program (cont.)

➤ James River Plant Improvements & SWIFT	\$340M
➤ Nansemond Plant Improvements	\$220M
➤ Nansemond SWIFT	\$292M
➤ Boat Harbor to Nansemond River Crossing	\$87M
➤ BH Pump Station & EQ Tank	\$60M
➤ York River SWIFT	\$143M
➤ VIP Advanced Sitework Contract	\$38M
➤ VIP SWIFT	\$349M
➤ Army Base to VIP River Crossing	\$49M
➤ Williamsburg SWIFT	\$110M

How Consultants & Contractors Make Go/No-Go Project Decisions

- Internal Factors
 - Opportunity for profitability on project
 - Other clients/projects that need services (Upcoming Work)
 - Current backlog of work
- External Factors
 - Future long-term relationship with Owner that has known or possible future projects
 - Work for Owner that treats firms fairly without litigation or other negative outcomes
 - Work for innovative Owner that implements interesting projects that can build resume/professional development opportunities

Pros and Cons for the Use of Stipends

Pros:

- Provides a financial incentive to increase competition from the best firms in the industry
- Encourage proposers to explore innovative ideas during the proposal stage
- Follows industry standard and process used by other large public sector organizations
- Allows HRSD to retain the use of innovative ideas from proposers not selected

Cons:

- Adds cost to overall project budget
- Paying a stipend to short-listed firms does not guarantee more/better competition

HRSD COMMISSION MEETING MINUTES
DECEMBER 17, 2019

ATTACHMENT #8

AGENDA ITEM 13. INFORMATIONAL ITEMS

- 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. [Effluent Summary](#)
- d. [Air Summary](#)



December 10, 2019

Re: General Manager's Report

Dear Commissioners:

The continuing issues with treatment at West Point provide a reminder as to how much I take permit compliance for granted. The staff has been struggling since June to get the West Point Treatment Plant back to normal following West Rock's discharge of very high pH water to the plant in violation of our industrial waste discharge regulations. The continuing struggles to reestablish the biofilm in the trickling filters demonstrate how fragile our biological-based treatment processes are and how easy our talented team of environmental professionals make it look to keep those processes operating as designed. So easy that I find myself taking the daily maintenance and operations of our treatment plants for granted, and permit compliance a given.

I discussed the West Point struggles with Santino Granato, the Small Communities System Manager in a call this morning. I could hear the frustration as he described the efforts his team was making to try and meet permit with the damaged plant. His passion and commitment were clear in his voice. I could hear how much he cares and how personally he takes plant performance. We are so lucky to have such talented and dedicated people working in our Small Communities Division and throughout HRSD. If there is a silver lining in this incident, it is the reminder that I should never take the efforts of our women and men for granted, no matter how easy they make it look!

The highlights of November's activities are detailed in the attached monthly reports.

- A. **Treatment Compliance and System Operations:** The West Point Treatment plant once again experienced an exceedance of the monthly BOD average concentration permitted value of 30 mg/l with a value of 32 mg/l for November. This is the third permit exceedance of monthly BOD average concentration since the industrial discharge from West Rock at the end of June. The damage caused by the high pH discharge (around 14) to the biofilm on the trickling filters continues to make BOD removal challenging. Staff continues to work on this issue, but the solution is really time to reestablish the biofilm. The highlights for the month are included in the attached monthly reports.
- B. **Internal Communications:** I participated in the following meetings/activities with HRSD personnel:
 - 1. A new employee orientation session

PO Box 5911, Virginia Beach, VA 23471-0911 • 757.460.7003

Commissioners: Frederick N. Elofson, CPA, Chair • Maurice P. Lynch, PhD, Vice-Chair • Vishnu K. Lakdawala, PhD
Michael E. Glenn • Stephen C. Rodriguez • Willie Levenston, Jr. • Elizabeth A. Taraski, PhD • Molly Joseph Ward
www.hrsd.com

2. A lunch and learn where Dr. Stephanie Klaus (Research Intern) presented a repeat of her Ph.D. defense entitled "Intensification of Biological Nutrient Removal Processes"
3. A meeting to discuss close-out of SWIFT Research Center contract issues
4. A meeting to develop a public outreach strategy for the James River Treatment Plant SWIFT full-scale project
5. One length of service recognition breakfast

C. **External Communications:** I participated in the following meetings/activities:

1. The monthly meeting of the HRPDC Director of Utilities Committee
2. An interview by the new Organizational Development Consulting firm
3. Presented HRSD and SWIFT to the Chesapeake Bay Foundation's annual volunteer training class for their VoiCeS (Volunteers as Chesapeake Stewards) program
4. Multiple conference calls for the US EPA Environmental Financial Advisory Board
5. A meeting of the HRPDC Stormwater Manager's group
6. The Newport News City Council to present the HRSD James River Treatment Plant SWIFT full-scale construction concept
7. Participated on a regionalization panel and a roundtable session focused on SWIFT at the American Water Summit
8. Participated in the NACWA Fall Leadership meeting and the quarterly NACWA Board meeting
9. A call with the Water Environment Federation President focused on workforce efforts underway by the Water Agency Leader's Alliance

D. **Consent Decree Update:**

There has been no response from EPA on the technical memorandum submitted in August with the analysis of the impact of a second set of high priority wet weather projects to be executed between 2030 and 2040.

The leadership and support you provide are the keys to our success as an organization. Thanks for your continued dedicated service to HRSD, the Hampton Roads region, the Commonwealth and the environment. **I look forward to seeing you on Tuesday, December 17, 2019 in Virginia Beach.**

Respectfully submitted,

Ted Henifin

Ted Henifin, P.E.
General Manager





TO: General Manager
 FROM: Director of Communications
 SUBJECT: Monthly Report for November 2019
 DATE: December 3, 2019

A. Publicity and Promotion

HRSD and or/SWIFT were featured in 10 news stories covering the following topics:

1. HRSD receives Oracle Excellence Award (1)
2. EPA urges Water Reuse (1)
3. HRSD exploring expansion to the Eastern Shore (5)
4. HRSD's planned expansion at the James River Plant (2)
5. Oysterman files lawsuit over pollution of Nansemond River (1)


B. Social Media and Online Engagement

Social Media Metrics November 2019				
METRIC	 FACEBOOK	 LINKEDIN	 TWITTER	 YOUTUBE
Number of Posts *number of published posts	18 +0	1 +0	17 +2	1:41 average view duration
Number of Followers/Likes *total number of fans	1,151 +7	4,802 +1	387 +8	170 +4
Engagement *sum of reactions comments and shares	362 -29	4 +2	44 -35	940 unique viewers (1,253 total views) +64
Traffic *total clicks on links posted	39 +33	10 +1	25 +17	3.6% click through -1%

Top posts for November on Facebook, Twitter and YouTube

HRSD added a new photo to the album: Timeline Photos.
Published by Hootsuite [?] · November 28 at 10:15 AM · 🌐

Thankful for the creative minds and hardworking employees who make it possible to clean millions of gallons of wastewater everyday in Hampton Roads. Happy Thanksgiving from HRSD! #Thanksgiving2019



Get More Likes, Comments and Shares
Boost this post for \$30 to reach up to 7,900 people.

835 People Reached **162** Engagements [Boost Post](#)

Newport NewsSustainability, James McCleese and 37 others · 1 Comment 3 Shares

👍 Like 💬 Comment ➦ Share

Performance for Your Post

835 People Reached

76 Reactions, Comments & Shares

69 Like	39 On Post	30 On Shares
1 😂 Haha	0 On Post	1 On Shares
2 😲 Wow	0 On Post	2 On Shares
1 Comments	1 On Post	0 On Shares
3 Shares	3 On Post	0 On Shares

86 Post Clicks

27 Photo Views	0 Link Clicks	59 Other Clicks
-----------------------	----------------------	------------------------

NEGATIVE FEEDBACK

0 Hide Post	0 Hide All Posts
0 Report as Spam	0 Unlike Page

Reported stats may be delayed from what appears on posts.

