



**DISTRICT OF COLUMBIA
WATER AND SEWER AUTHORITY
Board of Directors**

*Meeting of the
Environmental Quality and Operations Committee*

*5000 Overlook Avenue, SW, Room 407
Thursday, June 21, 2018
9:30 a.m.*

- | | | |
|-------------------|--|-----------------------------|
| | I. Call to Order | Howard Gibbs
Chairperson |
| 9:30 a.m. | II. Path to Asset Management:
Cost of Proactive Action vs Reactive Action | Leonard Benson |
| 10:15 a.m. | III. DCCR Program Management for Professional
Engineering Services | Carlton Ray |
| 10:25 a.m. | IV. Action Items | John Bosley/Leonard Benson |

Joint Use

1. Contract Number: 16-PR-HCM-AC – MB Staffing, Temporary Personnel Services
2. Contract Number: DCFA #493 – Greeley & Hansen LLC, Program Management for Professional Engineering Services
3. Contract Number: DCFA #494 – Whitman, Requardt & Associates, LLP, Water, Sewer & Wastewater Treatment Facilities BOA 7

Non Joint Use

1. Contract Number: 16-PR-DSS-32 – Rodgers Brothers Custodial Service, Inc., Hauling & Disposal of Excavation Spoils and Debris
2. Contract Number: 160020 – Capital Paving of D.C., Inc., Small Diameter Water Main Replacement 13A
3. Contract Number: 170120 – Sagres Construction Corp, Small Diameter Water Main Replacement 12b2
4. Contract Number: 160010 – Fort Myer Construction Corporation, Water Main Infrastructure & Replacement

- | | | |
|-------------------|-------------------------------------|----------------|
| 10:35 a.m. | V. AWTP Status Updates | Aklile Tesfaye |
| | 1. BPAWTP Performance | |
| 10:45 a.m. | VI. Water Quality Monitoring | Charles Kiely |

1. Coliform Testing
2. LCR Compliance Testing

10:50 a.m. VII. Fire Hydrant Upgrade Program Jason Hughes

1. [Status Report of Public Fire Hydrants](#)
2. [Out of Service Fire Hydrant Map](#)

10:55 a.m. VIII. Executive Session*

11:00 a.m. IX. Adjournment Howard Gibbs
Chairperson

* The DC Water Board of Directors may go into executive session at this meeting pursuant to the District of Columbia Open Meetings Act of 2010, if such action is approved by a majority vote of the Board members who constitute a quorum to discuss: matters prohibited from public disclosure pursuant to a court order or law under D.C. Official Code § 2-575(b)(1); contract negotiations under D.C. Official Code § 2-575(b)(1); legal, confidential or privileged matters under D.C. Official Code § 2-575(b)(4); collective bargaining negotiations under D.C. Official Code § 2-575(b)(5); facility security under D.C. Official Code § 2-575(b)(8); disciplinary matters under D.C. Official Code § 2-575(b)(9); personnel matters under D.C. Official Code § 2-575(b)(10); proprietary matters under D.C. Official Code § 2-575(b)(11); decision in an adjudication action under D.C. Official Code § 2-575(b)(13); civil or criminal matters where disclosure to the public may harm the investigation under D.C. Official Code § 2-575(b)(14), and other matters provided in the Act.

Follow-up Items from Prior Meetings:

1. The IMA Regional Committee (RC) brief the EQ&Ops Cmte on the work of the IMA RC **[Target: July 2018 EQ&Ops Cmte Mtg]**
2. Chief Engineer, DC Water: Provide a presentation on the prioritization criteria for selection of water mains to be replaced each year **[Target: September 2018 EQ&Ops Cmte Mtg]**
3. Assistant General Manager, Customer Care & Ops: Provide a briefing on the DDOT- DC Water Memorandum of Understanding (MOU) concerning roadway restoration requirements. **[Will brief at the June 2018 EQ&Ops Cmte Mtg]**
4. Director, DETS: Provide additional detail regarding specific impacts to sewage pumping stations for both the 100-year and 500-year flood scenarios. **[Target: September 2018 EQ&Ops Cmte Mtg]**
5. Chief Engineer, DC Water: Conduct discussion on 'Preventative Maintenance' during the June EQ&Ops Committee meeting. **[Target: September 2018 EQ&Ops Cmte Mtg]**
6. Director, Clean Water & Technology: Reschedule presentation on Blue Plains Research & Development Overview and Update for EQ&Ops Committee meeting. **[Target: July 2018 EQ&Ops Cmte Mtg]**
7. Chief Engineer, DC Water: Reschedule site visits with Committee members to Pump Stations. **[Target: July 2018 EQ&Ops Cmte Mtg]**
8. Director, Department of Wastewater Engineering, DC Water: Provide an updated map displaying the solar power system installation at Blue Plain AWTP. **[Submitted to EQ&Ops Cmte, May 30, 2018]**
9. Director, Department of Wastewater Engineering, DC Water: Provide an information sheet addressing the questions raised regarding the risk exposure to DC Water as it relates to uncontrollable circumstances. The information sheet will also include

clarification on the insurance coverages for the provider and DC Water. **[Submitted to EQ&Ops Cmte, May 30, 2018]**

10. Director, Department of Wastewater Engineering, DC Water: Update the Fact Sheet for the proposed Solar Power Purchase Agreement to more clearly reflect that the vendor will be responsible for all capital design and construction costs and that DC Water will only be responsible to purchase power over 20-25 years. **[Submitted to EQ&Ops Cmte, May 30, 2018]**
11. Chief Engineer, DC Water: Brief the Committee in detail concerning the risk assessment tool, specifically concerning the criteria and scoring used for both likelihood of failure (LOF) and consequence of failure (COF). **[Target: October 2018 EQ&Ops Cmte Mtg]**



Path to Achieve Asset Management: Cost of Proactive Action vs Reactive Action

District of Columbia Water And Sewer Authority

Environmental Quality & Operations Committee Meeting
June 21, 2018

Linear and Vertical Assets





EQ & Ops Committee Work Plan

- 💧 Explore Investment in Infrastructure:
 - ✓ **April:** What are our peer utilities doing?
 - ✓ **May:** Blue Plains site visit
 - **June: What is the cost of proactive investment vs. addressing issues as they arise?**
 - **July:** Water & Sewer site visits
 - **September:** What is needed to fully meet asset management principles?

- 💧 Proactive Vs Reactive:
 - Industry Practice
 - Direct cost comparison
 - Socioeconomic costs
 - Triple Bottom Line (TBL) Analyses



Agenda

- 🔹 Objective of this Presentation
- 🔹 Definition of Terminology
- 🔹 Industry Research Tools
- 🔹 Methodology
- 🔹 Case Studies
- 🔹 Summary of Results
- 🔹 Findings/Conclusions



Objective

- To demonstrate the value of proactive approach to Asset Management -
 - Direct financial costs comparison
 - Socioeconomic impact analysis
 - Monetizing social and environmental costs
 - Using Triple Bottom Line (TBL) method to compare proactive and reactive approaches
 - $TBL = \text{financial costs} + \text{socioeconomic costs}$



Definition

💧 According to Merriam-Webster:

Reactive -

- 1717- first known use
- Done in response to a problem or situation
- Reacting to problems when they occur instead of doing something to prevent them

Proactive -

- 1933- first known use
- Acting in anticipation of future problems, needs, or changes
- Controlling a situation by causing something to happen rather than responding to it after it has happened
- Synonyms – farseeing, farsighted, forward-looking





Definition – As It Relates to Asset Management

Reactive

Reactive: *running to failure, then making repairs or replacing assets, often on an emergency basis*

- Missed opportunities
- Movement from one problem to the next
- Increased potential for mistakes, missteps
- ***High cost with little to no added value to the asset***

Proactive

Proactive: *implementing asset renewal or replacement before failure*

- Considers varied options, data based, different approaches, etc.
- Allows identification of possible problems before they occur
- Considers alternative solutions
- ***Lower lifecycle costs***



Industry Research Tools

- Water Research Foundation (WRF) Report #445I Managing Infrastructure Risk: The Consequence of Failure for Buried Assets (2017)
 - Case studies compare reactive vs, proactive approach for renewal of buried watermains
 - #445I Data Collection Workbook used to gather costs and impacts
- WERF SIMPLE (Sustainable Infrastructure Management Program Learning Environment) (2009)
 - Spreadsheet tool provides basis for monetizing social and environmental impacts (e.g., loss of service, reputation damage, etc) for buried and vertical assets
 - Applies to all assets



SIMPLE

Sustainable Infrastructure Management Program Learning Environment



TBL is calculated using WERF's SIMPLE tool

- Direct DC Water costs are measured by:
 - Reactive: Actual expenses for emergency repairs
 - Proactive: Actual or estimated costs

- Social and/or environmental impacts are incurred by society as a result of an asset failure (e.g. sewer collapse or watermain break). These impacts can be monetized using information from the following sources:
 - Bureau of Labor & Statistics and USEPA
 - DDOT
 - WRF #445 I Report
 - WERF SIMPLE Financial Model



Methodology, cont'd

Social and Environmental Impacts	Reactive	Proactive	Comment
Traffic Impact	↑	↓	Emergency response has a greater impact on traffic; CIP projects are planned to minimize rush hour impacts
Business Impact	↑	↓	Emergency responses result in higher impacts to business due to road and business closures, reducing foot and vehicular access
Reputation Impact	↑	↓	Adverse media coverage is far greater with emergency response and its negative impacts on community
Environmental Impact	↑	↓	Proactive approach (avoiding failures) reduces potable (chlorinated) water and sewage spills and traffic tie-ups with associated clean air impacts



Methodology, cont'd

💧 Cost elements used for case studies:

- Direct DC Water costs such as equipment, materials (including sourcing, procurement and delivery), construction contractors, consultants and DC Water staff time, including overtime premiums
- Socioeconomic costs including impacts to:
 - Agencies, such as City, NPS, DDOT, other utilities
 - Customers (e.g.. loss of service, poor water quality, discolored water etc.)
 - People who may not be customers (e.g.. traffic impacts)
 - Businesses or other organizations (e.g. loss of revenue due to business closure, road closure, lack of parking/access)
 - The environment (e.g.. release of chlorinated water or sewage)
 - DC Water reputation (e.g., bad publicity)



Case Studies

Case studies selected to compare reactive versus proactive approaches for:

- Variety of assets and locations
- Variety of costs and socioeconomic factors

Selected Case Studies for Linear Assets

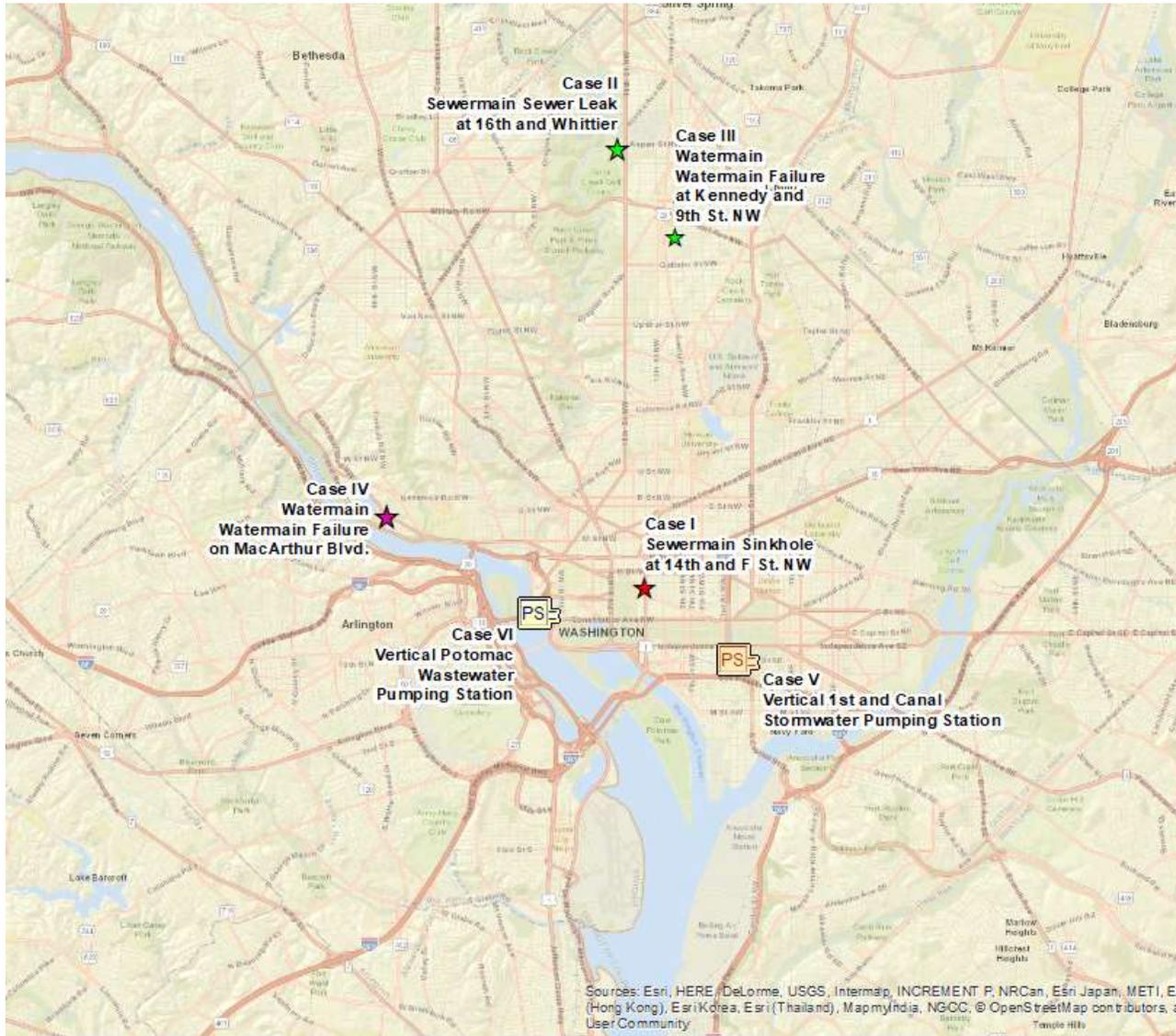
- I4th and F St. (large sewer)
- I6th and Whittier (smaller sewer)
- MacArthur Blvd. (large water main)
- Kennedy and 9th St. (small diameter water main)

Selected Case Studies for Vertical Assets

- Ist and Canal Stormwater Pumping Station
- Potomac Wastewater Pumping Station



Case Studies





Case I: Sewermain - Sinkhole at 14th and F St. NW

- 💧 May 2013 incident in downtown DC:
 - Collapse of 54” (brick) combined sewer; created sinkhole
 - Closed an arterial road for 9 days, extensive traffic impacts
 - No recorded sewage release
- 💧 Socioeconomic impacts
 - Traffic impacts based on DDOT traffic flow data, estimated wait times, and well sourced model developed by Philadelphia Water Dept.
 - 13 businesses impacted (restaurants, retail, salon, parking garage)
 - Extensive media coverage





...Sink hole at I 4th and F St. NW

- 💧 **Direct costs** came from DC Water records and staff
- 💧 **TBL calculations** using WERF SIMPLE Tool, actual (reactive) repair costs and typical proactive renewal costs
- 💧 Business and traffic impacts (based on PWD methodology and DDOT data) were developed separately
- 💧 Reactive TBL costs were 7.4 times that of proactive TBL costs

Triple Bottom Line Costs		
	Reactive	Proactive
Economic (Direct)	1,043,206	120,000
Social Impacts		
<i>Business Losses</i>	267,000	217,000
<i>Reputation</i>	5,000	0
<i>Traffic Delays</i>	<u>15,541,877</u>	<u>1,956,435</u>
Social Subtotal	15,813,877	2,173,435
Environmental	61,688	8,024
TOTAL	\$16,918,771	2,181,459



Case II: Sewermain – Sewer Leak at 16th and Whittier

- October, 2017 incident at exposed sewer near creek bed
 - Sewage release in environmentally sensitive area
 - Minor leakage and odor observed
 - Repaired leak with clamp; stabilized 5 feet stream bank