Top Tweet earned 721 impressions

A toilet is not just a toilet! It's sanitation 🌐
It's dignity 🗑️ It's public health 🧑‍🚰 Happy World Toilet Day! @UN_Water
#WorldToiletDay #Water #Sanitation
pic.twitter.com/23gOaCmf13








🔗 2 ❤️ 9

[View Tweet activity](#) [View all Tweet activity](#)

Top videos

Views · November

	The Wastewater Treatment ...	<div style="width: 99.9%;"></div>	999
	HRSD's Woodstock Park W...	<div style="width: 10%;"></div>	47
	SWIFT Research Center: W...	<div style="width: 8%;"></div>	29
	SWIFT Research Center Rib...	<div style="width: 7%;"></div>	26
	HRSD Ops Challenge 2013	<div style="width: 5%;"></div>	21

[SEE MORE](#)

1. Facebook: 7,308 post impressions reaching 7,066 users.
2. Twitter: 10,200 tweet impressions
3. SWIFTVA.com: 360 new users/visitors and 1,109 page views; 397 total visitors with average timer per session at 1:42 minutes
4. LinkedIn Impressions: 635 page impressions and 400 post impressions
5. Next Door unique impressions: 53 post impressions (two neighborhood-specific posts)
6. Blog Posts: (1) "Thanksgiving is here! Say hello to the holiday and goodbye to the waste."
7. Construction Project Page Visits – 860 total visits (not including direct visits from home page, broken down as follows:
 - a. 596 visits to individual pages
 - b. 264 to the status page

B. News Releases, Advisories, Advertisements, Project Notices, Community Meetings and Project Websites

1. News Releases/Traffic Advisories/Construction Notices: 6 (2 news releases, 1 traffic advisory and 3 project updates)
2. Advertisements: 0
3. Project Notices: 6 (via door hanging/door knocking, hand delivery, mail and NextDoor postings, reaching approximately 600 residents)
4. Project/Community Meetings: 2
5. New Project Web Pages /Videos: 0

C. Special Projects and Highlights

Director participated in the quarterly meeting of the Hampton Roads Emergency Services Media Council, which featured a presentation by Stewart Baker, Virginia Department of Emergency Management (VDEM) Emergency Coordinator. Mr. Baker shared results of the updated transportation study which is in the process of being finalized with the Hurricane Evacuation Study.

D. Internal Communications

1. Director participated in the following internal meetings and events:
 - a. Weekly website phase two status meetings with vendor and IT staff
 - b. Meeting with Director of Engineering and staff to begin developing a communications plan for Infrastructure Week 2020
 - c. Collateral revisions for visitor safety brochure and Boater Pump out program brochure
 - d. Planning meetings for the Woodstock Park skate park design public input meeting
 - e. Planning meetings for a December informational open house at the James River Treatment Plant
2. Director conducted bi-weekly communications department status meetings.
3. Director attended Windows 365 Surface Pro training.
4. Director attended webinar training for “Podcasting for Internal Communications.”

E. Metrics

1. Educational and Outreach Activities: 9
 - a. 11/4/19 – Booker T Washington Elementary Outreach Activity, Suffolk (4 attendees)
 - b. 11/6/19 – Girl Scout Troop Outreach, Newport News (15 attendees)
 - c. 11/9/19 – Presentation to CHROME Club, Norfolk (39 attendees)
 - d. 11/12/19 – Anthem Environmental Fair, Virginia Beach (150 attendees)
 - e. 11/13/19 – SWIFT Tour and Q & A: Hampton Academy, Kecoughtan High School students (50 attendees)
 - f. 11/14/19 – Anthem Environmental Fair, Norfolk (250 attendees)
 - g. 11/18/19 – SWIFT Tour, TCC Biology Students (13 attendees)
 - h. 11/19/19 – SWIFT tour, VA Wesleyan chemistry students (20 attendees)
 - i. 11/26/19 – Mack Benn Elementary Outreach, Suffolk (7 attendees)
2. Number of Community Partners: 8
 - a. Anthem, Inc.
 - b. Canon
 - c. CHROME Club of Norfolk
 - d. Girl Scout Troop 1044
 - e. Hampton Public Schools
 - f. Suffolk Public Schools
 - g. Tidewater Community College
 - h. Virginia Wesleyan University

3. Additional Activities Coordinated by Communications Department: 3
 - a. 11/8/19 – Canon Safety and Environmental Fair, Newport News
 - b. 11/13/19 – Nansemond Treatment Plant (NTP) Tour, Hampton Academy, Kecoughtan High School
 - c. 11/18/19 – NTP Tour: TCC Biology Students
4. Monthly Metrics Summary

Item #	Strategic Planning Measure	Unit	November 2019
M-1.4a	Total Training Hours per Full Time Employee (3) - Current Month	Hours / #FTE	2.67
M-1.4b	Total Training Hours per Full Time Employee (3) - Cumulative Fiscal Year-to-Date	Hours / #FTE	31.54
M-5.2	Educational and Outreach Events	Number	11
M-5.3	Number of Community Partners	Number	9

Respectfully,

Leila Rice, APR
 Director of Communications

TO: General Manager

FROM: Director of Engineering

SUBJECT: Engineering Monthly Report for November 2019

DATE: December 2, 2019

A. General

1. Capital Improvement Program (CIP) spending for the fourth month of Fiscal Year (FY) 2020 was lower than the planned spending target. Due to the early reporting deadline this month, all costs are not included in this summary but will be included in the January Commission Report.

CIP Spending (\$M):

	Current Period	FYTD
Actual	7.11*	33.81*
Plan	15.00	54.00

* Preliminary totals – final numbers to be reflected in January report

2. The Engineering Department, in conjunction with staff from the Finance Department are working to create a new internal process to improve the CIP project prioritization and selection procedure. The process is known as the Capital Program Optimization and Business Case System. An important new feature of this program is the inclusion of a risk methodology to better understand the consequences of choosing one project over another. All existing projects have been scored using this new criterion. A new CIP project request form has been developed and will be used during this year's CIP update.

B. Asset Management Division

1. Staff attended a training session sponsored by the Virginia Department of Emergency Management (VDEM) on damage assessment procedures following a disaster event. The training helped to identify specific procedures, data and photo requirements, and timing of information to be submitted to VDEM and Federal Emergency Management Agency (FEMA). The updated procedures will be reflected in HRSD's damage assessment guideline document.

2. Staff has begun to outline the work needed to conduct a Sanitary Sewer Evaluation Survey (SSES) of the West Point and Surry County sewer collection systems. Smoke testing and Closed Circuit Television (CCTV) surveys will be performed in the coming months using external resources to determine the condition of the existing infrastructure. The goal is to better identify areas within the respective sewer collection systems needing repair or replacement.

C. North Shore, South Shore and SWIFT Design & Construction Divisions

1. The Design-Build Team continues with the design of the Town of Surry Pump Station and Discharge Force Main project. A meeting was held to review the 30 percent design drawings, and efforts to obtain appraisals for potential easements are underway. A portion of the project - from a local marina to Virginia Route 10, is ready to construct. This work should begin in January.
2. Two projects located in the City of Norfolk will be designed and built through cooperative agreements with the City. The Larchmont Area Sanitary Sewer Improvements project involves the replacement of much of the sewer collection system in this area and will include the replacement of gravity sewers, force mains and pump stations. HRSD will be administering this project, and the new infrastructure will be divided between the City and HRSD to better align the facilities with the roles of our respective organizations.

The second project is the City of Norfolk Sanitary Sewer Pump Station No. 27 project. The City will provide financial support to design and build this pump station to HRSD standards. The City will administer this project and transfer ownership of the new pump station to HRSD after completion. Cost Sharing Agreements for both projects will be finalized in the coming months and presented to the Commission for approval.

3. The James River SWIFT project continues to move forward with a meeting with the Newport News City Council. This meeting was generally well received by the City and two additional informational open house meetings are scheduled in the coming months. Public support for this project is critical for success since some of the work will extend outside of HRSD's James River Treatment Plant. The design team continues with their efforts to complete the conceptual design documents for this project. The current goal will be to move this project forward in January based on feedback received from the open house meetings.

D. Planning & Analysis Division

1. Staff continues to work with EmNet to optimize the design improvements needed to divert flow from the Chesapeake-Elizabeth Treatment Plant to the Atlantic Treatment Plant. EmNet uses a sophisticated computer model to look at numerous design alternatives simultaneously to find the most effective combination of improvements that will meet our needs and still provide the needed system hydraulic capacity and reliability. A meeting to review the preliminary results of the EmNet effort will be held in December.
2. Staff met with Energy Systems Group (ESG) in November. ESG is an energy services company that provides turn-key energy efficiency solutions to owners throughout the United States. Staff reviewed potential projects that could benefit both HRSD and ESG. Future biogas projects appeared to have the highest likelihood of future success. We agreed to meet again to discuss possible business opportunities.

E. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 3
 - a. 11/06/19 – Staff moderated a session for Public Sector Owners on the Benefits of the Design-Build project delivery method at the Design-Build Institute of America (DBIA) National Convention.
 - b. 11/12/19 – Staff made a presentation to members of the James City Service Authority on HRSD's use of Infor EAM and how this software program assists HRSD with the Asset Management Program.
 - c. 11/13/19 – Staff made a presentation to the Hampton Roads Post of the Society of American Military Engineers (SAME) entitled, "HRSD's One Water Program."
2. Number of Community Partners: 3
 - a. DBIA
 - b. James City Service Authority
 - c. Hampton Roads Post SAME
3. Number of Research Partners: 0

4. Metrics Summary

Item #	Strategic Planning Measure	Unit	November 2019
M-1.4a	Total Training Hours per Full Time Employee (44) - Current Month	Hours / #FTE	1.70
M-1.4b	Total Training Hours per Full Time Employee (44) - Cumulative Fiscal Year-to-Date	Hours / #FTE	19.69
M-5.2	Educational and Outreach Events	Number	3
M-5.3	Number of Community Partners	Number	3
M-5.4	Number of Research Partners	Number	0

Bruce W. Husselbee, P.E.

Bruce W. Husselbee, P.E.