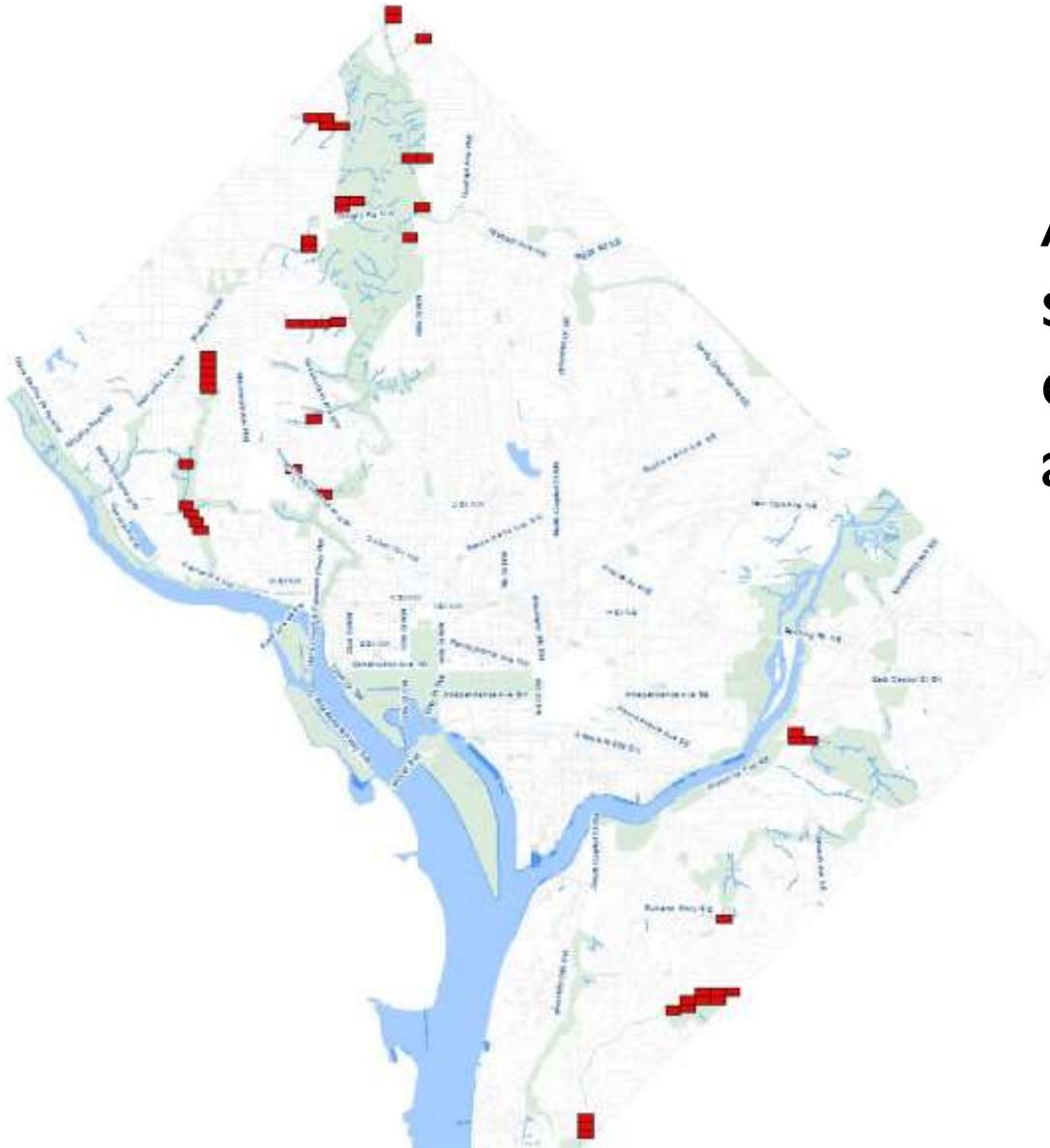


- Socioeconomic impacts
 - Modest impact from sewage release
 - Infrequent inspection could allow more significant release prior to detection
 - No traffic or business impacts; no media coverage





Other Creekbed Sites Similar to 16th and Whittier



Approx. 40 exposed sewers near, at or crossing creek beds in SE and NW quadrants



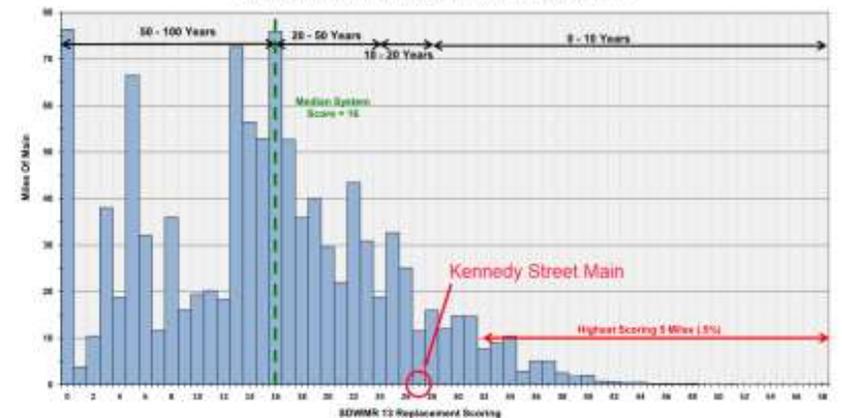
Case III: Watermain – Watermain Failure at Kennedy and 9th St. NW

January, 2018 incident in dense urban neighborhood:

- Small diameter water main failure (c1897 6” pit cast pipe)
- Partial road closure for 1 day, moderate traffic impacts
- Approx. 200 people out of water
- Repaired road and 3-foot section of damaged pipe
- Pipe condition assessment projected replacement 10-20 years



Water Main Infrastructure
Small Diameter Water Main Replacement Program Timeline



Socioeconomic impacts

- DC Water customers loss of water service
- Traffic impacts for one rush hour period
- 5 businesses impacted (restaurants, barber shop) and a church



Case IV: Watermain – Watermain Failure on MacArthur Blvd.

- May, 2017 failure of 30” water main on MacArthur Blvd near Q St. NW
 - Rupture of 30” cast iron pipe c1860, with lead joints
 - Three prior breaks on main
 - Large sinkhole closed road for 8 days, moderate traffic impacts
 - Replaced 15 feet of watermain
 - Was previously identified as one of highest risk mains
- Socioeconomic impacts
 - Traffic impacts (8 Days), and one business impacted (deli)
 - Several basements flooded
 - Extensive media coverage





1st and Canal Stormwater Pumping Station

Case V: Vertical –

- February 1, 2018 pump failure
 - Pumps failed and station flooded
 - SCADA level sensor alerted DDCS staff who installed a temporary pump
 - Temporary pumps still in operation waiting for new replacement pumps to arrive
- Socioeconomic
 - DDCS staff averted flooding of the 395 tunnel
- Stormwater Pumping Stations
 - All 16 stations have significant equipment rehabilitation and replacement needs





Potomac Wastewater Pumping Station

Case VI: Vertical –

February 13, 2018 failure

- Catastrophic stop log chamber failure on 96” force main
- Reduced pump station capacity from 460 mgd to 230 mgd

Socioeconomic

- Wastewater spill (10,000 gallons)
- Fortunate there were no major rain events before completing repair (3 weeks) which could have released millions of gallons to the Potomac River

Addressing the problem

- Installation of air release valves on the twin force mains (96” and 72”) will prevent surge pressures





Summary of Cost and TBL Analysis

Comparison of Reactive versus Proactive Approach

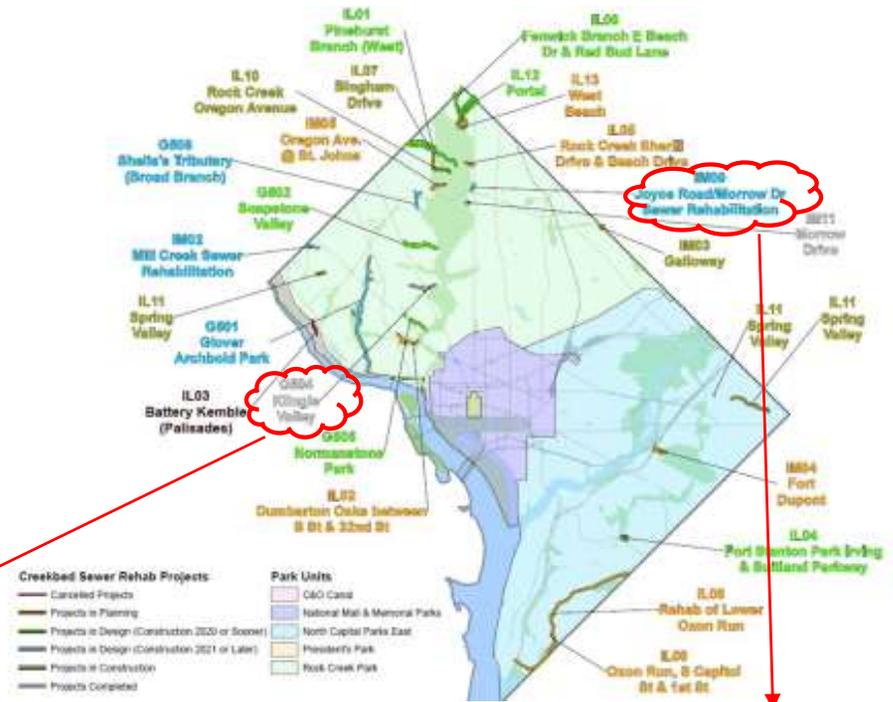
Asset Type	Location	Costs (\$1,000)						Cost Multiples for Reactive Approach	
		(1)	(2)	(3) = (1) + (2)	(4)	(5)	(6) = (4) + (5)	(7) = (4)/(1)	(8) = (5)/(2)
		Proactive: (Planned) Direct Cost,	Proactive: Social & Environmental Cost,	Total Proactive: TBL Cost,	Reactive: Direct Cost to DC Water,	Reactive: Social & Environmental Cost,	Total Reactive: TBL Cost,	Direct Cost Multiple (Reactive to Proactive)	Socioeconomic Costs Multiple (Reactive to Proactive)
Case I: Sewer	14th St and F St, NW	120	2,181	2,301	1,043	15,875	16,918	8.7	7.3
Case II: Sewer	16th St and Whittier St, NW	206	0	206	1,932	644	2,576	9.4	NA
Case III: Watermain	Kennedy St and 9th St, NW	2.3	15	17.3	28	75	103	12.2	5.0
Case IV: Watermain	MacArthur Blvd, NW	30	80	110	472	425	897	15.7	5.3
Case V: Vertical	1st & Canal SW PS	438	24	462	662	467	1,129	1.5	19.4
Case VI: Vertical	Potomac CSO PS	146	0	146	386	527	913	2.6	NA



One Final Example: Sewers – Rehab at Klinge Valley & Morrow Dr

Klinge Valley - Rehabilitation of Sewers and MHs			
Pipe Length (ft)	Pipe Diameter (in)	Cost Per Foot	Total Cost
2500	8" to 18"	\$268.00	\$670,000.00

Morrow Dr Emergency Repair - Replaced 14' of 10" VCP with 10" Cast Iron			
Pipe Length (ft)	Pipe Diameter (in)	Cost Per Foot	Total Cost
14	10	\$5,000.00	\$70,000.00





Summary of Findings

- **Proactive investment strategy minimizes direct (DC Water) cost and social & environmental (community impact) costs:**
 - Reactive approach has about a 1.5-fold to over 15-fold increase in direct costs to DC Water when compared to a proactive (planned) approach
 - Reactive approach has about a 5-fold to 19-fold increase in socioeconomic costs to the community, when compared to a proactive (planned) approach

- **Emergency repairs on linear assets do not extend the service life of the repaired asset**
 - Generally does not address the root problem or cause
 - Is wasted money when more comprehensive proactive project is done

- **Repeated emergency repairs and associated impacts can negatively impact DC Water's reputation and customer confidence**



District of Columbia Water and Sewer Authority

Briefing on:

***DCFA #493-WSA: Program Management
Engineering Services for DC Clean Rivers Project***

Briefing for:

Environmental Quality and Operations Committee

June 21, 2018



DCWATER.COM

Agenda

- Remaining Work on Clean Rivers Project
- Program Implementation Model
- Past Performance
- Procurement
- Intermunicipal Agreement Cost Allocation
- Recommendation



REMAINING WORK ON CLEAN RIVERS PROJECT

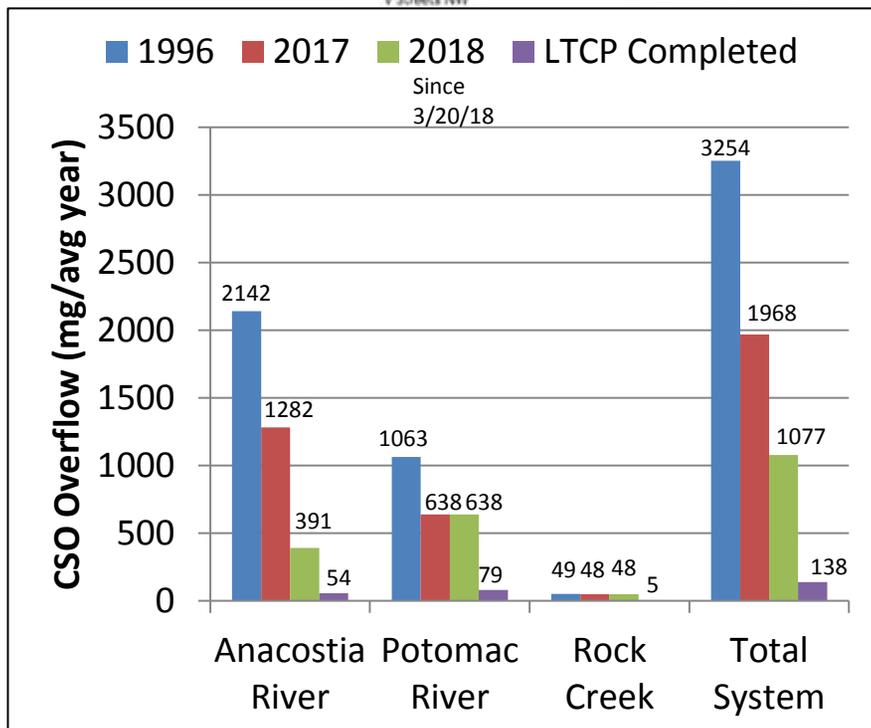
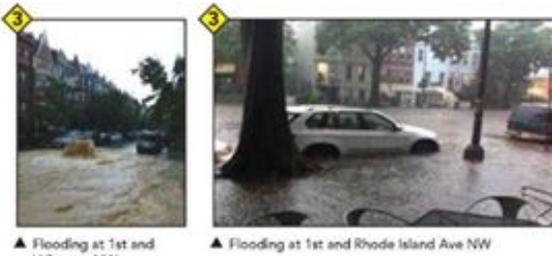