TO: General Manager

FROM: Director of Finance

SUBJECT: Monthly Report for November 2019

DATE: December 9, 2019

A. General

1. As has been the case this fiscal year, water consumption continues to be higher than budget and flat compared to Fiscal Year 2019, resulting in slightly higher than expected wastewater revenues. Facility Charges are in-line with budget, but may slow during the winter months. Interest Income is slightly lower than last year, but higher than budget. As reported last month, personal services are tracking higher due to the extra pay period in August but the cumulative personnel services expense percentage are expected to be back in line with budget by year end. Major repairs and capital assets expenses continue to be significantly lower than budget at this time as has been the case since July.

B. Interim Financial Report

1. Operating Budget for the Period Ended November 30, 2019

	Amended Budget	Current YTD	Current YTD as % of Budget (42% Budget to Date)	Prior YTD as % of Prior Year Budget
Operating Revenues				
Wastewater	\$ 316,217,000	\$ 137,425,623	43%	43%
Surcharge	1,500,000	703,215	47%	45%
Indirect Discharge	2,750,000	1,385,294	50%	42%
Fees	2,858,000	1,237,988	43%	44%
Municipal Assistance	725,000	274,443	38%	29%
Miscellaneous	600,000	438,485	73%	98%
Total Operating Revenue	324,650,000	141,465,048	44%	43%
Non Operating Revenues				
Facility Charge	6,160,000	2,683,540	44%	40%
Interest Income	4,000,000	2,487,593	62%	93%
Build America Bond Subsidy	2,400,000	1,121,298	47%	48%
Other	595,000	253,049	43%	26%
Total Non Operating Revenue	13,155,000	6,545,480	50%	52%
Total Revenues	337,805,000	148,010,528	44%	44%
Transfers from Reserves	10,857,750	4,524,063	42%	42%
Total Revenues and Transfers	\$ 348,662,750	\$ 152,534,591	44%	44%
Operating Expenses				
Personal Services	\$ 57,346,225	\$ 24,680,884	43%	43%
Fringe Benefits	24,232,400	10,172,948	42%	41%
Materials & Supplies	8,838,801	3,054,142	35%	39%
Transportation	1,579,921	466,179	30%	38%
Utilities	12,774,299	4,887,794	38%	38%
Chemical Purchases	10,979,218	3,639,031	33%	32%
Contractual Services	46,373,753	13,489,989	29%	28%
Major Repairs	10,847,604	1,969,430	18%	25%
Capital Assets	458,825	82,350	18%	18%
Miscellaneous Expense	3,085,523	2,236,136	72%	38%
Total Operating Expenses	176,516,569	64,678,883	37%	36%
Debt Service and Transfers				
Debt Service	63,544,841	36,442,548	57%	57%
Transfer to CIP	108,341,340	45,142,225	42%	42%
Transfer to Risk management	260,000	108,335	42%	42%
Total Debt Service and Transfers	172,146,181	81,693,108	47%	48%
Total Expenses and Transfers	\$ 348,662,750	\$ 146,371,991	42%	42%

2. Notes to Interim Financial Report

The Interim Financial Report summarizes the results of HRSD's operations on a basis of accounting that differs from generally accepted accounting principles. Revenues are recorded on an accrual basis, whereby they are recognized when billed; expenses are generally recorded on a cash basis. No provision is made for non-cash items such as depreciation and bad debt expense.

This interim report does not reflect financial activity for capital projects contained in HRSD's Capital Improvement Program (CIP).

Transfers represent certain budgetary policy designations as follows:

- a. Transfer to CIP: represents current period's cash and investments that are designated to partially fund HRSD's capital improvement program.
- b. Transfers to Reserves: represents the current period's cash and investments that have been set aside to meet HRSD's cash and investments policy objectives.

3. Reserves and Capital Resources (Cash and Investments Activity) for the Period Ended November 30, 2019

HRSD - RESERVE AND CAPITAL ACTIVITY

November 30, 2019

	General Reserve			Capital		
	General	Debt Service	Risk Mgmt Reserve	Reserve	Paygo	Debt Proceeds
	Unrestricted	Restricted	Unrestricted	Unrestricted	Unrestricted	Restricted
Beginning - July 1, 2019	\$ 178,937,154	\$ 28,553,343	\$ 3,499,535	\$ 15,266,324	\$ 86,279,809	\$ 14,334,553
Current Year Sources of Funds						
Current Receipts	80,580,325					-
Capital Grants					-	
VRA Draws					12,901,508	
Bond Proceeds (includes interest)						36,364
Transfers In	66,355,163		108,335		45,142,225	
Sources of Funds	146,935,488	-	108,335	-	58,043,733	36,364
Total Funds Available	\$ 325,872,642	\$ 28,553,343	\$ 3,607,870	\$ 15,266,324	\$ 144,323,542	\$ 14,370,917
Current Year Uses of Funds						
Cash Disbursements	106,164,275				31,440,691	14,370,917
Series 2019A Refunding	-					
Transfers Out	45,250,560				66,355,163	-
Uses of Funds	151,414,835	-	-	-	97,795,854	14,370,917
End of Period - November 30, 2019	\$ 174,457,807	\$ 28,553,343	\$ 3,607,870	\$ 15,266,324	\$ 46,527,688	\$ -
Unrestricted Funds	\$ 239,859,689					

4. Capital Improvements Budget and Activity Summary for Active Projects for the Period Ended November 30, 2019

Classification/ Treatment Service Area	Expenditures		Year to Date		Total Expenditures	Outstanding Encumbrances	Available Balance
	Budget	prior to 6/30/2019	FY 2020 Expenditures				
Administration	\$ 74,586,023	\$ 43,226,275	\$ 1,639,554	\$	44,865,829	\$ 16,577,388	\$ 13,142,806
Army Base	158,584,000	125,110,560	27,091	\$	125,137,651	2,861,256	30,585,093
Atlantic	128,433,059	88,977,629	6,714,414		95,692,043	11,863,405	20,877,611
Boat Harbor	139,444,401	60,512,133	3,468,757		63,980,890	16,247,404	59,216,107
Ches-Eliz	186,982,583	21,557,919	14,104,834		35,662,753	78,317,496	73,002,334
James River	288,758,687	58,557,889	687,115		59,245,004	7,947,908	221,565,775
Middle Peninsula	88,315,297	10,996,758	616,553		11,613,311	8,705,233	67,996,753
Nansemond	90,962,641	42,439,857	1,013,944		43,453,801	5,380,898	42,127,942
Surry	45,747,598	1,905,064	368,640		2,273,704	7,096,496	36,377,398
VIP	300,368,424	259,851,080	831,352		260,682,432	3,348,276	36,337,716
Williamsburg	32,901,493	12,215,243	1,052,228		13,267,471	15,751,901	3,882,121
York River	59,198,339	44,185,737	1,019,984		45,205,721	1,609,965	12,382,653
General	697,921,094	233,236,782	2,758,301		235,995,083	41,705,029	420,220,982
	<u>\$ 2,292,203,639</u>	<u>\$ 1,002,772,926</u>	<u>\$ 34,302,767</u>	<u>\$</u>	<u>1,037,075,693</u>	<u>\$ 217,412,655</u>	<u>\$ 1,037,715,291</u>

5. Debt Management Overview

HRSD - Debt Outstanding (\$000's) November 30, 2019

	Principal Oct 2019	Principal Payments	Principal Draws	Series 2019A Refunding	Principal Nov 2019	Interest Payments
Fixed Rate						
Senior	\$ 269,310	\$ (5,440)	\$ -		\$ 263,870	\$ (3,446)
Subordinate	487,464	-	3,619		491,083	-
Variable Rate						
Subordinate	50,000	-	-		50,000	(57)
Line of Credit						
Total	<u>\$ 806,774</u>	<u>\$ (5,440)</u>	<u>\$ 3,619</u>	<u>\$ -</u>	<u>\$ 804,953</u>	<u>\$ (3,503)</u>

HRSD- Series 2016VR Bond Analysis November 29, 2019

	SIFMA Index	HRSD	Spread to SIFMA
Maximum	2.30%	2.25%	-0.05%
Average	0.54%	0.53%	-0.01%
Minimum	0.01%	0.01%	0.00%
As of 11/29/19	1.10%	1.10%	0.00%

* Since October 20, 2011 HRSD has averaged 53 basis points on Variable Rate Debt

6. Financial Performance Metrics for the Period Ended November 30, 2019

HRSD - UNRESTRICTED CASH

November 30, 2019

Can be used for any purpose since it is not earmarked for a specific use and is extremely liquid

		Days Cash on	
		Hand	Days Cash on Hand
Total Unrestricted Cash	\$ 239,858,648		496
Risk Management Reserve	\$ (3,607,870)	(7)	489
Reserve	\$ (15,266,324)	(32)	457
Capital (PAYGO only)	\$ (46,527,688)	(96)	361
Net Unassigned Cash	\$ 174,456,766		361

Risk Management Reserve as a % of Projected Claims Cost is 25% YTD compared to 25% Policy Minimum
Days Cash on Hand Policy Minimum is 270-365 days.

HRSD - SOURCES OF FUNDS

November 30, 2019

Primary Source	Beginning		YTD	YTD	YTD	Ending		Allocation of	Credit Quality	Current Mo Avg Yield
	Market Value	YTD				Market Value	Funds			
	July 1, 2019	Contributions	Withdrawals	Income	November 30, 2019					
BAML Corp Disbursement Account	7,755,006	262,532,512	257,248,879	35,159	13,073,798	6.5%	N/A	0.55%		
VIP Stable NAV Liquidity Pool	163,658,801	113,355,162	91,355,162	1,629,099	187,287,900	93.5%	AAAm	1.87%		
Total Primary Source	\$ 171,413,807	\$ 375,887,674	\$ 348,604,041	\$ 1,664,258	\$ 200,361,698	100.0%				

VIP Stable NAV Liquidity Pool out performance Va Local Government Investment Pool (the market benchmark) by 0.06% in the month of November.

Secondary Source	Beginning		YTD	YTD	YTD	Ending		YTD	Yield to Maturity
	Market Value	YTD				Market Value	Ending Cost		
	July 1, 2019	Contributions	Withdrawals	& Realized	November 30, 2019		Mkt Adj	at Market	
VIP 1-3 Year High Quality Bond Fund	128,529,607	-	66,364,177	952,822	62,935,655	61,985,230	950,425	1.70%	
Total Secondary Source	\$ 128,529,607	\$ -	\$ 66,364,177	\$ 952,822	\$ 62,935,655	\$ 61,985,230	\$ 950,425		

VIP 1-3 Year High Quality Bond Fund out performed ICE BofA ML 1-3 yr AAA-AA Corp/Gov Index (the market benchmark) by 0.03% in the month of November.

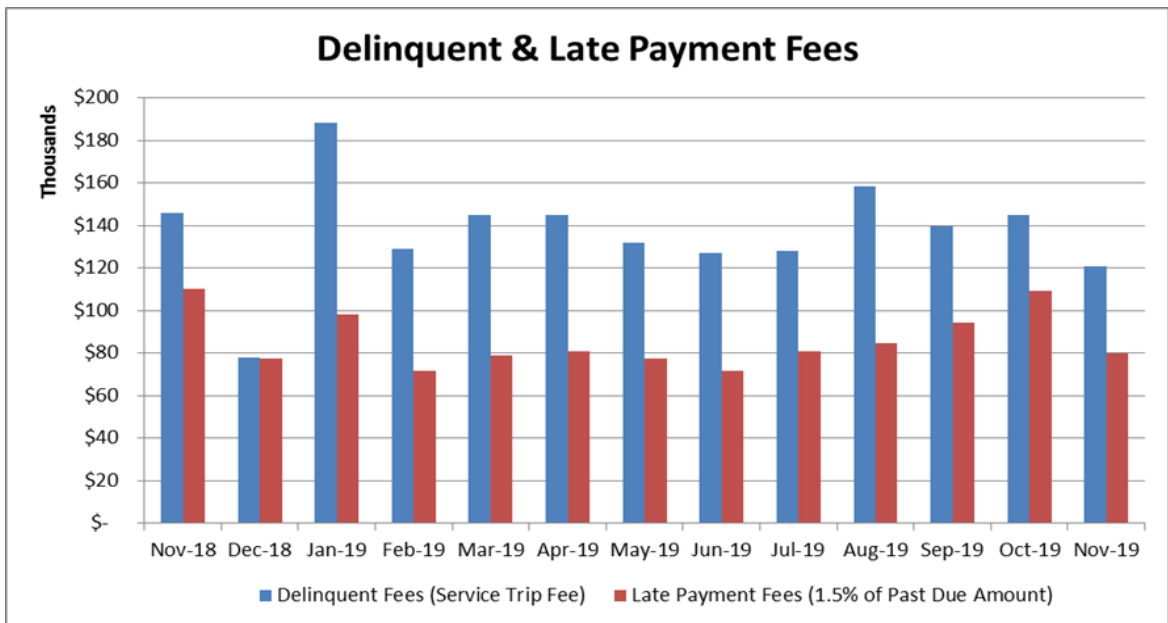
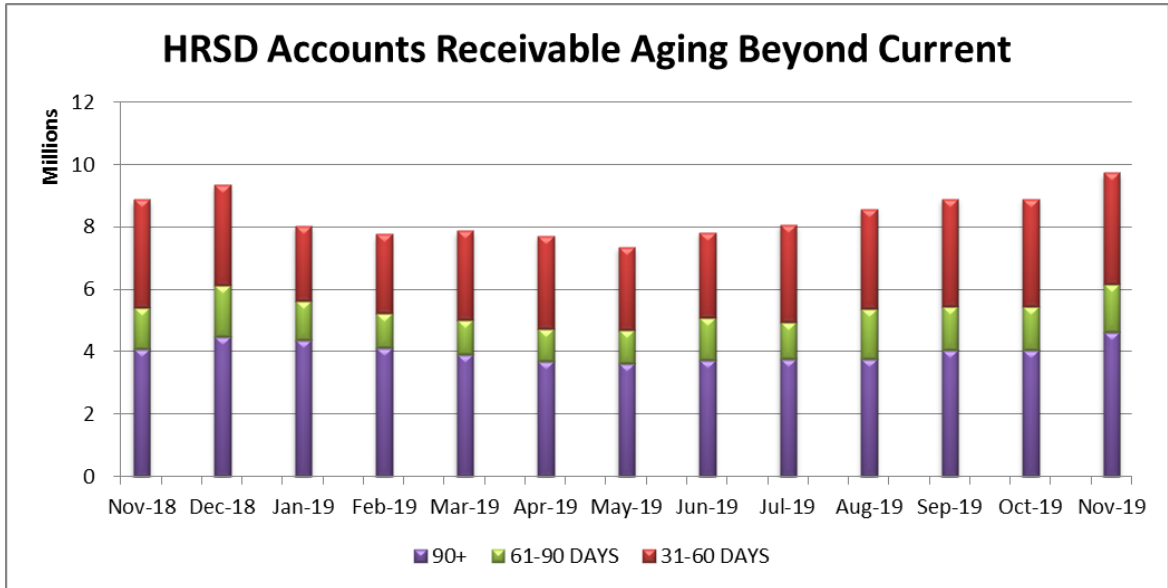
	Total	Fund Alloc
Total Primary Source	\$ 200,361,698	76.1%
Total Secondary Source	\$ 62,935,655	23.9%
TOTAL SOURCES	\$ 263,297,353	100.0%

7. Summary of Billed Consumption

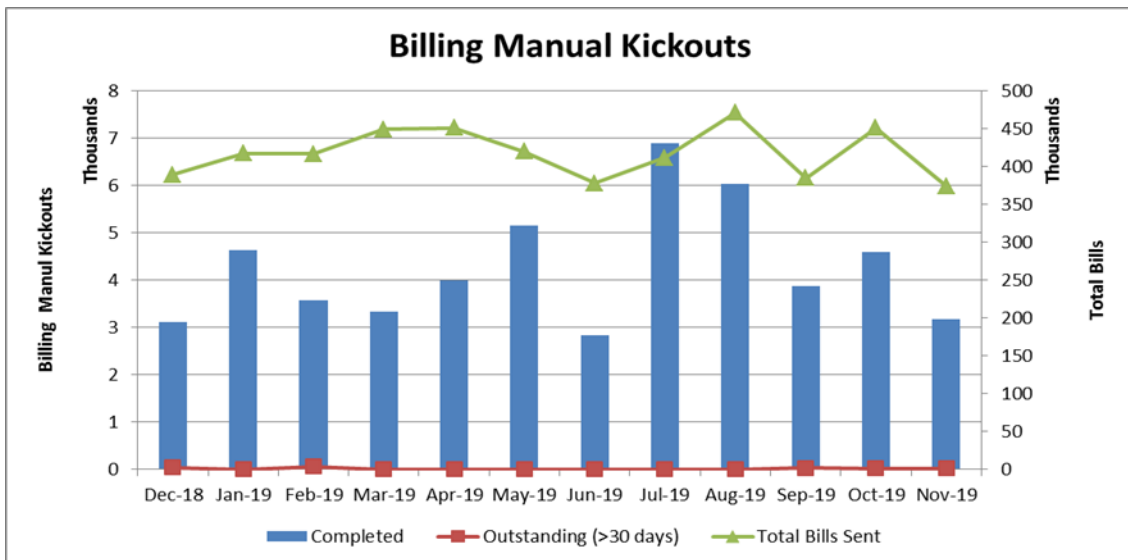
Summary of Billed Consumption (,000s ccf)							
Month	FY2020 Cumulative Budget Estimate	FY2020 Cumulative Actual	% Difference		% Difference		% Difference
			From Budget	Cumulative FY2019 Actual	From FY2019	Cumulative 3 Year Average	From 3 Year Average
July	4,845	5,135	6.0%	5,175	-0.8%	4,940	4.0%
Aug	9,649	10,009	3.7%	10,233	-2.2%	9,815	2.0%
Sept	14,488	14,571	0.6%	14,294	1.9%	14,384	1.3%
Oct	18,842	19,169	1.7%	19,087	0.4%	19,036	0.7%
Nov	22,952	23,309	1.6%	23,249	0.3%	23,278	0.1%
Dec	27,344	-	N/A	27,376	N/A	27,532	N/A
Jan	31,535	-	N/A	32,010	N/A	32,003	N/A
Feb	36,079	-	N/A	36,551	N/A	36,443	N/A
March	40,427	-	N/A	40,187	N/A	40,480	N/A
Apr	44,149	-	N/A	44,551	N/A	44,554	N/A
May	48,421	-	N/A	48,790	N/A	48,786	N/A
June	52,985	-	N/A	53,172	N/A	53,280	N/A