Clean Rivers Project

**Controls Combined
Sewer Overflows**

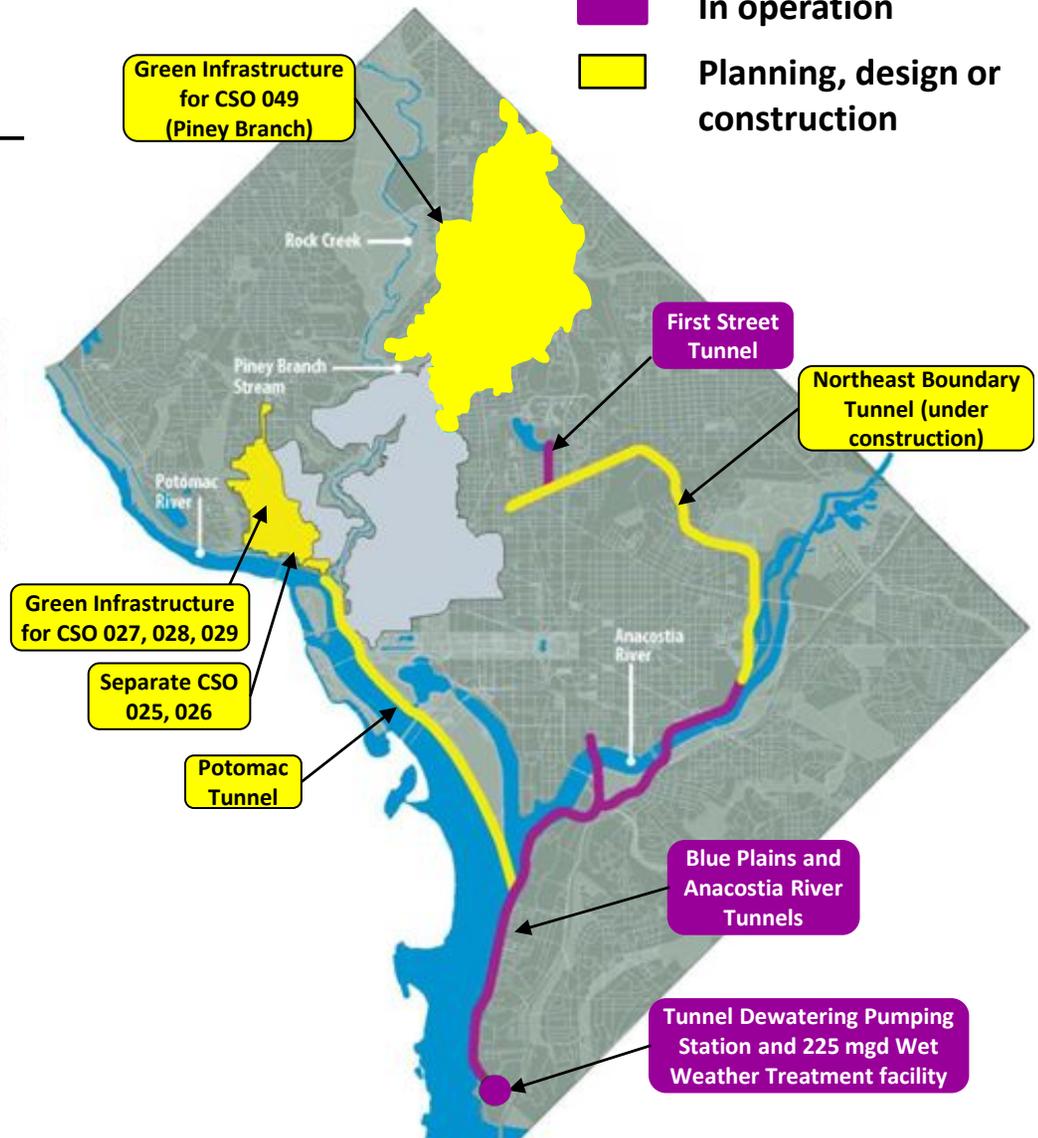


Addresses Chronic Sewer Flooding



Legend

- In operation
- Planning, design or construction



DC CLEAN RIVERS PROJECT AND NITROGEN REMOVAL PROGRAMS

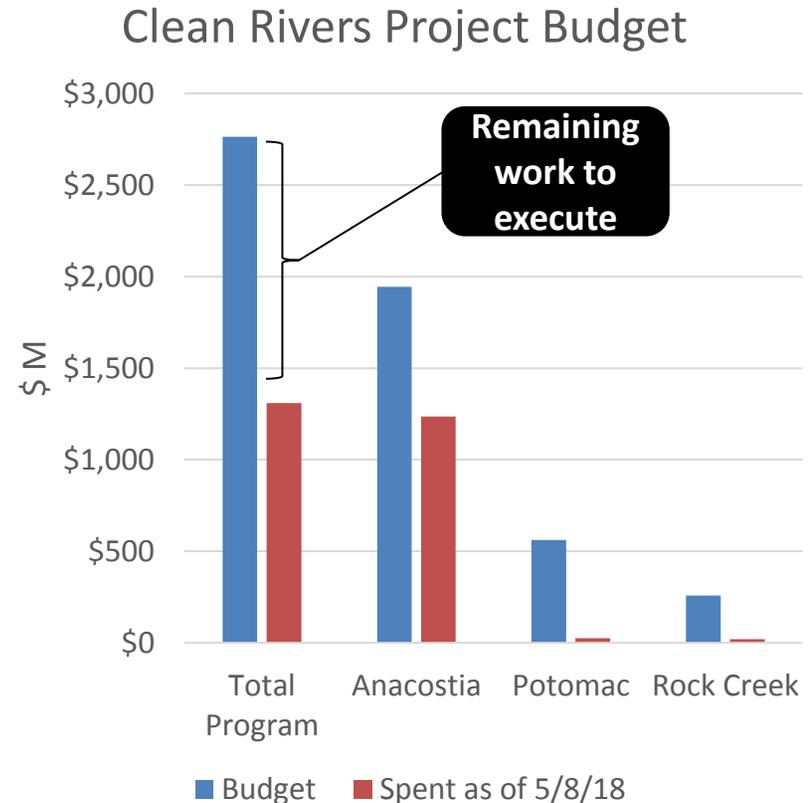
- DC Clean Rivers Project: \$2.7 Billion
- Nitrogen Removal: \$950 Million
- Total > \$ 3.5 Billion
- 25 yr implementation (2005 – 2030)
- 96% reduction in CSOs & flood relief in Northeast Boundary
- Approx 1 million lbs/yr nitrogen reduction predicted

Remaining Work on Clean Rivers Project

- Anacostia
 - Northeast Boundary Tunnel construction

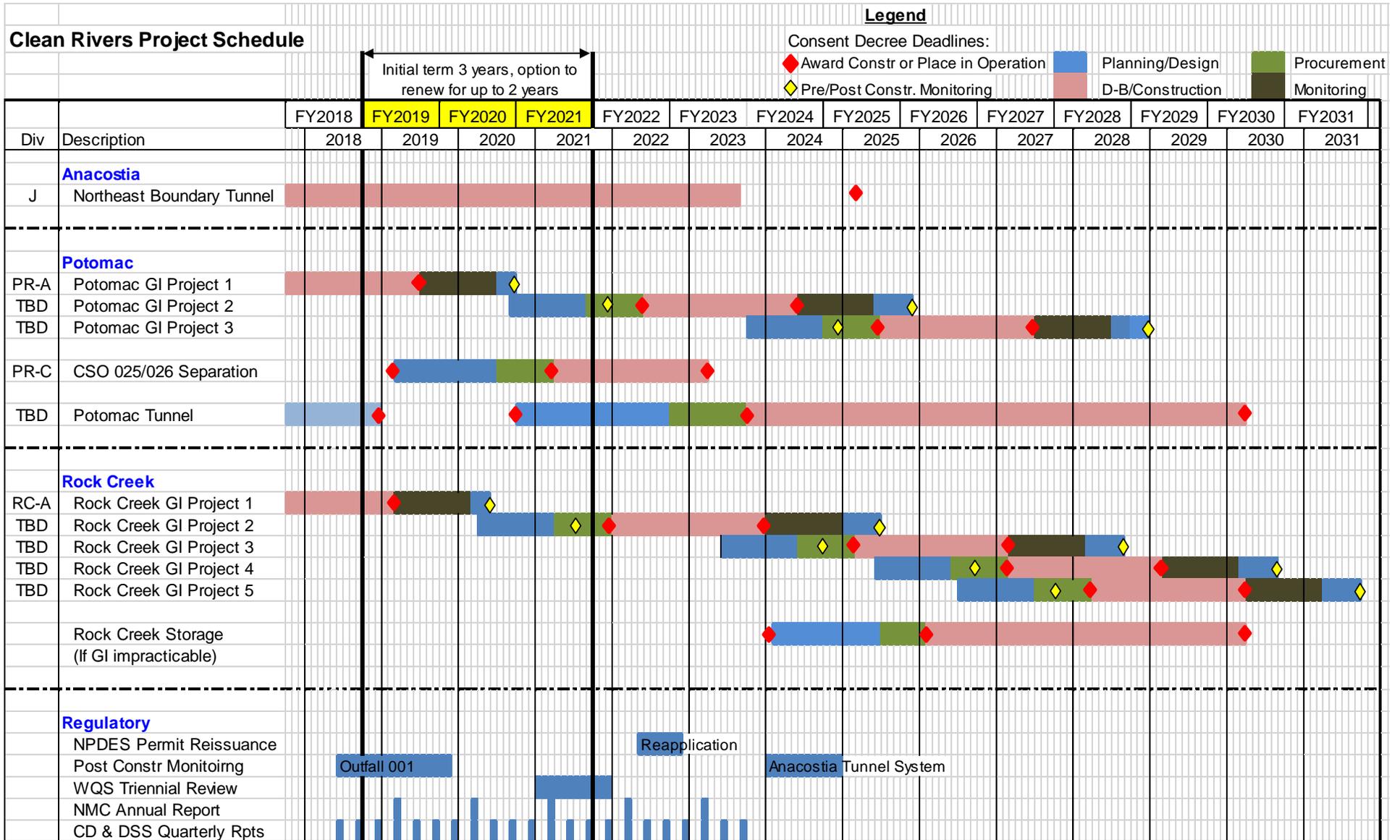
- Potomac
 - Potomac River Tunnel
 - Complete Facility Plan
 - Easement/ROW acquisition
 - Design, procurement & construction
 - CSO 025/026 sewer separation

- Green infrastructure for Potomac and Rock Creek
 - Complete Project 1 in each receiving water and prepare practicability assessment
 - Plan, design and construct remaining GI if practicable, otherwise implement previously EPA-approved gray infrastructure



53% of Budget remains to be executed

Clean Rivers Project Schedule is Dictated by Consent Decree Deadlines



Consent Decree has Significant Penalties for Failure to Meet Schedule

- Consent Decree signed by EPA, DOJ, District and DC Water
- More than 9 upcoming deadlines in FY2019-FY2021
- Stipulated penalties run \$1,000 to \$5,000 per day per missed deadline
- Costs can run into the millions for projects since multiple deadlines can be missed

Case 1:00-cv-00183-TFH Document 124 Filed 01/15/16 Page 1 of 58

Consolidated Civil Action No. 1:00CV00183TFH

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

ANACOSTIA WATERSHED SOCIETY, et al.,)
Plaintiffs,)
v.)
DISTRICT OF COLUMBIA WATER AND)
SEWER AUTHORITY, and THE DISTRICT)
OF COLUMBIA,)
Defendants,)
and)
THE UNITED STATES OF AMERICA,)
Plaintiff,)
v.)
DISTRICT OF COLUMBIA WATER AND)
SEWER AUTHORITY, et al., and THE)
DISTRICT OF COLUMBIA,)
Defendants.)

Consolidated
Civil Action No. 1:00CV00183TFH

FIRST AMENDMENT TO CONSENT DECREE



PROGRAM IMPLEMENTATION MODEL



From 2007-2008, DC Water Evaluated Different Methods to Implement Program

Large Owner Staff

- Hire full range of employees necessary to plan, design and manage construction

Tailored Owner Staff with Consultants

- Hire key management staff to manage project
- Retain Program Consultants Organization to provide specialized services necessary to plan, design and manage construction



- Program Consultants Organization assists DC Water with project management, design, construction, technical analyses and regulatory matters
- Allows consultant staff to be adjusted year by year as the program changes
- Provides specialty services on call as needed to be successful
- Does not require DC Water to hire expertise that is difficult to find and then have challenges repurposing staff when no longer needed and then having to lay them off

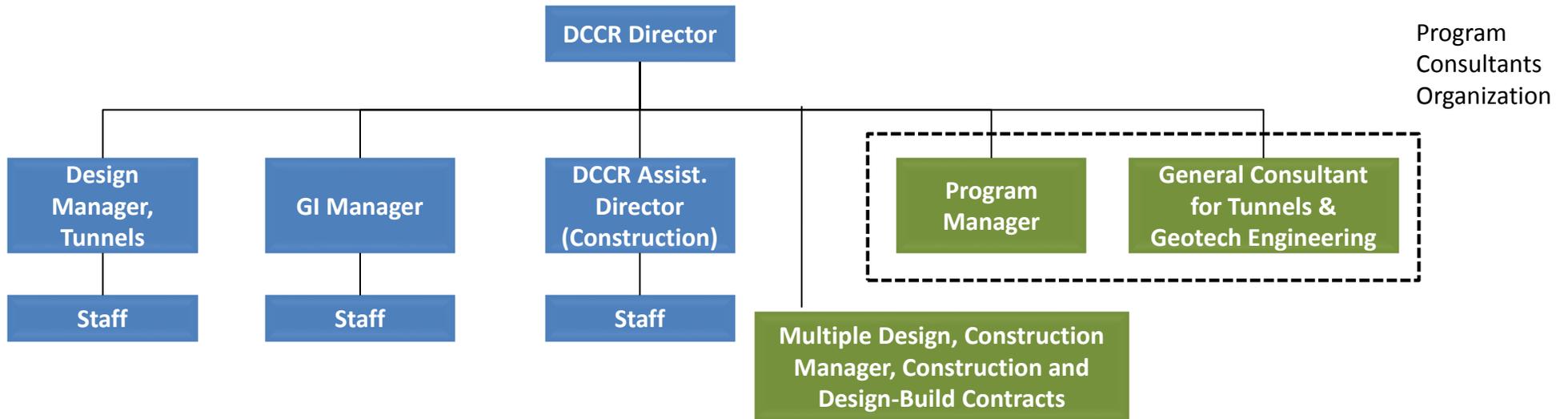


Program Implementation Model

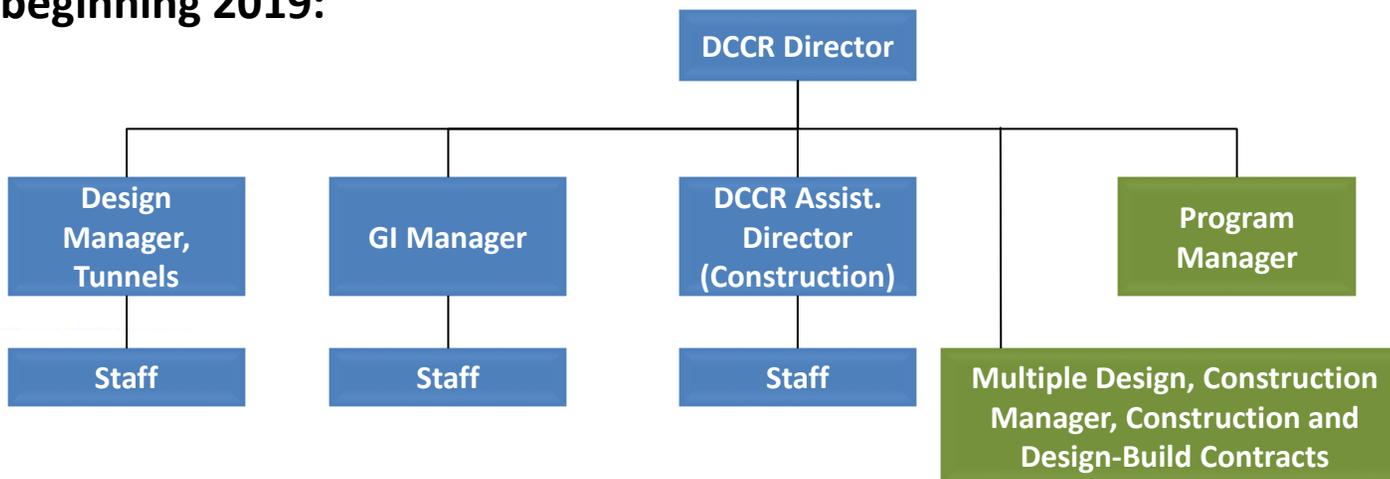
Legend

- DC Water
- Consultant

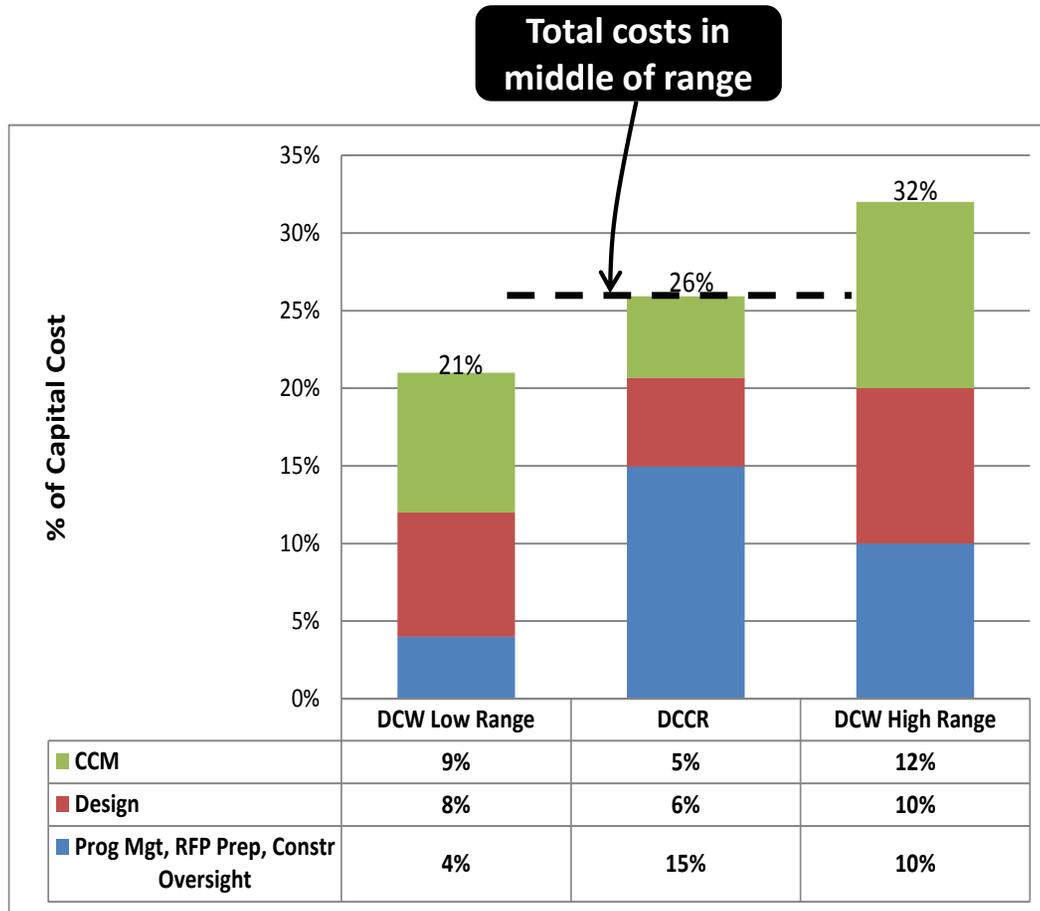
2009-2018:



Proposed Change beginning 2019:



Benchmarking: Clean Rivers Planning/Engineering/CM Costs vs. DC Water Typical Ranges for Work Outside of Blue Plains



Services Assigned to DCCR Program Management

Activity
1. Program Administration
2. Operational Plan & Hydraulic design
3. Establish Design and Guidelines for tunnels and GI
4. Right of way and easements acquisitions
5. Agency coordination and permits
6. Subsurface boring program
7. Geotechnical investigations, boring, testing and interpretation
8. Geotechnical Data and Baseline Reports
9. Environmental Data and Baseline Reports
10. Risk management planning
11. Cost estimating
12. Financial planning, budget development
13. Design consultants & construction mgrs monitoring & quality control
14. Public and other third party outreach
15. NEPA documentation
16. Regulatory/permitting assistance