C. Customer Care Center

1. Accounts Receivable Overview

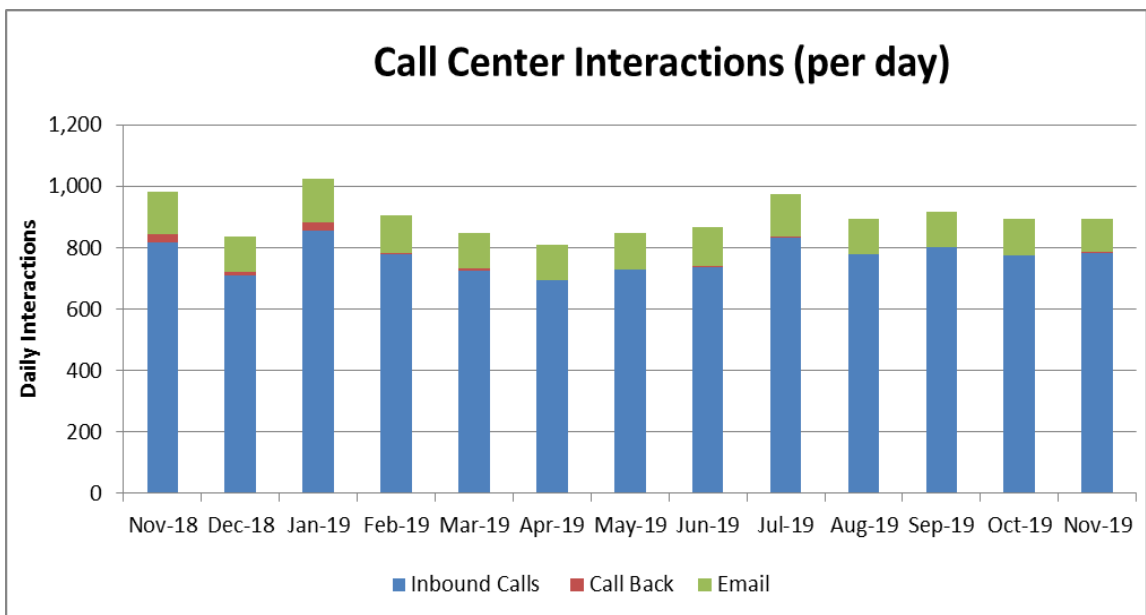


2. Customer Care Center Statistics



Jun-19 Billing Activity was affected by Virginia Beach tragedy.

Jul-19 A formatting change caused an increase in manual kickouts. We expect the levels to normalize in the next few months.



Customer Interaction Statistics	Jun	Jul	Aug	Sep	Oct	Nov
Calls Answered within 3 minutes	94%	89%	94%	81%	86%	87%
Average Wait Time (seconds)	0:40	0:64	0:63	0:81	0:71	0:65
Calls Abandoned	4%	7%	5%	7%	7%	6%

D. Procurement Statistics

ProCard Fraud	External Fraud Transactions *	Comments
July	2	Caught by Bank Immediately
August	0	
September	0	
October	1	Caught by Bank Immediately
November	0	
Total	3	

***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: 2
 - a. 11/7/19 - Christopher Newport University SWaM Fair
 - b. 11/7/19 - City of Virginia Beach Minority Business Council 2019 Conference and Expo

2. Community Partners: 2
 - a. Christopher Newport University
 - b. City of Virginia Beach

3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	November 2019
M-1.4a	Training During Work Hours Per Full Time Employee (102) – Current Month	Hours / #FTE	1.01
M-1.4b	Total Training During Work Hours Per Full Time Employee (102) – Cumulative Fiscal Year-to-Date	Hours / #FTE	11.59
M-5.2	Educational and Outreach Events	Number	2
M-5.3	Number of Community Partners	Number	2
	Wastewater Revenue	Percentage of budgeted	102%
	General Reserves	Percentage of Operating Budget less Depreciation	115%
	Liquidity	Days Cash on Hand	496 Days
	Accounts Receivable (HRSD)	Dollars	\$28,437,590
	Aging Accounts Receivable	Percentage of receivables greater than 90 days	16%

Respectfully,

Jay A. Bernas

Jay A. Bernas, P.E.

Director of Finance

TO: General Manager
FROM: Director of Information Technology
SUBJECT: Information Technology Department Report for November 2019
DATE: December 5, 2019

A. General

1. Following several months of aggressive planning and testing, staff successfully deployed Surface Pros across the organization. Those who did not receive Surface Pros will continue to use their task-specific devices which require more processing power, unique interfaces, etc. Staff did an outstanding job of preparing and executing an enterprise hardware rollout. Due to an ongoing billing system upgrade, the Customer Care Center will receive their Surface Pros in the first quarter of 2020.
2. Staff continues working with the Water Quality design-build team to ensure that all required connectivity and IT-related needs are addressed prior to construction.
3. Customer Care and IT are conducting end-user acceptance testing for the recently installed upgrades to the Customer Care and Billing platform.
4. IT developers and Oracle professional services have completed the initial install of the new mobile workforce application and have begun system configuration and testing.
5. IT continues working with Engineering in preparation of the Infor enterprise asset management software upgrade scheduled for mid December.

B. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 0
2. Number of Community Partners: 0

3. Metrics Summary

Item #	Strategic Planning Measure	Unit	November 2019
M-1.4a	Training During Work Hours Per Full-Time Employee (50) – Current Month	Total Training Hours / # FTE	3.02
M-1.4b	Total Training During Work Hours Per Full-Time Employee (50) – Cumulative Fiscal Year-to-Date	Total Training Hours / # FTE	25.50
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 November 2019
DATE: December 2, 2019

A. Interceptor Systems

1. North Shore (NS) Interceptor Systems

A tapping saddle failed at the master metering site along 16th Street in Newport News (Anderson Park) and resulted in a Sanitary Sewer Overflow (SSO). Staff contained the spill and removed the failed saddle and installed damage control (DC) plugs and a full circle clamp repair. Staff was able to contain the spill within a few hours and completed the repair within eight hours. A total of 40,000 gallons was lost.

2. South Shore (SS) Interceptor Systems

On November 6, staff received an odor complaint near the Pughsville Pressure Reducing Station (PRS). To address the odors, staff repaired pumps that were leaking air through the packing and bled air on the upstream and downstream interceptor force mains.

B. Major Treatment Plant Operations

1. Army Base Treatment Plant (ABTP)

There was a non-potable water (NPW) spill when staff discovered that the NPW was left running following pump maintenance activities, resulting in a loss of 8,500 gallons.

2. Atlantic Treatment Plant (ATP)

- a. There were three odor events this month. The first occurred on November 6 when Odor station A had excessive water vapor emitting from the exhaust stack. Staff repaired the unit's de-mister pads that had folded and allowed the water vapor to escape. The other two events occurred on November 9 and November 27 when high exhaust levels were caused by abnormally high hydrogen sulfide (H₂S) loadings to the scrubber. Staff is replacing the carbon in the scrubber to help take the higher loadings.
- b. Staff received an odor complaint on November 12. They discovered that the gas pressure at Digester #6 was high, causing the system to bleed excess gas into the atmosphere. In addition, pressures were higher than normal while the Combined Heat and Power (CHP) engines were down for

maintenance to address problems associated with expended carbon in one of the carbon media tanks. Staff reset the waste burner and adjusted the pressure level. On November 14, staff received a second odor complaint when a contractor was moving the solids on the pad while winds were blowing toward the Ocean Lakes neighborhood. We are now requiring the contractor to check with staff prior to moving any biosolids. Staff will verify that the winds are in a favorable direction before biosolids are moved.

On November 28 Atlantic Plant received a call from a neighbor to report smelling odors from the plant the previous day. Plant operations investigated and two potential sources of off-site odors and the complaint could have been a waste gas burner failure and/or the H₂S exception from odor control station C. Since the complaint was not phoned in real time and there were no off-site odors at the time of the call determining the actual source of odor is difficult at best. The plant has ordered new carbon media for Odor C to preclude the intermittent sulfide exception condition and operators also continue to ensure the best management of the digester gas system.

3. Nansemond Treatment Plant (NTP)

- a. On November 19, staff discovered underground fittings on an NPW line had become loose by the secondary clarifiers #1 – 3. This resulted in an NPW spill of 10,000 gallons, none of which was recovered. Staff excavated and repaired the line in two places.
- b. On November 28 the secondary clarifier #4 rake arm failed. Staff secured the flows and successfully took the tank out of service. Staff, however, was unable to place tank #5 in service when the stem of the influent gate to tank #5 broke free, making it impossible to open the influent chamber. Staff is in the process of repairing the gate. Since flows are relatively low, we can meet the plant's needs with the smaller secondary clarifiers #1-3. We hope to have the influent gate on secondary clarifier #5 repaired by the end of December.

4. Virginia Initiative Plant (VIP)

- a. There was one reportable event caused by an NPW leak of 200 gallons onto the ground when the maintenance access cover leaked at the equalization tank.
- b. Staff continued dosing aluminum sulfate for phosphorus removal due to the continued higher than normal influent phosphorus loading. Staff is working with Department of Water Quality to locate the source of elevated influent phosphorus levels.

5. Williamsburg Treatment Plant (WBTP)

Staff completed work on replacing aluminum walls separating anaerobic, anoxic and aerated zones in the #3 aeration tank with fiberglass. The aluminum walls were found to be corroding more quickly than expected.

6. Incinerator Operations Events Summary

There were two deviations from the required Sewage Sludge Incineration rule minimum operating parameters and four minor (less than 60 minute) non-reportable bypass events.

C. Small Communities (SC)

Middle Peninsula Small Communities Treatment and Collections - West Point System

The West Point Treatment Plant exceeded the Monthly Average Concentration BOD permit limit of 30 mg/l with a value of 33 mg/l. The Biological Trickling Filters suffered extensive biofilm loss from the unpermitted industrial discharge in July with regrowth slowly continuing over the last several months. Data analysis of pre and post-industrial discharge indicates reduced biological treatment capabilities with an inability to provide consistent and reliable BOD removal since the event occurred. This impact is magnified with cooling temperatures. Trickling filter operation has been optimized as much as possible, but there is little that can be done other than wait for a mature and stable biofilm to develop. Installation and startup of the tertiary filter will provide improved BOD removal reliability.

D. Water Technology and Research

The Water Technology and Research division is in the process of preparing two proposals for federal research funding:

- US Bureau of Reclamation: Virginia Tech is the lead with HRSD and Jacobs supporting. The topic of the proposal is future SWIFT pilot testing. If successful, HRSD would receive some grant funding
- EPA: The Water Research Foundation is the lead with HRSD, Columbia University, Northwestern University, DCWater, George Washington University, and Brown and Caldwell. The topic of the proposal is the further development of partial denitrification-anammox processes. If successful, HRSD would receive some grant funding.

E. 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)	1	4	8	4	2							
2.7	# of PS Annual PMs Performed (SS)	6	5	4	5	4							
2.7	# of Backup Generator PMs Performed (Target is 4.6)	10	13	17	11	9							
2.8	# of FM Air Release Valve PMs Performed (NS)	209	77	70	127	139							
2.8	# of FM Air Release Valve PMs Performed (SS)	311	318	365	334	97							
2.9	# of Linear Feet of Gravity Clean (NS) (Target is 2,417 for HRSD)	6,248	2,681	1,426	638	2,079							
2.9	# of Linear Feet of Gravity Clean (SS) (Target is 2,417 for HRSD)	1,064	13,240	1,551	1,365	4,365							
2.9	# of Linear Feet of Gravity CCTV Inspection (HRSD Target 3,300 LF)	610	0	0	0	0							

F. Strategic Measurement Data

1. Education and Outreach Events:

- a. 11/9/19 - Electrical Manager attended the Chrome Sponsor Launch at Norfolk State University. The Launch consisted of guest speakers, and exhibitors whose mission was centered around promoting Science, Technology, Engineering, and Mathematics (STEM) for Hampton Roads K-12 students.
- b. 11/13/19 - Staff met with City of Virginia Beach Public Utilities Operations staff to collaborate and discuss locality issues – quarterly meeting.
- c. 11/18/19 - Tour of Nansemond for TCC Biology Students. Tour conducted by Robby Jones.
- d. 11/19/19 - Staff met with City of Portsmouth Public Utilities Operations staff to collaborate and discuss locality issues – quarterly meeting.
- e. 11/20/19 – Log Removal Value (LRV) Table discussion with Bill Mann and Charles Bott.
- f. 11/21/19 - Staff met with City of Suffolk Public Utilities Operations staff to collaborate and discuss locality issues – quarterly meeting
- g. 11/25/19 - Invited keynote presentation at the 2019 International Water Association Innovation Conference on Sustainable Wastewater Treatment and Resource Recovery – Charles Bott
- h. 11/25/19 - Podium presentation at the 2019 International Water Association Innovation Conference on Sustainable Wastewater Treatment and Resource Recovery – Stephanie Klaus
- i. 11/25/19 - Invited work shop presentation at the 2019 International Water Association Innovation Conference on Sustainable Wastewater Treatment and Resource Recovery – Charles Bott

2. Community Partners:

- a. Chesapeake Bay Foundation – oyster cage maintenance at BHTP for oyster gardening program
- b. Department of Energy (DOE) Jefferson Lab
- c. Old Dominion University (ODU)
- d. VDOT Adopt a Highway (AAH)

3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	November 2019
M-1.4a	Training During Work Hours per Full Time Employee (FTE) (516) – Current Month	Hours / FTE	2.03
M-1.4b	Total Training During Work Hours per FTE (516) – Cumulative Year-to-Date	Hours / FTE	16.87
M-2.3a	Planned Maintenance Total Maintenance Hours	Total Recorded Maintenance Labor Hours	23,904
M-2.3b	Planned Maintenance – Preventive and Condition Based	% of Total Maintenance Hours	57.77%
M-2.3c	Planned Maintenance - Corrective Maintenance	% of Total Maintenance Hours	16.36%
M-2.3d	Planned Maintenance - Projects	% of Total Maintenance Hours	25.87%
M- 4.1a	Energy Use: Treatment *reported for October 2019	kWh/MG	2,613
M-4.1b	Energy Use: Pump Stations *reported for October 2019	kWh/MG	150
M-4.1c	Energy Use: Office Building *reported for October 2019	kWh/MG	114
M-5.2	Educational and Outreach Events	Number	9
M-5.3	Number of Community Partners	Number	4

Respectfully submitted,
Steve de Mik
 Director of Operations

TO: General Manager

FROM: Director of Talent Management (TM)

SUBJECT: Monthly Report for November 2019

DATE: December 4, 2019

A. Talent Management Executive Summary

1. Recruitment

New Recruitment Campaigns	8
Job Offers Accepted – Internal Selections	13
Job Offers Accepted – External Selections	3
Average Days to Fill Position	63

2. The quarterly Employee Assistance Program (EAP) review meeting was held to discuss utilization and methods to increase employee awareness of available EAP resources.

3. Wellness Program Participation

Participation Activities	Unit	November 2019	Year to Date (March 2019–February 2020)
Biometric Screenings	Number	8	23
Preventive Health Exams	Number	16	74
Preventive Health Assessments	Number	22	236
Online Health Improvement Programs	Number	114	314
Online Health Tracking	Number	116	814
Flu Vaccines	Number	24	386
Tetanus Vaccines	Number	9	82

4. The Wellness Specialist distributed resources for the *Great American Smoke Out* held on November 21st.

5. One hundred and thirty-six participants began the *Holiday Maintain Don't Gain* Wellness Challenge.

6. The Training Resource Specialist is developing three e-learning initiatives, *HRSD Ethics Policy*, *Procurement Policy*, and *Social Media Policy* with training to be implemented in early 2020.
7. The Organizational Development & Training (OD&T) Manager facilitated an introductory Emotional Intelligence (EQ) webinar for Virginia Water Environment Association's Leadership Academy. Individual assessments and coaching calls were provided to participants for the January EQ class.
8. The Apprenticeship Committee met with Apprentice representatives to obtain feedback and discuss goals regarding Learning Management software implementation, streamlining curriculum, apprentice work and class schedules, course delivery improvements, apprentice resources and development of an Apprenticeship Program seminar.
9. OD&T conducted *Real Colors* and *Your Role in Quality* training.
10. The Safety Manager worked with the Chief of Asset Management to present a recommendation to the Quality Steering Team (QST) for HRSD's participation in Virginia's Crisis Event Response and Recovery Access (CERRA) program as part of the Hurricane Readiness and Recovery Plan.
11. Based on internal audit recommendations, staff evaluated the Enterprise Resource Program Organization Learning Module and the *Canvas* Learning Management software for feasibility of tracking safety training.
12. The Winter *Safe Times* newsletter was developed and distributed.
13. Mishaps and Work-Related Injuries Status to Date (OSHA Recordable)

	<u>2018</u>	<u>2019</u>
Mishaps	45	30
Lost Time Mishaps	6	6
<i>Numbers subject to change pending HR review of each case.</i>		

14. Safety Division Monthly Activities

Safety Training Classes	11
Work Center Safety Inspections	8
Reported Accident Investigations	1
Construction Site Safety Evaluations	32
Contractor Safety Briefings	6
Hot Work Permits Issued	23
Confined Space Permits Issued/Reviewed	160
Occupational Health Testing	10
Industrial Hygiene Monitoring Events	5