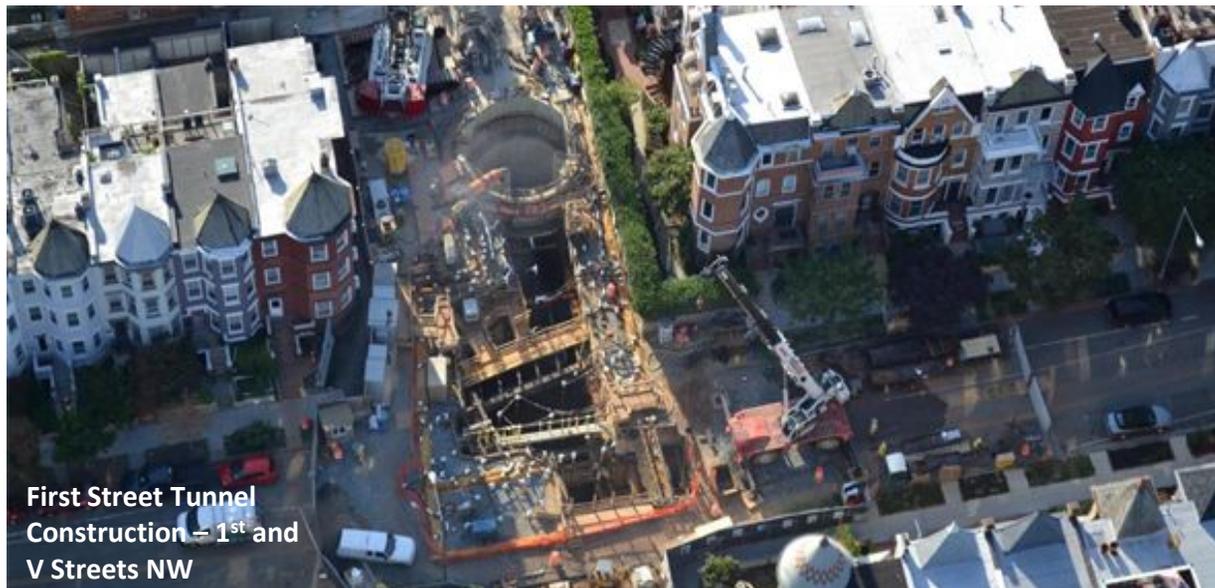
Clean Rivers Project is not typical of Work Outside the Fence

Typical work outside the fence

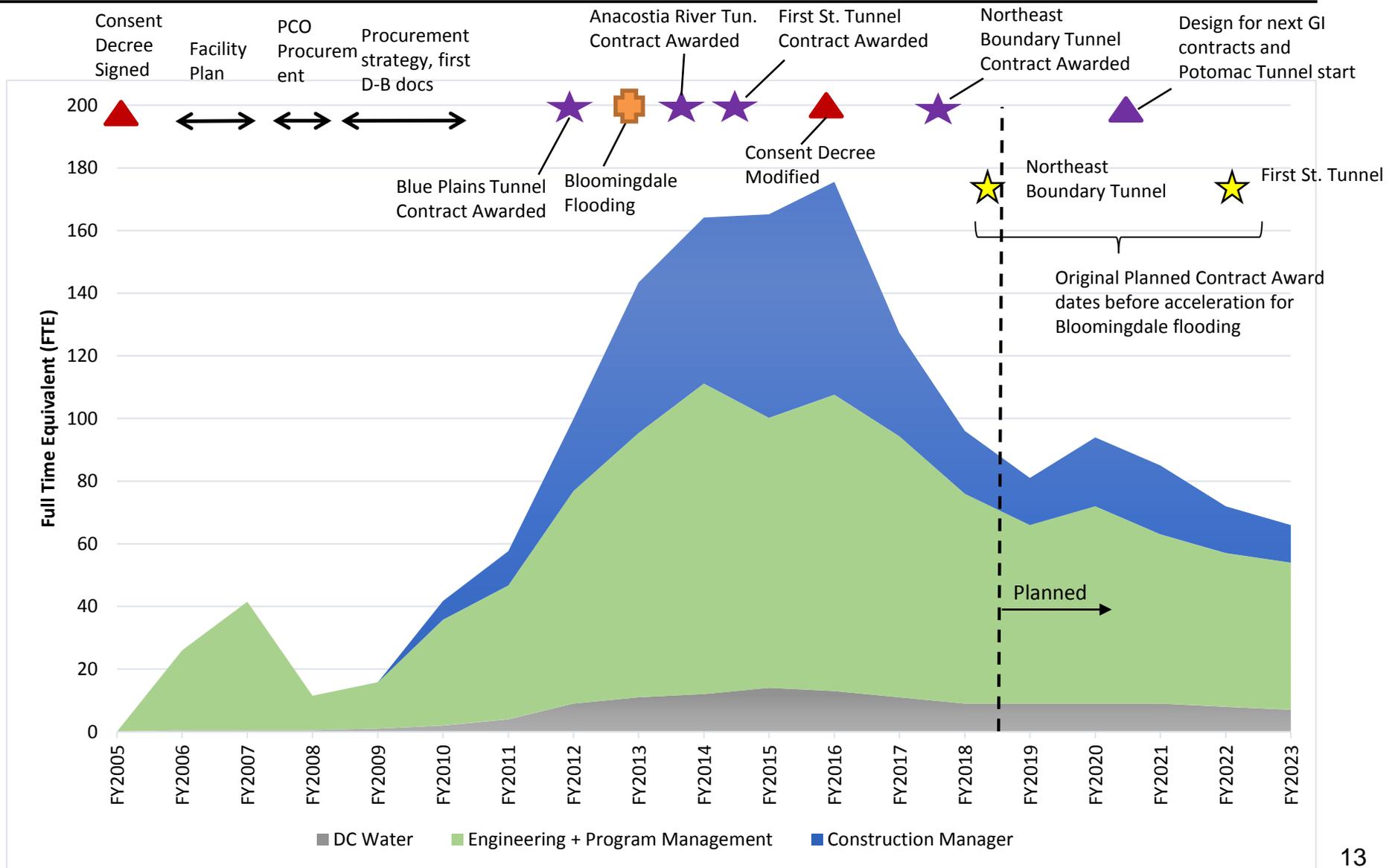
- Relatively short duration water and sewer work
- Public impacts are limited
- Relatively low flows/small lines

Clean Rivers Project

- Long duration
- Significant impact at a few sites
- High flows/very large sewers



Management Approach allows Program Staffing to Change to Match Needs



PAST PERFORMANCE



Past Performance

Anacostia Tunnel Performance (March 20 – June 3, 2018)

Schedule

- Met all Consent Decree Facility Milestones to date, including 3/23/2018 deadline for Anacostia

MBE/WBE (as of 5/30/18)

- Design & PM: MBE/WBE awards of 32%/6% vs goals of 28%/4%.
Total awards = \$119 M
- Construction: MBE/WBE awards of 35%/5% vs goals of 32%/6%.
Total awards = \$323 M

Safety

- More than 1.6 million work hours on Blue Plains Tunnel without a lost time accident

Permits, Easements & MOUs

- 44 easements, 61 agreements and MOUs
- More than a thousand permits

Bloomingtondale

- Developed and implemented plan to provide early relief for Bloomingtondale flooding

Schedule Extension

- Developed Green Infrastructure plan, secured Consent Decree modification extending implementation period by 5 years

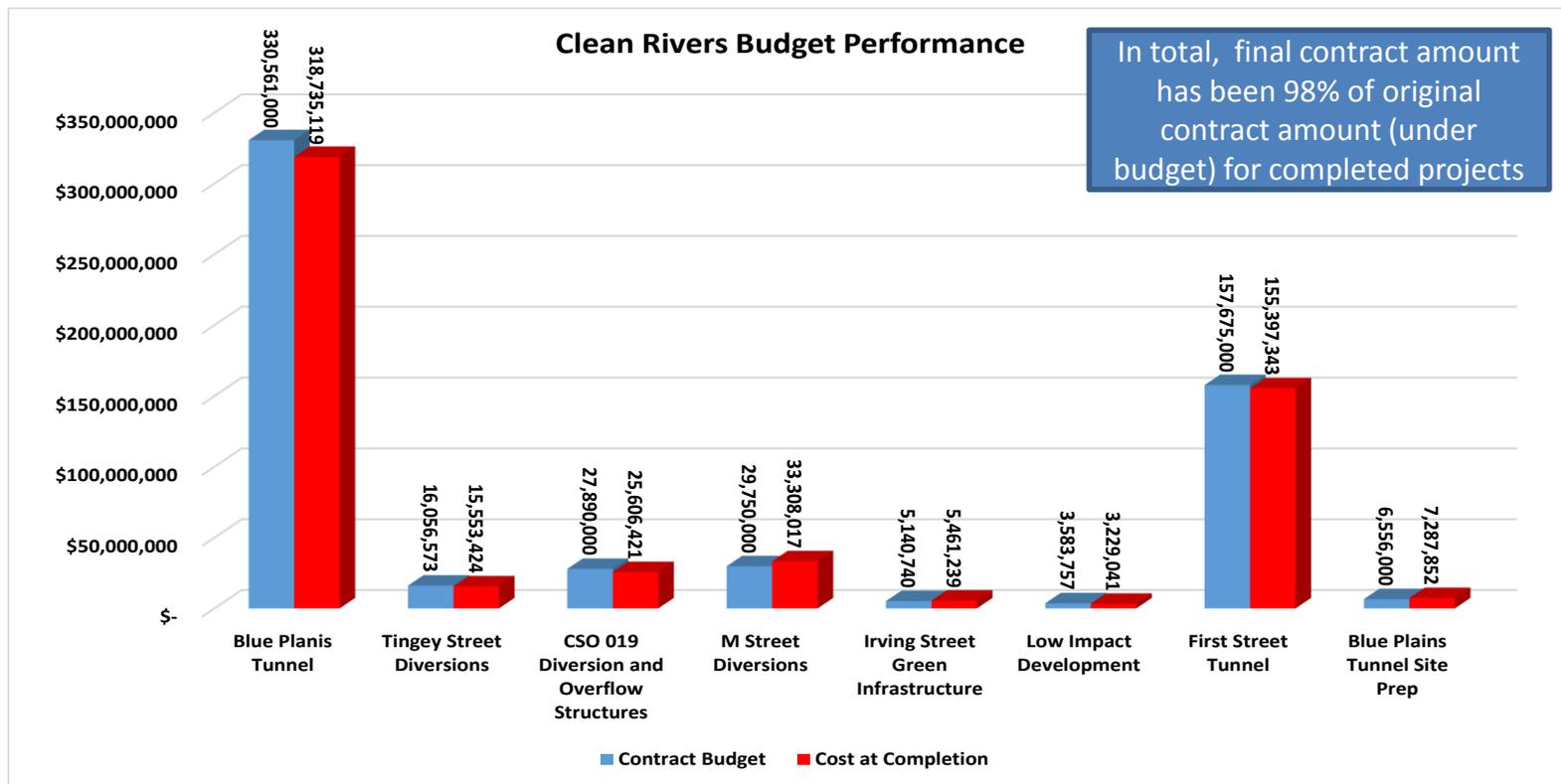
No.	Date	Rainfall, avg of 4 gages (in)	Volume Captured by Tunnel (MG)	Measured Overflow (MG)	% captured
1	Mar 20, 2018	0.59"	20	0	100%
2	Apr 16, 2018	1.81"	181	10	95%
3	Apr 24-25, 2018	0.72"	23	0	100%
4	Apr 27, 2018	0.68"	45	0	100%
5	May 13-May 20, 2018	5.71"	651	4	99%
6	May 22 2018	1.05"	128	5	96%
7	May 31-Jun 1 2018	0.89"	86	4	96%
8	Jun 3, 2018	1.57"	224	89	72%
Total		13.02"	1,358	112	92%



Trash removed by Fine Screenings at Wet Weather Treatment Facility

Budget Performance

- Budget performance in managing active contracts has been excellent
- Overall , projects are under within budget
- Risk and Contract Management approaches are effective



Program Success

Innovation

1

Meet new Nitrogen limit in NPDES permit by extending Tunnel to Blue Plains, ENR designed for 555 mgd , not 740 mgd



2

Eliminated Potomac Tunnel Dewatering Pumping Station



Benefit

- Saved more than \$850 M
 - Saved space, reduced complexity at Blue Plains
 - Makes plan expandable
 - Provides redundancy for pumping stations & allows rehab of stations & sewers – reduces capital costs
-
- Saves more than \$2.8 M/yr (\$28 M in 10 yrs), in O&M and capital reinvestment
 - Simplifies system, reduces staffing needs
 - Provides redundancy for Potomac and Rock Creek PS and sewers

Program Success

Innovation

- 3 Amended Decree extends Potomac Tunnel by 5 Years



- 4 Eliminated Swirl Facility and Str 24 Inflatable Dams



Benefit

- Deferred more than \$400 M in spending from FY16-FY25 which allows increased spending on water, sewer and wastewater projects
- Provides flexibility for capital planning
- Reduces costs, estimated at about \$1M/yr (based on 5% of Distribution & Conveyance Dept. O&M budget in FY16)
- Reduces risk of flooding & regulatory noncompliance and system complexity
- Reduces staffing needs

Program Success

Innovation

5 Bloomingdale Flooding relief



6 Kennedy Center CSO 021



Benefit

- District to pay \$58M for First St. Tunnel & McMillan facilities (\$5.8M annual payment)
 - Established phased approach to flood relief by constructing facilities in a different sequence
 - Does not “waste” money on temporary measures
 - Recent storms – no flooding in area served by First St Tunnel
-
- Saved \$13M + probably double in lost revenues and from Kennedy Center shows and probable damages to Kennedy Center Grounds
 - Diversion not practically constructible after Expansion completed
 - Provides easements at no cost to DC Water
 - Costs and negotiations performed by Clean Rivers on behalf of other departments

PROCUREMENT



Procurement Process



Due Diligence Evaluation

Criteria in RFP	Finding
Professional qualifications necessary for satisfactory performance	✓
Specialized experience and technical competence of firm and proposed personnel	✓
Capacity to perform work	✓
Past Performance on contracts with DC Water and others	✓
Familiarity with types of problems applicable and means for resolution	✓
Avoidance of personal and organizational conflicts of interest	✓
Commitment to MBE/WBE and CBE goals	✓
Proposed method to accomplish the work	✓

- The proposed Greeley and Hansen team is composed of firms serving on both the current Program Management contract and the current Tunnels and General Consultant for Tunnels and Geotechnical Engineering Contract



What have we done to reduce costs?

- Combined Program Manager and General Consultant for Tunnels and Geotechnical Engineering into one contract – reduces administrative costs
- Assigned construction management roles to program manager to reduce CM costs
- Used lessons learned and experience on Blue Plains Tunnel, Anacostia River Tunnel and First Street Tunnel to structure project and estimate engineering costs
- Reduced staffing in program manager by combining positions – **staff reduced by half compared to peak of program**
- Structured approaches to:
 - Risk management
 - Permitting
 - Environmental compliance
- Use procurement approach that provides for collaboration with bidding contractors to reduce unknowns, manage risks and obtain the best ideas for construction
- Set contract term at 3 years to better manage costs with two option years



Additional DC Water Evaluations

- Would reissuing the procurement result in additional competition?
 - Unlikely, due to the specialized experience required
 - Reissuing would also result in delays, jeopardizing meeting schedule deadlines

- Would restructuring the nature of the contract result in a more economical cost?
 - Unlikely. There would be substantial costs associated with bringing a new team up to speed and on board that would increase costs.
 - Further, DC Water has significant experience on the cost to perform the services required and this was used in the negotiations to assure fair value

- Should DC Water move ahead?
 - Staff recommendation is yes.
 - Not moving ahead means DC Water will need to perform work with in-house staff or with new hires. Skill sets for this specialty work do not exist in-house and would be difficult to hire quickly.
 - Would be difficult to reduce DC Water staff when no longer needed
 - Exposes DC Water to risk of not meeting consent decree deadlines
 - Costs will be incurred in other areas at higher levels