B. Monthly Strategic Planning Metrics Summary

1. Education and Outreach Events: (4)

- a. 11/14/19 – City of Norfolk Workforce Development Center Autumn Career Fair
- b. 11/20/19 – Granby High School Career Fair
- c. 11/21/19 – City of Suffolk Career and Education Center Career Expo
- d. 11/26/19 – Tidewater Community College Career Fair

2. Community Partners: (4)

- a. City of Norfolk Workforce Development Center
- b. City of Norfolk Public Schools
- c. City of Suffolk Career and Technical Education Center
- d. Tidewater Community College

3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	November 2019
M-1.1a	Employee Turnover Rate (Total)	Percentage	0.35%
M-1.1b	Employee Turnover - Service Retirements	Percentage	0.33%
M-1.4a	Total Training Hours Per Full Time Employee (17) – November	Total Training Hours/ FTE	2.82
M-1.4b	Total Training During Work Hours Per Full Time Employee (17) – Cumulative Fiscal Year-to-Date	Hours / FTE	29.59
M-5.2	Educational and Outreach Events	Number	4
M-5.3	Community Partners	Number	4

Respectfully submitted,
Paula A. Hogg
Director of Talent Management

TO: General Manager

FROM: Director of Water Quality (WQ)

SUBJECT: Monthly Report for November 2019

DATE: December 4, 2019

A. General

1. Pretreatment and Pollution Prevention (P3) division staff did not assess any civil penalties this month.
2. The Director attended the annual North American Society of Toxicology and Chemistry meeting held in Toronto, Ontario, Canada this year. The primary purpose of attendance was to chair and facilitate a technical session addressing linkages between wastewater treatment and improvements to receiving surface waters where wastewater effluent is being discharged. The session was well attended, and the audience was highly engaged. The Director has been pursuing work on this general topic with the Water Research Foundation (WRF) for a number of years, and several products have been realized that appear to be gaining traction with the regulated community. These linkages are assumed but rarely documented; further work will help agencies like HRSD dedicate limited resources to management actions that provide tangible environmental and human health benefits for rate payers.
3. The Director attended a meeting of the WRF Research Advisory Council (RAC) in Alexandria, Virginia. The RAC makes recommendations to the WRF Board with regard to the areas of research that are most important to WRF subscribers like HRSD and is involved in developing proposals for research in conjunction with subscriber representatives. This meeting was held to determine which areas of research are of the highest priority. WRF staff, with subscriber teams, will now develop proposals for research in these areas. These draft proposals will be considered by the RAC in the spring of 2020 for funding.
4. The Director attended the annual National Association of Clean Water Agencies (NACWA) Leadership meeting in Austin, Texas. This meeting was focused on two issues: advocacy priorities and strategic planning. NACWA has been advocating for changes to the Clean Water Act (CWA) for several years now and given recent additions to the CWA relative to integrated planning, the discussion again revolved around this idea. However, changing the CWA (rather than making additions) seems unlikely. The Director advocated for change in approach to the CWA where the CWA is not overly prescriptive. Specifically, a fundamental step in determining the CWA needs for any surface water is to establish the uses of that water. For example, current uses (recreation, fishing for human consumption, aquatic life) are often broadly defined to be met at all

times in every gallon of water present in that waterbody. However, those uses may not exist at all times and everywhere in a water body. This is particularly true where seasons associated with annual climate variability and rainfall events affect the uses. NACWA should consider an effort to refine these uses for water bodies so that resources are not dedicated to meeting uses that do not exist at all times in all places. This approach was used in setting the Chesapeake Bay dissolved oxygen requirements for aquatic life that form the basis of nutrient reductions triggered by the Chesapeake Bay Total Maximum Daily Load (TMDL) and required in HRSD permits. This approach reduced the expectation for management actions in the Bay and saved ratepayers tens, if not hundreds of millions of dollars in wastewater facility upgrades. Similar approaches could be used in many other surface waters across the country in support of aquatic life and other uses without changing the CWA.

B. Quality Improvement and Strategic Activities

1. The Sustainability Environment Advocacy (SEA) Group reported no activities for the month of November.
2. The WQ Communication Team continues monitoring and measuring inter-divisional communication issues within the WQ Department.

C. Municipal Assistance

HRSD provided sampling and analytical services to Northumberland County, Westmoreland County, and New Kent County to support monitoring required for their respective Virginia Pollution Discharge Elimination System (VPDES) permits and to King George County and the Cities of Chesapeake and Roanoke to support their water quality monitoring projects.

D. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 3
 - a. 11/01/2019 – Technical Services Division (TSD) staff presented the summary of the sequencing batch reactors (SBR) Per- and polyfluoroalkyl substances (PFAS) study to chemistry, biology, and biochemistry students at the Christopher Newport University (CNU) Molecular Biology and Chemistry Seminar.
 - b. 11/02/19 – TSD staff participated as a speaker, professional career panelist, and student poster judge for the Virginia Academy of Sciences Conference at CNU.
 - c. 11/08/19 - P3 staff participated in the Canon Health and Safety Expo.
 - d. 11/19/19 – P3 staff provided a community outreach event at the Salty Dog Rally in Hampton.
 - e. 11/20/019 – TSD staff conducted a tour of the Nansemond Treatment Plant and SWIFT facility with CNU students.

- f. 11/21/19 – Central Environmental Laboratory staff participated in the Old Dominion Career Fair.

2. Community Partners: 11

- a. American Red Cross
- b. City of Chesapeake
- c. City of Hampton
- d. City of Newport News
- e. City of Suffolk
- f. City of Virginia Beach
- g. Elizabeth River Stars
- h. Old Dominion University
- i. Virginia Department of Environmental Quality
- j. Virginia Department of Health Division of Shellfish Sanitation
- k. Hampton Roads Planning District Commission

3. Odor Complaints: 3

- a. South Shore (SS) Operations received text messages from the neighbors of the Pughsville pressure reducing station (PRS) on November 6. SS Operations responded and found a pump was air bound and leaking through the packing. This was corrected and no further complaints have been received. TSD has also discontinued the weekly odor monitoring that had been ongoing since the odor complaint received in late October.
- b. HRSD Communications received an odor complaint regarding odors from Atlantic Plant made by the plant's neighbors via Nextdoor.com on November 12. The Combined Heat and Power (CHP) facility's digester gas engines had shut down before Veteran's Day weekend. Recirculation of the digester gas in the system commenced without a second waste gas burner coming online. This was the most likely source of off-site odors. The CHP system was brought back online ending gas recirculation, excess gas pressure, and use of the Pressure Relief Valve (PRV). Communications responded accordingly to the neighbors via email and on Nextdoor.com.
- c. Atlantic Plant received a call on November 28 from a neighbor reporting odors from the plant observed the previous day. Plant operations investigated and two potential sources of off-site odors were identified. The complaint could have been related to a failure of a waste gas burner and/or a hydrogen sulfide exception from odor control station C. Since the complaint was not reported at the time, it was noted and there were no off-site odors at the time of the actual report determining the actual source of odor is difficult. The plant has ordered new carbon media for odor control station C to preclude an intermittent sulfide exception condition and continue ensuring the best management of the digester gas system.

4. Monthly Metrics

Item #	Strategic Planning Measure	Unit	November 2019
M-1.4a	Training During Work Hours Per Full Time Employee (114) (Current Month)	Total Hours / # FTE	3.70
M-1.4b	Total Training During Work Hours Per Full Time Employee (114) (Cumulative Fiscal Year-to-Date)	Total Hours / # FTE	27.82
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	3:25,366
M-3.2	Odor Complaints	#	3
M-3.4	Pollutant Removal	Total Pounds Removed	79,934,096
M-3.5	Pollutant Discharge	% Pounds Discharged/ Pounds Permitted	16%
M-5.2	Educational and Outreach Events	#	6
M-5.3	Community Partners	#	11
	Average Daily Flow	Total MGD for all Treatment Plants	128.48
	Pretreatment Related System Issues	#	0

Respectfully submitted,
James Plett, Ph.D
 Director of Water Quality



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 (MAP) monitoring.

I. *Projects in Process*

Permitting

- **Tasks Completed (November 2019)**
 - No additional tasks were performed by SC&H in November; management took this time to review the report and prepare action plans

- **Upcoming Tasks (December 2019)**
 - Review and incorporate report edits and management action plans
 - Issue final report

Payroll/ Timekeeping

- **Tasks Completed (November 2019)**
 - Prepared and communicated fieldwork documentation requests
 - Obtained requested population documentation and selected samples for testing
 - Conducted fieldwork testing procedures

- **Upcoming Tasks (December 2019)**
 - Continue fieldwork testing procedures
 - Document testing results and confirm understanding with process owners
 - Draft internal audit report

Pollution Source Control

- **Tasks Completed (November 2019)**
 - Performed onsite walkthrough discussions
 - Documented process understanding
 - Drafted planning documentation

- **Upcoming Tasks (December 2019)**
 - Finalize planning documentation
 - Prepare fieldwork audit objectives
 - Begin fieldwork testing procedures

Risk Assessment Refresh

- **Tasks Completed (November 2019)**
 - Conducted risk assessment discussions with process owners
 - Documented risk assessment results

- **Upcoming Tasks (December 2019)**
 - Conduct and document remaining risk assessment discussions
 - Update overall risk assessment documentation



Business Continuity and Disaster Recovery (Audit Fieldwork Complete/ Management Response in Process)

- **Upcoming Tasks (Q4 2019)**

- HRSD management has communicated its continued progress to develop a plan to address the recommendations included in the BC/DR report. SC&H will continue to work with HRSD process owners and management to finalize the audit report, incorporating management action plans. A specific completion date has not been identified at this time.

II. Upcoming Projects (FY2020)

SC&H’s next audit will pertain to the SWIFT functions at HRSD and is scheduled to begin in Q1 (January) of calendar year 2020.

III. Management Action Plan (MAP) Monitoring

SC&H is performing on-going 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
D&C: CIP Project Management	5/11/2016	February 2020	11	2	13
Biosolids Recycling	10/8/2016	Pending Permit	7	1	8
HR Benefits	11/22/2016	Closed	15	0	15
Inventory	4/20/2017	February 2020	1	4	5
Procurement/ ProCard	8/23/2017	December 2019	8	3	11
Engineering Procurement	4/20/2018	February 2020	4	4	8
Corporate Governance: Ethics Function	3/21/18	June 2020	3	2	5
Treatment Plant Operations*	10/15/18	December 2019	0	9	9
Customer Care Division*	7/26/19	August 2020	0	4	4
Safety Division*	9/12/19	September 2020	0	3	3
Totals			49	32	81

*SC&H has not yet performed formal follow-up procedures for the implementation status of these MAPs. Actual status may vary within the associated process areas and will be updated upon follow-up.

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
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%
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%
M-1.2	Internal Employee Promotion Eligible	Percentage	100%		59%	80%	69.57%	71.43%	64.00%	69.00%	68.00%	85.00%	85.00%
M-1.3	Average Time to Fill a Position	Calendar Days	< 30		70	60	52	43.76	51	56	67	67	66
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
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
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
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
M-2.1	CIP Delivery - Budget	Percentage			113%	96%	124%	149%	160%	151%	156%	160%	170%
M-2.2	CIP Delivery - Schedule	Percentage			169%	169%	161%	150%	190%	172%	173%	167%	159%
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
M-2.3b	Planned Maintenance	Percentage of Total Mtc Hours Monthly Avg			20%	27%	70%	73%	48%	41%	43%	44%	59%
M-2.3c	Corrective Maintenance	Percentage of Total Mtc Hours Monthly Avg			63%	51%	12%	10%	18%	25%	25%	24%	18%
M-2.3d	Projects	Percentage of Total Mtc Hours Monthly Avg			18%	22%	20%	18%	32%	34%	32%	32%	27%
M-2.4	Infrastructure Investment	Percentage of Total Cost of Infrastructure	2%		8.18%	6%	6%	4%	7%	7%	5%	5%	4
M-3.3	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
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
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
M-4.1b	Energy Use: Pump Stations	kWh/MG Monthly Avg			197	173	152	159	168	163	173	170	181
M-4.1c	Energy Use: Office Buildings	kWh/MG Monthly Avg			84	77	102	96	104	97	104	104	95
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%
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
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%
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
M-5.1	Name Recognition	Percentage (Survey Result)	100%	67%	71%	N/A	62%	N/A	60%	N/A	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%
M-5.5	Number of Research Partners	Annual Total Number			42	36	31	33	28	35	15	20	26
	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
	Rainfall	Annual Total Inches		66.9	44.21	56.21	46.65	46.52	51.95	54.14	66.66	49.24	53.1
	Billed Flow	Annual Percentage of Total Treated		71.9%	82.6%	78%	71%	73%	74%	72%	73%	76%	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%
	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%

Monthly Updated Metrics														FY-20	FY-20
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	Oct-19	Nov-19
	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	129.7	128.5
	Industrial Waste Related System Issues	Number	0		3	6	6	6	2	4	7	4	7	0	0
	Wastewater Revenue	Percentage of budgeted	100%		97%	96%	98%	107%	102%	104%	103%	103%	104%	109%	102%
	General Reserves	Percentage of Operating and Improvement Budget	75% - 100%		72%	82%	84%	92%	94%	95%	104%	112%	117%	117%	115%
	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	\$27,391,182	\$28,437,590
	Aging Accounts Receivable	Percentage of receivables greater than 90 days			21%	20%	18%	19%	21%	20%	18%	18%	17%	16%	16%
M-2.5	Capacity Related Overflows	Number within Level of Service	0		25	1	30	5	11	16	6	10	5	0	0
M-3.1	Permit Compliance	# of Exceedances to # of Permitted Parameters	0		12:55,045	1:51995	2:52491	1:52491	2:52491	2:52,491	9:53236	9:58338	2:60879	2:20293	3:25366
M-3.2	Odor Complaints	Number	0		6	2	7	11	5	9	7	6	9	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	64,181,950	79,934,096
M-3.5	Pollutant Discharge (% of permitted)	Pounds Discharged/Pounds Removed	< 40%		25%	22%	25%	22%	22%	20%	22%	17%	17%	15%	16%
M-5.2	Educational and Outreach Events	Number			302	184	238	322	334	443	502	432	367	47	31
M-5.3	Number of Community Partners	Number			280	289	286	297	321	354	345	381	293	31	28

EFFLUENT SUMMARY FOR NOVEMBER 2019

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	TKN mg/l	NH3 mg/l	CONTACT TANK EX
ARMY BASE	9.00	50%	1	4.0	3	3	1.1	0.56	4.1	3.6	NA	NA	16
ATLANTIC	22.64	42%	17	8.1	11	1	NA	NA	NA	NA	NA	NA	11
BOAT HARBOR	11.69	47%	7	6.7	2	1	0.58	0.68	24	19	NA	NA	8
CENT. MIDDLESEX	0.008	33%	<2	<1.0	<1	<1	NA	NA	NA	NA	NA	NA	NA
CHES-ELIZ	17.59	73%	13	14	8	4	1.1	1.2	32	32	NA	NA	20
JAMES RIVER	11.37	57%	5	2.1	1	1	0.19	0.33	8.1	7.4	NA	NA	1
KING WILLIAM	0.057	57%	<2	<1.0	NA	<1	0.14	0.064	0.36	0.96	0.16	NA	NA
NANSEMOND	14.94	50%	4	4.5	1	3	0.30	0.89	4.1	4.3	NA	NA	3
SURRY, COUNTY	0.039	60%	4	<1.0	NA	NA	NA	NA	NA	NA	<0.50	NA	0
SURRY, TOWN	0.034	56%	9	12	NA	31	NA	NA	NA	NA	3.0	0.34	NA
URBANNA	0.047	47%	4	11	13	4	6.2	5.9	17	19	NA	0.05	NA
VIP	22.66	57%	1	3.1	1	<1	0.53	0.85	3.1	3.6	NA	NA	3
WEST POINT	0.299	50%	32	15	3	2	3.3	2.6	21	17	NA	NA	0
WILLIAMSBURG	7.14	32%	2	2.6	8	4	0.36	0.55	3.9	3.2	NA	NA	6
YORK RIVER	10.98	73%	0	0.05	1	1	0.41	0.30	4.2	5.2	NA	NA	0
	<u>128.48</u>												

	% of Capacity
North Shore	50%
South Shore	52%
Small Communities	48%

Tributaries	Tributary Summary					
	Annual Total Nitrogen			Annual Total Phosphorus		
	Discharged	Operational		Discharged	Operational	
	YTD	Projection	CY19	YTD	Projection	CY19
	%	Lbs	%	%	Lbs	%
James River	71%	3,632,954	80%	71%	258,471	81%
York River	71%	225,325	78%	69%	15,089	78%
Rappahannock	216%	NA	NA	941%	NA	NA

Permit Exceedances: Total Possible Exceedances, FY20 to Date: 3:25,366
Pounds of Pollutants Removed in FY20 to Date: 79,934,096
Pollutant Lbs Discharged/Permitted Discharge FY20 to Date: 16%

	Rainfall (inch)		
	<u>North Shore (PHF)</u>	<u>South Shore (ORF)</u>	<u>Small Communities (FYJ)</u>
Month	3.12"	2.17"	2.27"
Normal for Month	3.19"	2.96"	3.14"
Year to Date Total	44.34"	44.15"	44.33"
Normal for YTD	47.22"	46.64"	45.17"

AIR EMISSIONS SUMMARY FOR NOVEMBER 2019

	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	0	4	39	99	0
BOAT HARBOR	0	0	0	n/a	0	0	0	0	20	100	0
CHES-ELIZ	0	1	0	0	0	0	*	0	22	96	0
VIP	0	0	0	n/a	0	0	1	1	68	99	0
WILLIAMSBURG	0	0	0	n/a	0	0	0	0	14	99	0

ALL OPERATIONS

DEQ Reportable Air Incidents:	1
DEQ Request for Corrective Action:	0
DEQ Warning Letter:	0
DEQ Notice of Violation:	0
Other Air Permit Deviations:	0
Odor Complaints Received:	3
HRSD Odor Scrubber H2S Exceptions:	5