INTERMUNICIPAL AGREEMENT COST ALLOCATION



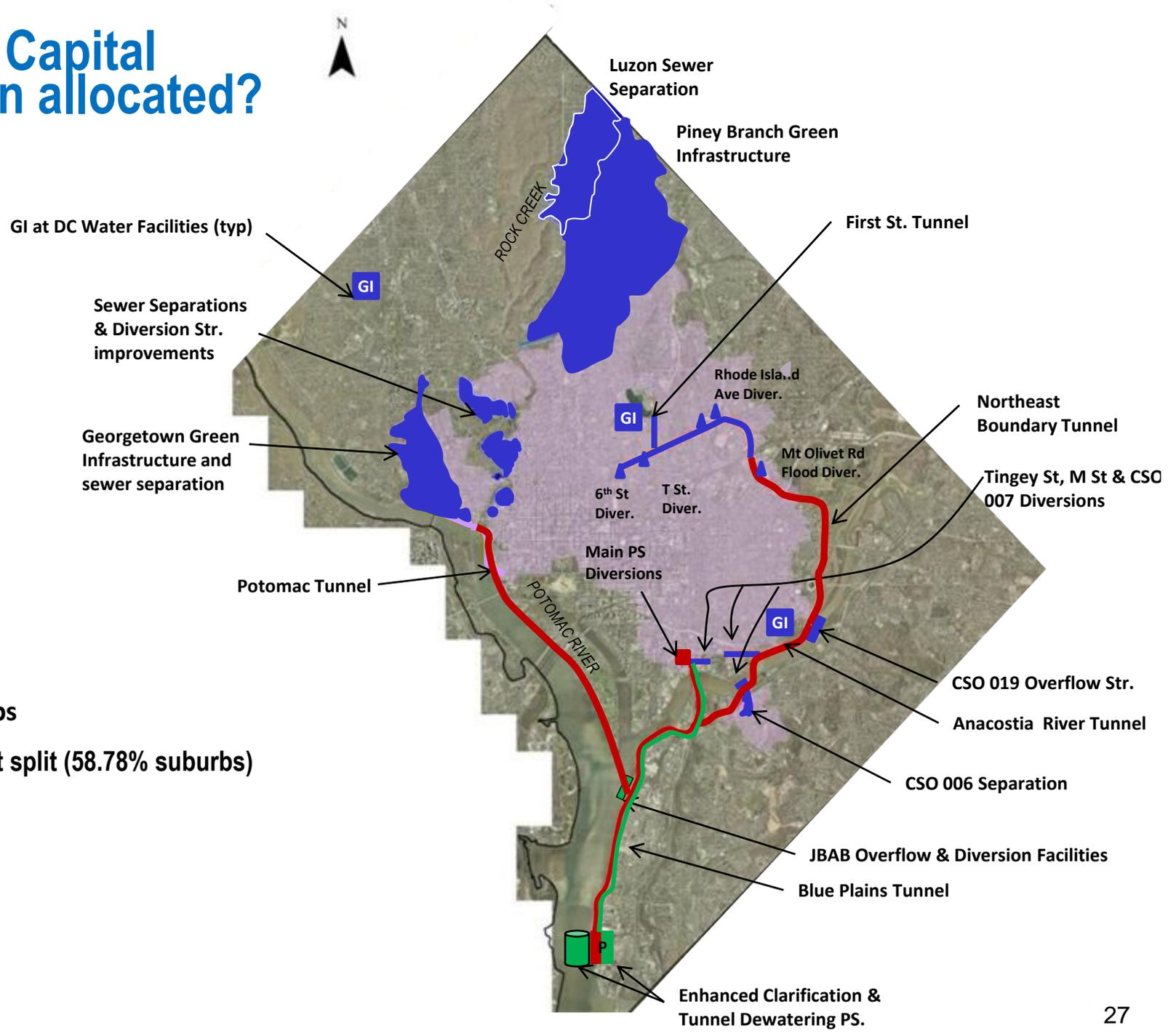
2012 Intermunicipal Agreement

- Multi-Jurisdictional Use Facilities (MJUF)
 - DC Water shall make determinations of the extent to which any facility is utilized by one or more entities and is, therefore, a MJUF; (Sect 5.B.1)
 - Regional Committee recommends cost allocations to Leadership Committee for approval

- Operating Agreement #2, Section 3:
 - Suburbs pay proportionate share of capital cost of portion of LTCP determined to be MJUF (7.1%)

How have Capital Costs been allocated?

- Legend**
- DC only
 - 7.1% suburbs
 - 370 mgd cost split (58.78% suburbs)



Proposed Cost Allocation

Task	Estimated Amount	Rationale for Allocation
Anacostia Div J Northeast Boundary Tunnel	\$ 23,884,895	Follow Div J Construction: 47% allocated at 7.1% (CSO 019 to W St), 53% allocated to DC only (W St to 6 th and R Street to address District flooding.
Potomac River Tunnel	\$ 21,183,905	7.1% suburbs
Potomac CSO 025/026 Sewer Separation	\$ 2,737,944	DC Only
Potomac River GI	\$ 4,880,196	DC Only
Rock Creek GI	\$ 7,806,339	DC Only
Subtotal	\$ 60,453,279	
Shared Services: Program Controls, Regulatory, Asset Management and other shared services	\$ 15,248,789	Using Long Term Control Plan Engineering Program Management (LTEM) split (5.09% suburbs). This cost split was developed at start of program for services that were difficult or administratively impractical to attribute to one particular project.
Grand Total	\$ 75,702,068	



Total Combined Allocation

User	Share %	Dollar Amount
District of Columbia	95.94%	\$72,626,143.24
Federal Funds	0.00%	\$0.00
Washington Suburban Sanitary Commission	3.17%	\$2,399,838.64
Fairfax County	0.58%	\$435,415.56
Loudoun County & Potomac Interceptor	0.32%	\$240,670.57
Total Estimated Dollar Amount	100.00%	\$75,702,068.00



Recommendation

- It is the Contracting Officer's recommendation that Greeley and Hansen LLC be awarded the Professional Services contract in the amount of \$75,702,068.00 (Award Amount)

**DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS CONTRACTOR FACT SHEET**

ACTION REQUESTED

**TO ADD FUNDS TO GOODS AND SERVICES MODIFICATION
For Temporary Staffing Services
(Joint Use)**

Approval to add funds to the contract 16-PR-HCM-44-AC, for Temporary Staffing Services in the amount of \$240,000.00.

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME: MB Staffing Services LLC 819 7 th St. Suite 311 Washington DC, 20001 LSBE	SUBS:	PARTICIPATION: N/A
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DESCRIPTION AND PURPOSE

Original Contract Value:	\$200,000.00
Original Contract Dates:	11/01/2016 – 10/31/2017
No. of Option Years in the contract:	1
Contract Modification No. 1 Value:	\$36,400.00
Contract Modification No. 1 Dates:	04/01/2017 – 10/31/2017
Contract Modification No. 2 Value:	\$283,512.31
Contract Modification No. 2 Dates:	06/01/2017 – 10/31/2017
Option Year No.1 Value:	\$400,000.00
Option Year No.1 Dates:	11/01/2017 – 10/31/2018
Contract Modification No. 4 Value:	\$250,000.00
Contract Modification No. 4 Dates:	02/15/2017 – 10/31/2018
Contract Modification No. 5 Value:	\$268,859.20
Contract Modification No. 5 Dates:	03/19/2017 – 10/31/2018
Contract Modification No. 6 Value:	\$140,830.40
Contract Modification No. 6 Dates:	05/21/2017 – 10/31/2018
Contract Modification No. 7 Value:	\$240,000.00
Contract Modification No. 7 Dates:	06/07/2017 – 10/31/2018

Purpose of the Contract:

The Contract for Temporary Staffing Services for DC Water is managed by the Department of Human Capital Management. Departments submit their individual requests to procurement for temporary staffing services as their need arises. Currently, External Affairs, Permit Operations, Finance, Waste Water Services, Board of Directors, Fleet and Procurement are using the contract.

Contract Modification:

This action is to modify the existing contract by adding additional funds to the temporary staffing contract. The additional funds are specifically for the Departments of Fleet and Water Services. This option will incur an additional contract cost of \$240,000.00.

The modification is needed for these departments:

- Fleet: to extend contract for the CDL Program temporary personnel.
- Water Services: to extend contract for their current business analyst in their business office.

Spending Previous Year:

Cumulative Contract Value:	11-01-2016 to 05-25-2018: \$ 1,579,601.91
Cumulative Contract Spending:	11-01-2016 to 05-25-2018: \$ 1,454,601,91

Contractor's Past Performance:

According to the COTR, the Contractor's quality and timeliness of deliverables, conformance to DC Water's policies, procedures and contract terms, and invoicing; all meet expectations and requirements.

PROCUREMENT INFORMATION

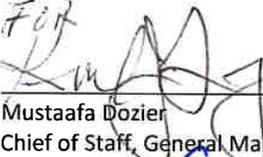
Contract Type:	Fixed Hourly Rate	Award Based On:	Highest Ratings
Commodity:	Good and Services	Contract Number:	16-PR-HCM-44-AC
Contractor Market:	Open Market with Preference Points for LBE and LSBE Participation		

BUDGET INFORMATION

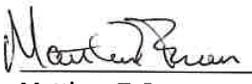
Funding:	Operating	Department:	HCM
Project Area:	DC Water Wide	Department Head:	Roger Brown

ESTIMATED USER SHARE INFORMATION

User - Operating	Share %	Dollar Amount
District of Columbia	41.90%	\$ 100,560
Washington Suburban Sanitary Commission	43.10%	\$ 103,440
Fairfax County	9.59%	\$ 23,016
Loudoun Water	4.64%	\$ 11,136
Other (PI)	0.77%	\$ 1,848
TOTAL ESTIMATED DOLLAR AMOUNT	100.00%	\$ 240,000

FOT

 Mustafaafa Dozier Date 6/15/18
 Chief of Staff, General Manager


 Dan Bae Date 6/15/17
 Director of Procurement


 Matthew T. Brown Date 6/15/18
 Chief Financial Officer

 David Gadis Date _____
 CEO/General Manager

**DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS CONTRACTOR FACT SHEET**

ACTION REQUESTED

**ENGINEERING SERVICES
DC CLEAN RIVERS PROJECT
PROGRAM MANAGEMENT FOR PROFESSIONAL ENGINEERING SERVICES
(Joint Use)**

Approval to execute an architectural and engineering services contract for \$75,702,068.00

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:	PARTICIPATION:
Greeley and Hansen LLC 5301 Shawnee Road Suite 400 Alexandria, VA 22312 <u>Headquarters</u> Chicago, IL	MBE/WBE/CBE Eligible Amounts: Tunnel and Shared Services \$ 63,015,533.00 MBE \$ 17,644,349.24 WBE \$ 2,520,621.32 Green Infrastructure Services \$ 12,686,535.00 CBE \$ 6,343,267.50 Total Eligible \$ 75,702,068.00 MBE/WBE/CBE Total \$ 26,508,238.06 See Attachment A for List of MBE/WBE/CBE Subcontractor Participation	 28.0% 4.0% 50.0%

DESCRIPTION AND PURPOSE

Contract Value, Not-To-Exceed: \$75,702,068.00
 Contract Time: 1,095 Days (3 Years, 0 Months)*
 Anticipated Contract Start Date: 10-01-2018
 Anticipated Contract Completion Date: 09-30-2021

* Agreement also provides for 2 option years

Other firms submitting proposals/qualification statements:
 None**

** Only Greeley and Hansen LLC responded and was shortlisted

Purpose of the Contract:

The purpose of the Professional Services is to assist DC Water and Sewer Authority in the continuing implementation of its Long Term Control Plan (LTCP) to control combined sewer overflow (CSO) discharges to the Anacostia and Potomac Rivers and Rock Creek, and to reduce flooding in the Northeast areas of the District. The DC Clean Rivers (DCCR) department is the organization responsible for managing and overseeing the implementation of the LTCP.

This work is required by a Consent Decree.

Contract Scope:

- Provide all necessary resources and technical services for managing multiple planning, design, procurement, contracting, construction management, execution and oversight functions of the DCCR Project to achieve a unified and coordinated planning, design and construction program that complies with all the requirements of the amended Consent Decree and the NPDES Permit.

Federal Grant Status:

- The engineering services contract may be funded in part by congressional appropriations, if additional funding becomes available.

PROCUREMENT INFORMATION

Contract Type:	Cost Plus Fixed Fee	Award Based On:	Highest Ranking Score
Commodity:	Professional Services	Contract Number:	DCFA #493-WSA
Contractor Market:	Open Market		

BUDGET INFORMATION

Funding:	Capital	Department:	DC Clean Rivers Project
Service Area:	Combined Sewer Overflow	Department Head:	Carlton Ray
Project:	CY, CZ, DZ		

ESTIMATED USER SHARE INFORMATION

CY – Allocation (LTCP- Div. J-NEBT: CSO 019 to W Street)

User	Share %	Dollar Amount
District of Columbia	92.90%	\$ 10,411,396.50
Federal Funds***	0.00%	\$
Washington Suburban Sanitary Commission	5.54%	\$ 620,873.38
Fairfax County	1.01%	\$ 113,191.72
Loudoun County & Potomac Interceptor	0.55%	\$ 61,639.05
Total Estimated Dollar Amount	100.00%	\$ 11,207,100.65

CY – Allocation (CAPM Div. J-NEBT: W Street to R Street)

User	Share %	Dollar Amount
District of Columbia	100.00%	\$12,637,794.35
Federal Funds***	0.00%	\$
Washington Suburban Sanitary Commission	0.00%	\$
Fairfax County	0.00%	\$
Loudoun County & Potomac Interceptor	0.00%	\$
Total Estimated Dollar Amount	100.00%	\$12,637,794.35

CY – Allocation (Long Term Engineering Management (LTEM) Shared Services)

User	Share %	Dollar Amount
District of Columbia	94.91%	\$14,472,625.64
Federal Funds***	0.00%	\$
Washington Suburban Sanitary Commission	3.97%	\$ 605,376.92
Fairfax County	0.71%	\$ 108,266.40
Loudoun County & Potomac Interceptor	0.41%	\$ 62,520.04
Total Estimated Dollar Amount	100.00%	\$15,248,789.00

CZ – Allocation (LTCP – Potomac River Tunnel)

User	Share %	Dollar Amount
District of Columbia	92.90%	\$19,679,847.74
Federal Funds***	0.00%	\$
Washington Suburban Sanitary Commission	5.54%	\$ 1,173,588.34
Fairfax County	1.01%	\$ 213,957.44
Loudoun County & Potomac Interceptor	0.55%	\$ 116,511.48
Total Estimated Dollar Amount	100.00%	\$21,183,905.00

CZ – Allocation (CAPM – Potomac Green Infrastructure)

User	Share %	Dollar Amount
District of Columbia	100.00%	\$7,618,140.00
Federal Funds***	0.00%	\$
Washington Suburban Sanitary Commission	0.00%	\$
Fairfax County	0.00%	\$
Loudoun County & Potomac Interceptor	0.00%	\$
Total Estimated Dollar Amount	100.00%	\$7,618,140.00

DZ – Allocation (CAPM – Rock Creek Green Infrastructure)

User	Share %	Dollar Amount
District of Columbia	100.00%	\$7,806,339.00
Federal Funds***	0.00%	\$
Washington Suburban Sanitary Commission	0.00%	\$
Fairfax County	0.00%	\$
Loudoun County & Potomac Interceptor	0.00%	\$
Total Estimated Dollar Amount	100.00%	\$7,806,339.00

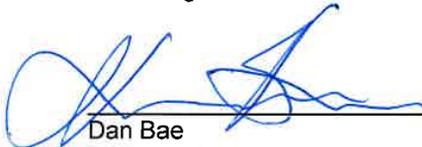
Total Combined Allocation

User	Share %	Dollar Amount
District of Columbia	95.93%	\$72,626,143.23
Federal Funds***	0.00%	\$
Washington Suburban Sanitary Commission	3.17%	\$ 2,399,838.64
Fairfax County	0.58%	\$ 435,415.56
Loudoun County & Potomac Interceptor	0.32%	\$ 240,670.57
Total Estimated Dollar Amount	100.00%	\$75,702,068.00

*** Eligible for Federal Appropriation Funding. Appropriation funding is insufficient to fund all eligible contracts. Federal Appropriations Funding may be used if additional funding becomes available or if other eligible projects are postponed.


 Leonard R. Benson
 Chief Engineer
 Date: 6-12-18


 Matthew T. Brown
 Chief Financial Officer
 Date: 6/15/18


 Dan Bae
 Director of Procurement
 Date: 6/15/18

 David L. Gadis
 CEO and General Manager
 Date: /

**ENGINEERING SERVICES CONTRACT DCFA#493
PROGRAM MANAGEMENT FOR PROFESSIONAL ENGINEERING SERVICES
ATTACHMENT A- SUBCONTRACTOR LISTING
PARTICIPATION AND DOLLAR AMOUNT**

SUB CONSULTANTS	MBE/WBE/CBE	PARTICIPATION	AMOUNT
<u>CBE Applicable to GI-Dedicated Services</u>			
Delon Hampton & Associates Washington, DC	CBE	20.00%	\$2,537,307.00
Mckissack & Mckissack Washington, DC 20001	CBE	20.00%	\$2,537,307.00
Soil & Land Use Technology, Inc. Washington, DC 20002	CBE	10.00%	\$1,268,653.50
<u>MBE/WBE Applicable to Tunnel and Shared Services:</u>			
Shrewsberry & Associates, LLC Indianapolis, IN 46256	MBE	6.00%	\$3,780,931.98
JCK Underground Boston, MA 02205	MBE	5.00%	\$3,150,776.65
Mckissack & Mckissack Washington, DC 20001	MBE	5.00%	\$3,150,776.65
Delon Hampton & Associates Washington, DC 20001	MBE	3.00%	\$1,890,465.99
Interagency Rockville, MD 20850	MBE	3.00%	\$1,890,465.99
MNK Consultant Woodbridge, VA 22192	MBE	3.00%	\$1,890,465.99
TBD ⁽¹⁾	MBE	3.00%	\$1,890,465.99
J-Dos International Washington, DC 20011	WBE	2.00%	\$1,260,310.66
LS Caldwell & Associates, Inc. Washington, DC 20011	WBE	1.00%	\$ 630,155.33
DP Consultants Washington, DC 20005	WBE	0.70%	\$ 441,108.73
P&B Risk Management Bristow, VA 20136	WBE	0.30%	\$ 189,046.60

**ENGINEERING SERVICES CONTRACT DCFA#493
PROGRAM MANAGEMENT FOR PROFESSIONAL ENGINEERING SERVICES
ATTACHMENT A- SUBCONTRACTOR LISTING
PARTICIPATION AND DOLLAR AMOUNT**

SUB CONSULTANTS	MBE/WBE/CBE	PARTICIPATION	AMOUNT
<u>None-MBE/ WBE Sub Consultants</u>			
AECOM ⁽²⁾ Arlington, VA	N/A		\$
Cliff Forrester LLC ⁽²⁾ Young Harris, GA	N/A		\$
Hazen & Sawyer ⁽²⁾ Fairfax, VA	N/A		\$
Infrastructure Project Services ⁽²⁾ Vienna, VA	N/A		\$
JA Underground ⁽²⁾ San Francisco	N/A		\$
Johnson, Miriam & Thompson ⁽²⁾ Hunt Valley, MD	N/A		\$
LandQuest Ventures ⁽²⁾ Leesburg, VA	N/A		\$
Limno-Tech, Inc. ⁽²⁾ Washington, DC	N/A		\$
Mueser Rutledge Consulting Engineers ⁽²⁾ Washington, DC	N/A		\$
Stantec Consulting ⁽²⁾ Laurel, MD	N/A		\$
Wallace Roberts & Todd ⁽²⁾ Philadelphia, PA	N/A		\$

Notes:

- (1) A competitive procurement will be held to select an MBE firm to perform geotechnical investigations/drilling. If an MBE driller is not selected, the share of others on the team will be increased to meet the 28% MBE goal.
- (2) The level of participation of these Sub Consultants depends on the nature of services required to implement the project.

**DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS CONTRACTOR FACT SHEET**

ACTION REQUESTED

ENGINEERING SERVICES:

**Water, Sewer & Wastewater Treatment Facilities
Basic Ordering Agreement 7
(Joint Use)**

Approval to execute an architectural and engineering services contract for \$6,000,000.

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:	PARTICIPATION:
Whitman, Requardt & Associates, LLP 801 South Caroline Street, Baltimore, MD 21231	C. C. Johnson and Malhotra, P.C. Rockville, MD	MBE 13.0%
	Savin Engineers, PC Pleasantville, NY	MBE 8.0%
	EPCM, Inc. Burke, VA	MBE 5.0%
	E2CR, Inc Baltimore, MD	MBE 2.0%
	Albrecht Engineering Baltimore, MD	WBE 3.0%
	Phoenix Parkton, MD	WBE 1.0%

DESCRIPTION AND PURPOSE

Contract Value, Not-To-Exceed: \$6,000,000
 Contract Time: 1826 Days (5 Years)
 Anticipated Contract Start Date (NTP): 09-03-2018
 Anticipated Contract Completion Date: 09-03-2023
 Other firms submitting proposals/ qualification statements:
 ARCADIS Hazen & Sawyer, PC*
 CH2M Hill Engineers JMT*
 Gannett Fleming Engineers & Architects, PC O'Brien & Gere Engineers, PC *
 GDH Inc.

* Asterisk indicates short listed firms.

Purpose of the Contract:

To provide professional architectural/engineering and related services for the DC Water Facilities on an as-needed basis through individually negotiated task orders.

Contract Scope:

- Work will be accomplished under a series of definitive Task Orders. Each Task Order will identify the scope of work, deliverables, compensation, and schedule for performing the task. The task orders will provide engineering and technical studies, concept designs, final designs, and services during bid and construction phases as needed.
- Professional services are anticipated in the following disciplines and support services: civil, structural, architectural, mechanical process, HVAC, instrumentation and control, electrical and support activities such as value engineering studies, preparation of standard specifications, surveys, and subsurface investigations.
- Projects will include upgrades and additions to various DC Water facilities.

PROCUREMENT INFORMATION

Contract Type:	Cost plus fixed fee/ Lump Sum	Award Based On:	Highest Ranking Score.
Commodity:	Engineering Design Services	Contract Number:	DCFA #494-WSA
Contractor Market:	Open Market		

BUDGET INFORMATION

Funding:	Capital	Department:	Wastewater Engineering
Service Area:	Water, Sewer, Sanitary, CSO	Department Head:	Diala Dandach
Project:	BC, J2, PF, LD, BT, I5		

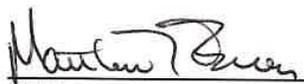
****USER SHARE INFORMATION**

User	Share %	Dollar Amount
District of Columbia	41.22%	\$ 2,473,200.00
Washington Suburban Sanitary Commission	45.84%	\$ 2,750,400.00
Fairfax County	8.38%	\$ 502,800.00
Loudoun County & Potomac Interceptor	4.56%	\$ 273,600.00
Total Estimated Dollar Amount	100.00%	\$ 6,000,000.00

** Work under this contract will be assigned as needed under specific task orders. It is anticipated that Joint Use work may be assigned during the contract period. As tasks are developed for work associated with specific facilities and costs are developed, the individual users will be notified and billed according to agreed cost sharing.

 _____, 6-12-18
 Leonard R. Benson Date
 Chief Engineer

 _____, 6/15/18
 Dan Bae Date
 Director of Procurement

 _____, 6/15/18
 Matthew T. Brown Date
 Chief Financial Officer

_____, _____
 David L. Gadis Date
 CEO and General Manager

**DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS CONTRACTOR FACT SHEET**

ACTION REQUESTED

GOODS AND SERVICES CONTRACT OPTION YEAR

**Hauling & Disposal of Excavation Spoils & Debris
(Non-Joint Use)**

Approval to exercise option year two (2) for the hauling of catch basin and excavation spoils in the amount of \$420,000.00.

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME: Rodgers Brothers Custodial Service, Inc. 2230 Lawrence Avenue, NE Washington, DC 20018 LSBE	SUBS: N/A	PARTICIPATION: N/A
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DESCRIPTION AND PURPOSE

Original Contract Value:	\$696,500.00
Original Contract Dates:	07/01/2016 – 07/31/2017
No. of Option Years in Contract:	2
Option Year 1 Value:	\$108,284.57
Option Year 1 Dates:	08/01/2017 – 07/31/2018
Option Year 2 Value:	\$420,000.00
Option Year 2 Dates:	08/01/2018 – 07/31/2019

Purpose of the Contract:

This contract provides DC Water’s Department of Sewer Services (DSS) with hauling/disposal services for excavation spoils, catch basin debris, floatable debris, trees, brush, log stumps, and general tree/wood material from various DC Water sites to landfills.

Contract Scope:

The Contractor shall provide all labor, management, supervision, personnel, and equipment required to load, haul and dispose of waste material including construction/excavation spoils, catch basin debris, floatable debris, trees, brush, log stumps and general tree/wood, mechanical street sweeping debris, junk, tires, metal, dirt, leaves, and mixed trash (collectively “Waste Material”) from DC Water sites. The Contractor shall also provide roll off containers for collection of floatable debris.

Spending Previous Year:

Cumulative Contract Value:	07/01/2016 to 07/31/2018: \$804,784.57
Cumulative Contract Spending:	07/01/2016 to 05/18/2018: \$690,481.43

Contractor’s Past Performance:

According to the COTR, the Contractor’s quality of workmanship; timeliness of deliverables; conformance to DC Water’s policies, procedures and contract terms; and invoicing all meet expectations.

PROCUREMENT INFORMATION

Contract Type:	Fixed Price	Award Based On:	Best Value
Commodity:	Services	Contract Number:	16-PR-DSS-32
Contractor Market:	Open Market with Preference Points for LBE and LSBE participation		

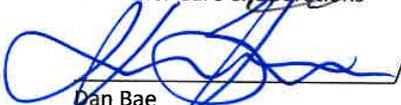
BUDGET INFORMATION

Funding:	Operating	Department:	DSS
Service Area:	Various Sites	Department Head:	Cuthbert Braveboy

ESTIMATED USER SHARE INFORMATION

User	Share %	Dollar Amount
District of Columbia	100	\$420,000.00
Washington Suburban Sanitary Commission	0	-
Fairfax County	0	-
Loudoun Water	0	-
Other (PI)	0	-
TOTAL ESTIMATED DOLLAR AMOUNT	100.00	\$420,000.00


 Charles Kiely
 Assistant General Manager,
 Customer Care & Operations
 Date 6/8/18


 Dan Bae
 Director of Procurement
 Date 6/8/18


 Matthew T. Brown
 Chief Financial Officer
 Date 6/12/18

 David L. Gadis
 General Manager and CEO
 Date

**DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS CONTRACTOR FACT SHEET**

ACTION REQUESTED

CONSTRUCTION CONTRACT:

**Small Diameter Water Main Replacement 13A
(Non-Joint Use)**

Approval to execute a construction contract for \$4,674,778.00

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:	PARTICIPATION:
Capital Paving of D.C., Inc. 2211 Channing Street, NE Washington, DC 20018	Aves Construction Corp. Temple Hills, MD MBE	32.0%
	Acorn Supply & Distributing, Inc. White Marsh, MD WBE	6.0%

DESCRIPTION AND PURPOSE

Contract Value, Not-To-Exceed:	\$4,674,778.00
Contract Time:	310 Days (0 Years, 10 Months)
Anticipated Contract Start Date (NTP):	10-01-2018
Anticipated Contract Completion Date:	08-07-2019
Bid Opening Date:	11-01-2017
Bids Received:	7
Other Bids Received	
Sagres Construction Corp.	\$ 5,333,735.00
Civil Construction, LLC	\$ 5,445,036.00
Ft. Myer Construction Corp.	\$ 5,524,859.31
Anchor Construction Corp.	\$ 5,664,269.00
Garney Companies, Inc.	\$ 5,953,371.00
J. Fletcher Creamer & Son, Inc.	\$ 6,679,406.00

Purpose of the Contract:

Replace water mains that have experienced failures, or have a history of low water pressure or water quality complaints.

Contract Scope:

- Replace 27 LF of 12-inch, 4,700 LF of 8-inch, 615 LF of 6-inch, 990 LF of 4-inch, and 170 LF of 3-inch water mains and associated valves and appurtenances.
- Replace water services, curb stops and curb stop boxes in public space as required including replacement of any lead service lines.
- Replace private lead service lines, including penetration through building wall, connection to first fitting inside the building and installation of a shutoff valve and pressure reducing valve, as requested by property owner.
- Provide permanent pavement and surface restoration.

Federal Grant Status:

- Construction contract is eligible for Federal grant funding assistance; inclusion in grant is pending availability of grant funds.

PROCUREMENT INFORMATION

Contract Type:	Unit Price	Award Based On:	Lowest responsive, responsible bidder
Commodity:	Construction	Contract Number:	160020
Contractor Market:	Open Market		

BUDGET INFORMATION

Funding:	Capital	Department:	Engineering and Technical Services
Service Area:	Water	Department Head:	Craig Fricke
Project:	F1, BW		

ESTIMATED USER SHARE INFORMATION

User	Share %	Dollar Amount
District of Columbia	100.00%	\$ 4,674,778.00
Federal Funds *	0.00%	\$
Washington Suburban Sanitary Commission	0.00%	\$
Fairfax County	0.00%	\$
Loudoun County & Potomac Interceptor	0.00%	\$
Total Estimated Dollar Amount	100.00%	\$ 4,674,778.00

* Eligible for Federal Grant Funding at 80% of the District of Columbia share. Grant funding is insufficient to fund all eligible contracts. Federal Grant Funding may be used if additional funding becomes available or if other eligible projects are postponed

Craig D. Fricke, 6-15-18
 for Leonard R. Benson Date
 Chief Engineer

[Signature], 6/15/18
 Dan Bae Date
 Director of Procurement

Matthew T. Brown, 6/15/18
 Matthew T. Brown Date
 Chief Financial Officer

_____,
 David L. Gadis Date
 CEO and General Manager

**DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS CONTRACTOR FACT SHEET**

ACTION REQUESTED

CONSTRUCTION CONTRACT:

**Small Diameter Water Main Replacement 12b2
(Non-Joint Use)**

Approval to execute a construction contract for \$5,467,190.00

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:	PARTICIPATION:
Sagres Construction Corp. 8350 Terminal Rd. Suite A Lorton, VA 22709	Crown Construction Service, Inc. Lanham, MD MBE	14.2%
	RCE Construction LLC Springfield, VA MBE	9.1%
	Joe Epes Company, Inc. Baltimore, MD MBE	8.2%
	Deetec Engineers & Surveyors Germantown, MD MBE	0.5%
	Acorn Supply and Distributing White Marsh, MD WBE	6.0%

DESCRIPTION AND PURPOSE

Contract Value, Not-To-Exceed:	\$5,467,190.00
Contract Time:	517 Days (1 Year, 5 Months)
Anticipated Contract Start Date (NTP):	10-01-2018
Anticipated Contract Completion Date:	03-31-2020
Bid Opening Date:	11-15-2017
Bids Received:	6
Other Bids Received	
Anchor Construction Corp.	\$ 5,577,197.15
Garney Companies, Inc.	\$ 5,602,285.00
Fort Myer Construction Corp.	\$ 5,618,004.77
Capital Paving of D.C., Inc.	\$ 5,903,791.00
Civil Construction LLC.	\$ 6,424,234.00

Purpose of the Contract:

Replace water mains that have experienced failures, or have a history of low water pressure or water quality complaints.

Contract Scope:

- Replace 1,192 LF of 12-inch, 7,558 LF of 8-inch, 356 LF of 6-inch, and 322 LF of 4-inch water mains and associated valves and appurtenances.
- Replace water services, curb stops and curb stop boxes in public space as required including replacement of any lead service lines.
- Replace private lead service lines, including penetration through building wall, connection to first fitting inside the building and installation of a shutoff valve and pressure reducing valve, as requested by property owner.
- Provide permanent pavement and surface restoration.

Federal Grant Status:

- Construction contract is eligible for Federal grant funding assistance and grant funding has been awarded.

PROCUREMENT INFORMATION

Contract Type:	Unit Price	Award Based On:	Lowest responsive, responsible bidder
Commodity:	Construction	Contract Number:	170120
Contractor Market:	Open Market		

BUDGET INFORMATION

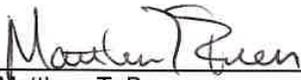
Funding:	Capital	Department:	Engineering and Technical Services
Service Area:	Water	Department Head:	Craig Fricke
Project:	DE, BW		

ESTIMATED USER SHARE INFORMATION

User	Share %	Dollar Amount
District of Columbia	40.00%	\$ 2,186,876.00
Federal Funds	60.00%	\$ 3,280,314.00
Washington Suburban Sanitary Commission	0.00%	\$
Fairfax County	0.00%	\$
Loudoun County & Potomac Interceptor	0.00%	\$
Total Estimated Dollar Amount	100.00%	\$ 5,467,190.00

 / 6-12-18
 Leonard R. Benson Date
 Chief Engineer

 / 6/15/18
 Dan Bae Date
 Director of Procurement

 / 6/15/18
 Matthew T. Brown Date
 Chief Financial Officer

_____/_____
 David L. Gadis Date
 CEO and General Manager

**DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS CONTRACTOR FACT SHEET**

ACTION REQUESTED

CONSTRUCTION CONTRACT CHANGE ORDER:

**Water Main Infrastructure Repair and Replacement Contract for FY17 - FY19
(Non-Joint Use)**

Approval to execute Change Order No. 01 not to exceed \$7,000,000. The modification will exceed the General Manager's approval authority.

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:	PARTICIPATION:
Fort Myer Construction Corporation 2237 33 rd Street, NE Washington, DC 20018	S & J Services, Inc. Hyattsville, MD MBE	32.0%
	Hybrid Construction Washington, DC WBE	6.0%

DESCRIPTION AND PURPOSE

Original Contract Value:	\$ 16,935,772.16
Value of this Change Order:	\$ 7,000,000.00 (Not to Exceed)
Cumulative CO Value, including this CO:	\$ 7,000,000.00
Current Contract Value, including this CO:	\$ 23,935,772.16
Contract Time:	1095 Days (3 Years, 0 Months)
Time Extension, this CO:	0 Days
Total CO Contract Time Extension:	0 Days
Contract Start Date (NTP):	10-01-2016
Contract Completion Date:	10-01-2019
Cumulative CO % of Original Contract:	41.3%
Contract Completion %:	73.2%

Purpose of the Contract:

To perform emergency and non-emergency water main repair and replacement work

Original Contract Scope:

- Emergency repair of water distribution assets
- Scheduled repair/replacement of water mains, valves, service lines and hydrants
- Special projects such as pipe condition assessments, internal repairs of water mains by joint seal installation or clean and line methods, pumping station/reservoir rehab projects

Current Change Order Scope:

- The volume of emergency main repairs increased dramatically this winter season. In January 2018 alone, 73 main breaks were repaired at a total cost of nearly \$1.6M. Also numerous special projects were assigned to this contract and are detailed in the bullet below. These projects were larger and more complex than the average, routine emergency repairs and as a result have greatly impacted the contract threshold. In just eighteen months from the start of a three-year-term contract, 73% of the contract value has already been exhausted. The purpose of this change order is to increase the contract cost value to offset the costs associated with these and other projects
- This contract was used to undertake numerous special projects that required urgent action including large valve installations; Anacostia PS Spill Header installation; Key Bridge Meter/Vault installation; Installation of Air Valves at Bryant St Pumping Station; M Street Corridor Pipe Condition Assessment; Joint Seal Repair of 48" Discharge Main on West Low Service at Bryant St; Fort Reno Pumping Station Leak Repair; and Internal Joint Seal Repair of 30" Water Main at Fort Stanton Reservoir. A bypass piping system was installed and

operated in conjunction with a small diameter water main replacement on 1600 block of Tuckerman St, NW.

- Additionally, 543 lead service lines have been replaced to date under the LSR Demand Program and 170 Fire Hydrants have been replaced to date.

Federal Grant Status:

- Construction Contract is not eligible for Federal grant funding assistance.

PROCUREMENT INFORMATION

Contract Type:	Unit Price	Award Based On:	Lowest responsive, responsible bidder
Commodity:	Construction	Contract Number:	160010
Contractor Market:	Open Market		

BUDGET INFORMATION

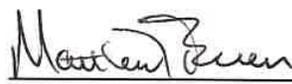
Funding:	Capital	Department:	Water Services	
Service Area:	Water	Department Head:	Jason Hughes	
Project:	GS, HY, BW			

ESTIMATED USER SHARE INFORMATION

User	Share %	Dollar Amount
District of Columbia	100.00%	\$ 7,000,000.00
Federal Funds	0.00%	\$
Washington Suburban Sanitary Commission	0.00%	\$
Fairfax County	0.00%	\$
Loudoun County & Potomac Interceptor	0.00%	\$
Total Estimated Dollar Amount	100.00%	\$ 7,000,000.00


 Charles Kiely
 Assistant General Manager,
 Customer Care & Operations
 Date: 6/8/18


 Dan Bae
 Director of Procurement
 Date: 6/15/18

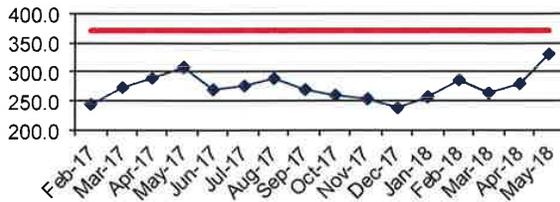

 Matthew T. Brown
 Chief Financial Officer
 Date: 6/15/18

 David L. Gadis
 CEO and General Manager
 Date

BLUE PLAINS ADVANCED WASTEWATER TREATMENT PLANT PERFORMANCE REPORT – MAY 2018

Average plant performance for the month was excellent with all effluent parameters well below the seven-day and monthly NPDES permit requirements. The monthly average influent flow to complete treatment was 330 MGD. There was 495 million gallons of treated captured combined flows directed to Outfall 001 during this period. The following figures compare the plant performance with the corresponding NPDES permit limits.

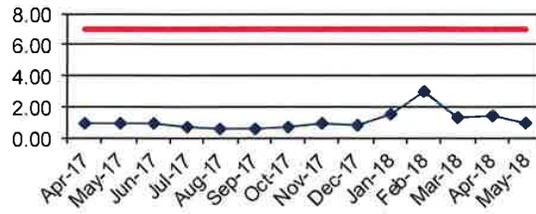
Plant Influent Flow (mgd)



■ Influent Flow — Average Design Capacity

This graph illustrates the monthly average influent flow to the plant. The design average flow is 384 MGD. Blue Plains has a 4-hour peak flow capacity of 555 MGD through complete treatment. Once the plant is at capacity, additional captured combined system flows from the tunnel up to 225 MGD receive enhanced clarification, disinfection and dechlorination.

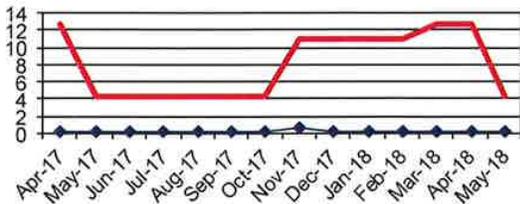
TSS (mg/l)



■ Effluent TSS — Permit Limit

Effluent Total Suspended Solids (TSS) is a measure of the amount of solid material that remains suspended after treatment. The effluent TSS concentration for the month averaged 0.94 mg/L, which is below the 7.0 mg/L permit limit.

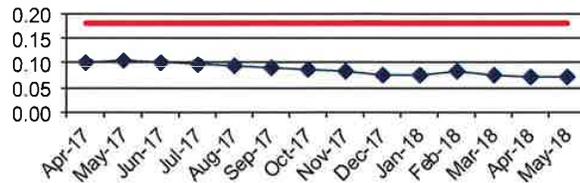
Ammonia (mg/l)



■ Effluent NH3 — Permit Limit

The Ammonia Nitrogen (NH₃-N) is a measure of the nitrogen found in ammonia. For the month, effluent NH₃-N concentration averaged 0.14 mg/L and is below the average 12.8 mg/L limit.

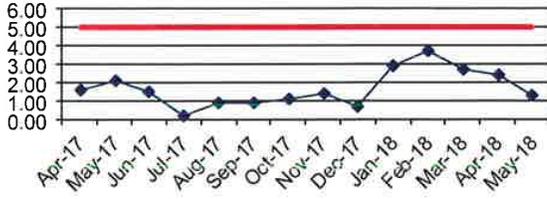
Total Phosphorus Annual Average (mg/l)



■ Effluent TP — Permit Limit

The Total Phosphorus (TP) is a measure of the particulate and dissolved phosphorus in the effluent. The annual average effluent TP concentration is 0.07 mg/L, which is below the 0.18 mg/L annual average limit.

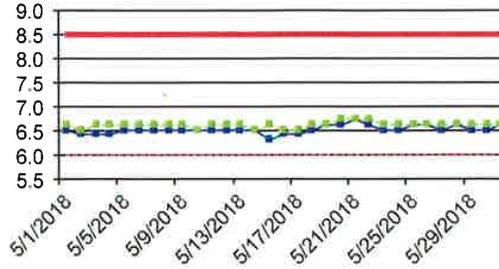
CBOD (mg/l)



■ Effluent CBOD — Permit Limit

Carbonaceous Biochemical Oxygen Demand (CBOD) is a measure of the amount of dissolved oxygen required for the decomposition of organic materials. The effluent CBOD concentration averaged 1.36 mg/L (partial month), which is below the 5.0 mg/L limit.

Min and Max Instantaneous pH

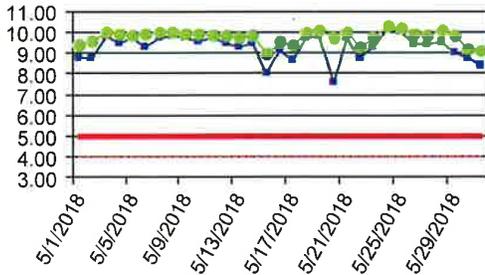


● MAX pH ■ MIN pH — Upper Limit - - Lower Limit

pH is a measure of the intensity of the alkalinity or acidity of the effluent. The minimum and maximum pH observed were 6.3 and 6.7 standard units, respectively. The pH was within the permit limits of 6.0 and 8.5 for minimum and maximum respectively.

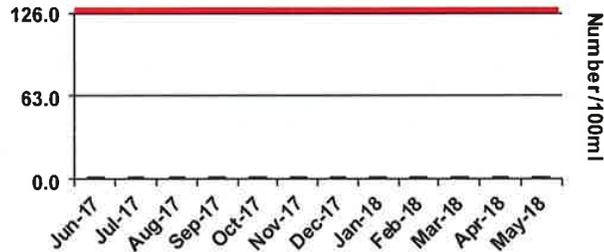
E. coli

Daily and Instantaneous Min DO



● MIN Daily Average ■ Instant MIN DO
 — MIN Daily Average Limit - - Instant MIN Limit

Dissolved Oxygen (DO) is a measure of the atmospheric oxygen dissolved in wastewater. The DO readings for the month are within the permit limits. The minimum daily average is 8.9 mg/L. The minimum instantaneous DO reading is 7.6 mg/L. The minimum permit limits are 5.0 mg/L and 4.0 mg/L respectively.

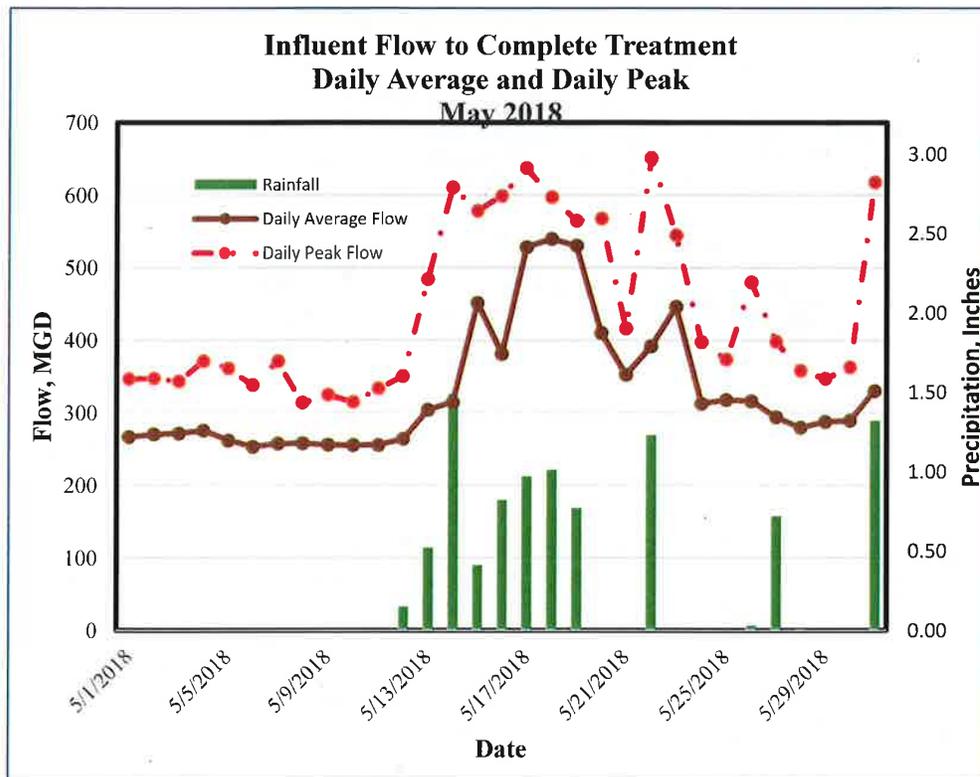


■ E. Coli Geomean — Permit Limit

E.coli is an indicator of disease causing organisms (pathogens). The E.coli permit limit is 126/100mL. The E coli geometric mean is 1.5 /100mL, and well below the permit limit.

Wet Weather Impact on Plant Performance

During the month of May 2018, the Washington Metropolitan Region received above normal total rainfall (8.73 inches vs normal of 3.99 inches) as measured at the National Airport. The wet weather event that occurred during May 12 - 19, 2018, resulted in peak flows through complete treatment exceeding 630 MGD. The plant's performance was excellent and the event had minimal impact on the quality of the effluent discharge through the complete treatment outfall. All effluent quality parameters were below the weekly and monthly average NPDES permit limits.



Wet Weather Treatment Facility (WWTF) at Blue Plains

Brief Description

The Wet Weather Treatment Facility at Blue Plains provides treatment for Combined Sewer Overflows (CSO) conveyed through the Long Term Control Plan (LTCP) tunnel systems to Blue Plains. With a design capacity of 250 MGD, the facility consists of sub systems including- a flow surcharge wet well and coarse screens, upstream of five 3,000 Horse Power (HP) Tunnel Dewatering Pumps (TDPs). The TDPs lift the flow 156 ft to the above ground Enhanced Clarification Facility (ECF), which comprises of fine screening, grit removal, and high rate clarification (HRC). The effluent from HRC is disinfected and dechlorinated before it's discharged through Outfall 001. When flow rates to the main plant are below the permitted peak

flow rates of 555 OR 511 MGD, the effluent from the HRC (or a portion of it) is directed to the main plant for complete treatment. On an average year, the facility is designed to receive approximately 2.6 billion gallons of CSOs and provide treatment with effluent total suspended solids quality comparable to that of Secondary Treatment effluent. The WWTF, along with the first section of the Anacostia Tunnel System were placed in operation, three days in advance of the March 23rd Consent Decree date.



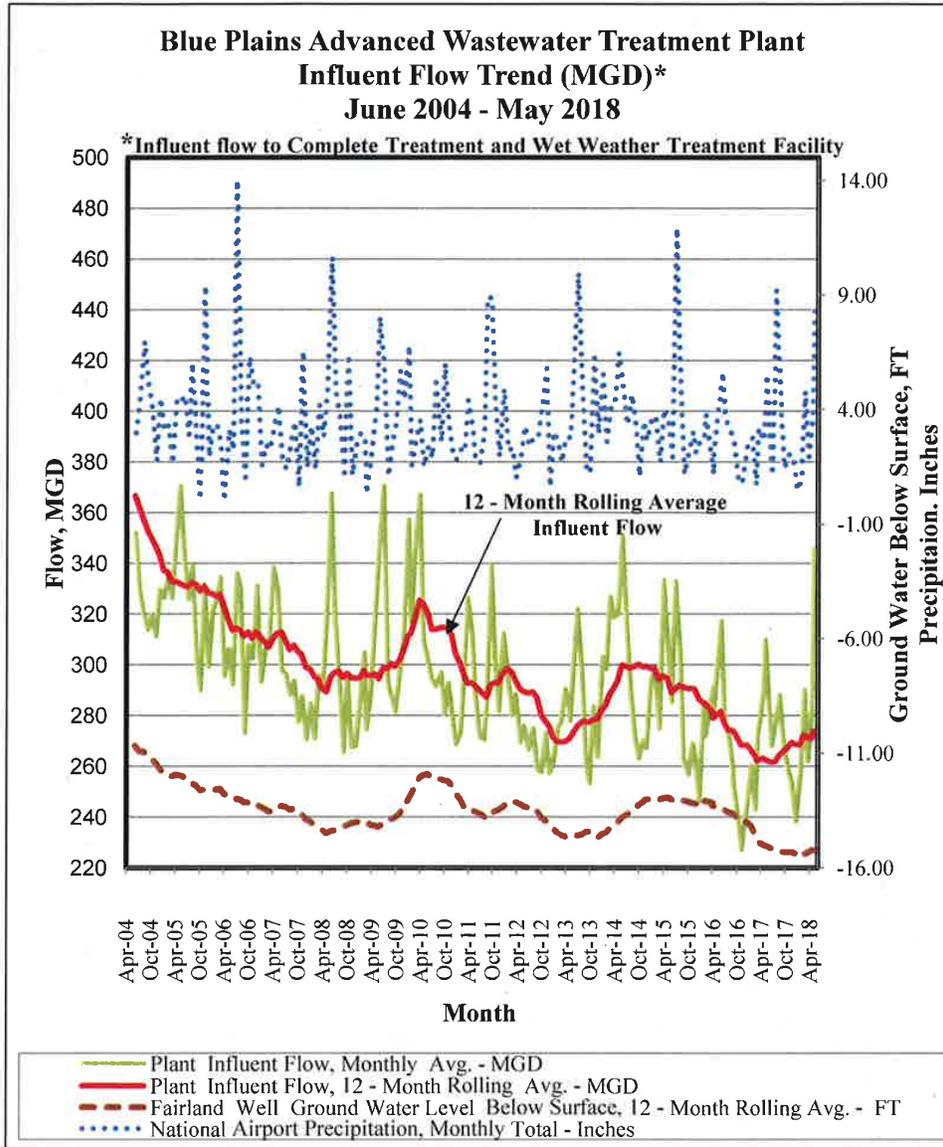
Aerial rendering of the Wet Weather Treatment Facility

Performance

During the month, a total of 785 million gallons (MG) of CSO captured in the tunnel system, was pumped, and treated using the ECF. A portion of the treated flow or 290 MG was directed to the main plant to maximize complete treatment and the remaining portion of the treated captured combined flow, or 495 MG, was disinfected, dechlorinated and discharged through Outfall 001. The quality of the effluent discharged was within anticipated ranges. Since the commissioning of the first section of the Anacostia River Tunnel Systems and the WWTF on March 20, 2018 and including the wet weather events that occurred in May 2018, the total volume pumped and treated through the WWTF is 1,054 MG.

Plant Influent Flow Trend

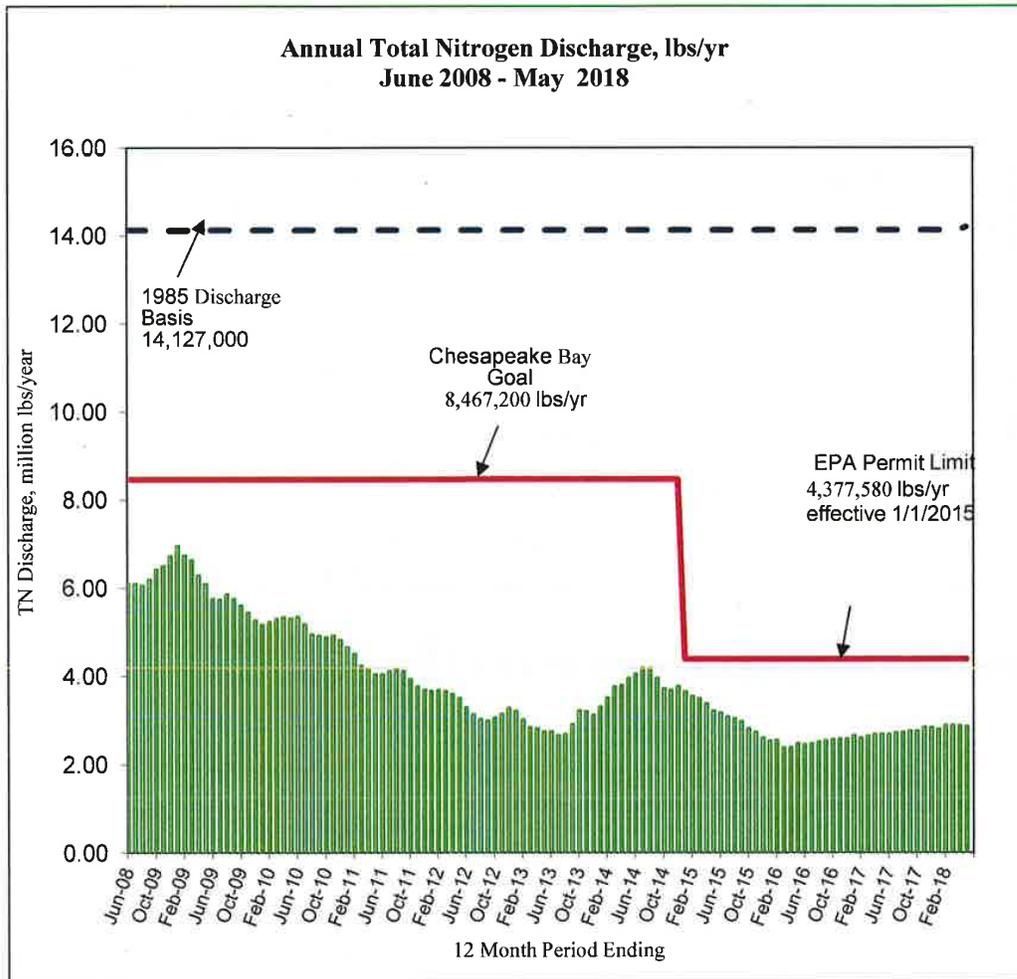
The graph below shows a long-term influent flow trend to the plant ending May 2018. While for any given month the flow is weather dependent, the 12-month rolling average influent flow has remained at or below 300 MGD since February 2011.



Blue Plains Total Nitrogen (TN) Removal – Performance

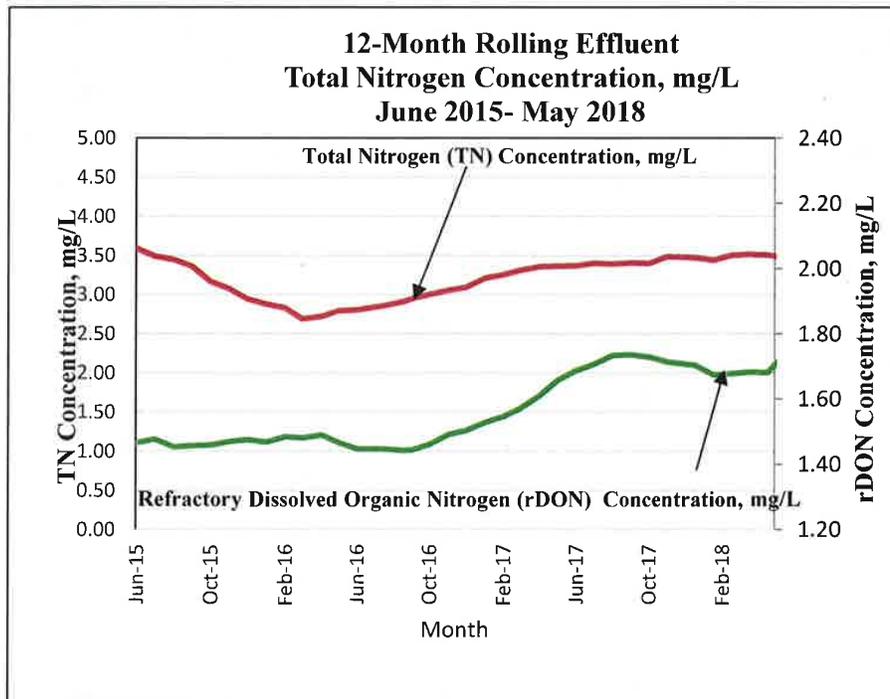
The graph below shows 12-month rolling TN discharge, in million pounds per year, over a 10-year period ending May 2018. In May 2018, the monthly average TN concentration and total load in the complete treatment effluent were 3.28 mg/L and 279,700 lbs., respectively.

The total pounds of nitrogen discharged in the complete treatment effluent during the current calendar year (through May 31, 2018) is 1,324,000 lbs and on track to remain below the NPDES permit discharge limit of 4,377,580 lbs. /year. The performance corresponds to average flow of 283 MGD, maximum month flow of 330 MGD, and average wastewater temperature above 16 °C observed during the period. The Blue Plains Enhanced Nitrogen Removal Facility (ENRF) is designed to meet the TN discharge limits at influent loads corresponding to annual average flows of 370 MGD, maximum month flows of 485 MGD, and operating wastewater temperatures below 12°C.



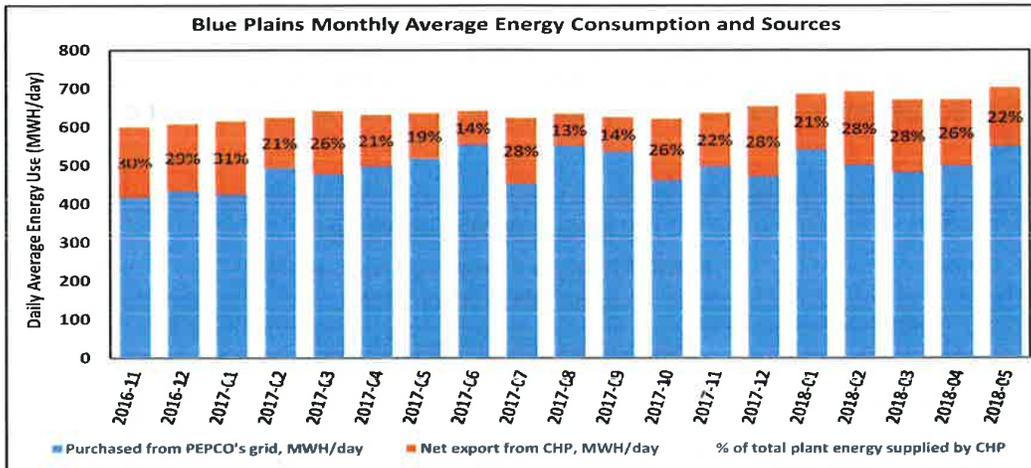
Note: Since the commissioning of ENRF, the 12-month rolling average TN concentration and load in the effluent continued to decline and reached the lowest level in March of 2016. Although the TN load in the effluent remained well below the permit limit, the slight but steady increase since March of 2016 was mostly caused by higher concentrations of refractory dissolved organic nitrogen (rDON) in the filtrate (liquid removed from dewatering class A biosolids) returned for treatment in the plant's secondary and enhanced nitrogen removal processes. The rDON concentrations are within anticipated levels and have stabilized as shown on the chart below (green line).

The monthly average TN concentrations in recent months were slightly elevated due to (a) major outages of Nitrification Reactors in November and December 2017 that were necessary to replace equipment (successfully completed), and (b) winter weather impact on the biological process.



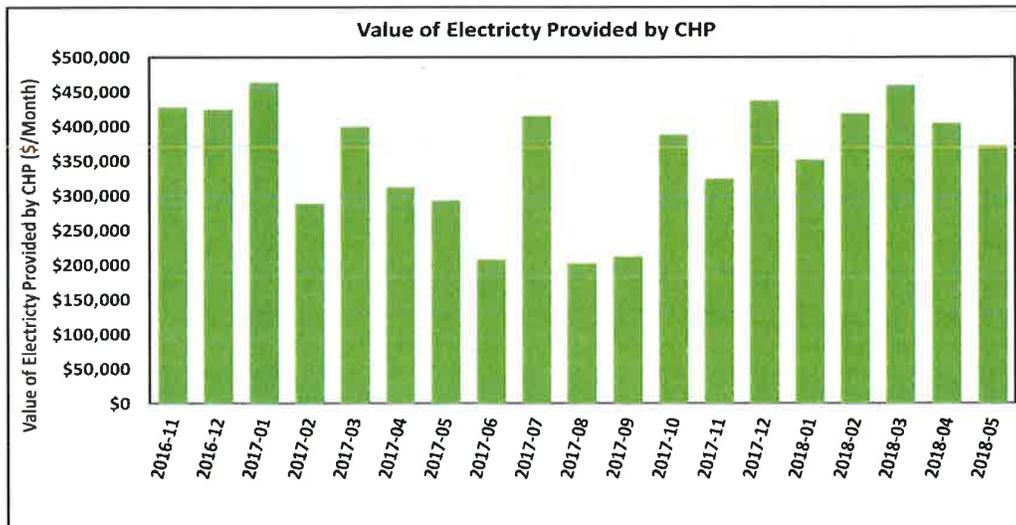
Blue Plains Electricity Generation and Usage

In May 2018, the average energy consumed at Blue Plains was 702 megawatt hours per day (MWH/day) or 2.13 MWH of electricity per million gallon of wastewater processed through complete treatment. The Combined Heat and Power (CHP) facility generated an average of 154 MWH/day, making up for 22% of total energy consumed at Blue Plains. The remaining 548 MWH/day was purchased from PEPCO.



The graph above is based on power monitors installed at the Main Substation and CHP, and reflects average energy consumed at Blue Plains in MWH/day. Of the total use, the energy purchased from PEPCO and net energy supplied by CHP are indicated by the blue and orange highlights, respectively.

The graph below shows the monthly value of the net electricity produced by CHP by assuming unit price of \$78/MWH of electricity.



CHP Operation and Maintenance Status

The recent repair works, completed on all three Heat Recovery Steam Generators (HRSG), have significantly improved the reliability of the CHP to produce and supply adequate high pressure steam to the Thermal Hydrolysis Process (THP) and maximize use of digester gas for electricity production. The average net electrical power production during the February 1 – May 31, 2018 time period was 177 MWH/day (7.4 MW) and is higher than the 138 MWH/day (5.8 MW) achieved during the same time period in 2017.

The annual reconciliation of the contract operation period that ended on September 30, 2017 is still in progress. The reconciliation will include, amongst other items, reimbursement payments for any power production shortfalls under the Digester Gas Electrical Power Production Guarantee, as set forth in the contract

Renewable Energy Credits (REC) Sale Completed

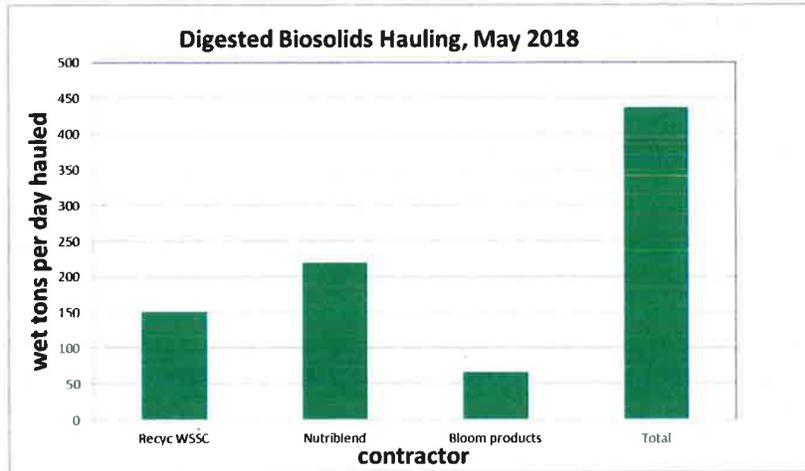
DC Water's first agreement for the sale of Tier 1 Renewable Energy Certificates (REC) was executed and a check for \$290,410.0 received on June 5, 2018. The amount was received from ACT Commodities Inc. (the buyer) for the sale of credits earned in the 2017 calendar year.

Renewable energy generated at Blue Plains is registered and certified by PJM's Generation Attribute Tracking System (GATS). The credits for the gross megawatt hours (MWH) generated, using digester gas and the Combined Heat and Power (CHP) facility, become commodity that DC Water can sell to any interested buyer. To date DC Water has registered and earned credits for the MWHs generated in calendar years 2016 and 2017 and will continue to do so for current and future calendar years. At the current average renewable energy production rate of 190 MWH/day, the estimated value of the credits is over \$300,000 per year.

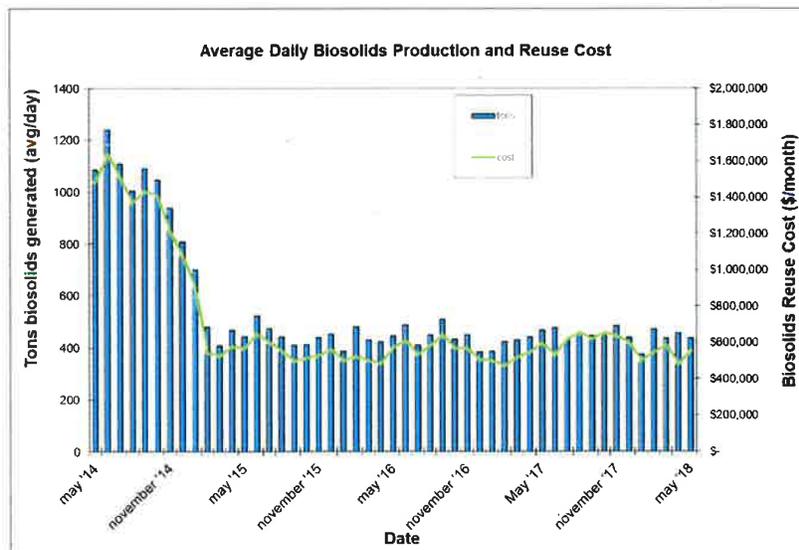
RESOURCE RECOVERY

Class A Biosolids/Bloom – Production, Hauling, and Cost

In May, biosolids hauling averaged 436 wet tons per day (wtpd). The average percent solids for the Class A material was 32.9%. The average quantities of Class A biosolids transported and applied on farms by the two major contracts (WSSC's Recyc and DC Water's Nutriblend) and the quantities marketed as Bloom are shown on the graph below. In May, 2,047 wet tons of Bloom were distributed to 19 customers.

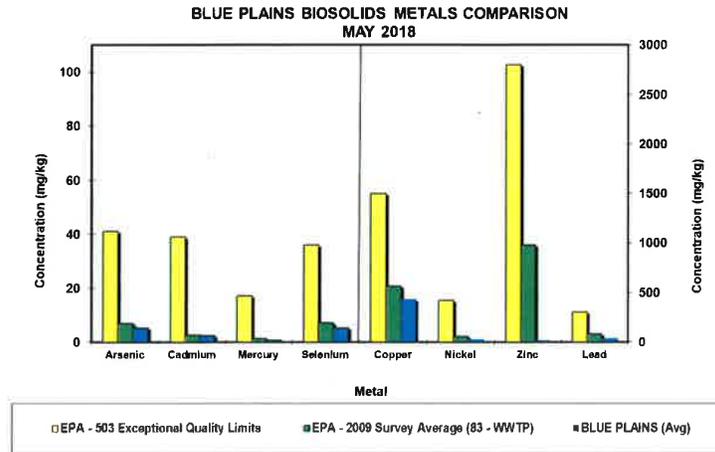


The graph below shows average daily biosolids produced and the associated monthly cost for reuse (transportation and application cost) for a four-year period ending May 2018. In May, diesel prices averaged \$3.40/gallon, and with the contractual fuel surcharge, the weighted average biosolids reuse cost (taking into account the marketed material) was \$40.91 per wet ton.

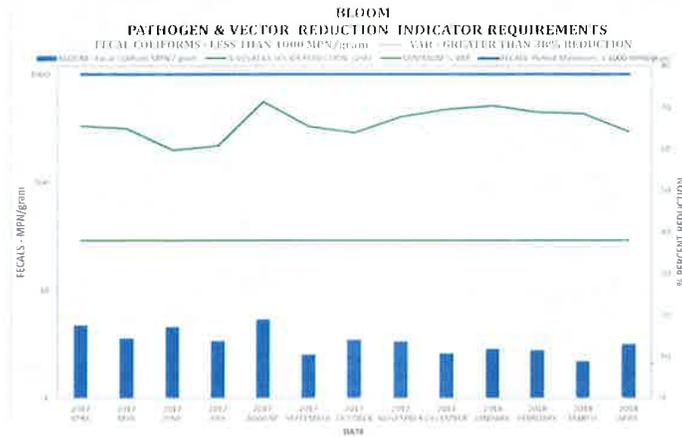


Product Quality

All biosolids produced during the month of May met Class A Exceptional Quality (EQ) required by EPA. The graph below shows the EPA regulated heavy metals average concentrations in the Class A biosolids. The concentrations are considerably below the regulated exceptional quality limits (EPA-503 Exceptional Quality Limits) and the national average (EPA-2009 Survey Average).

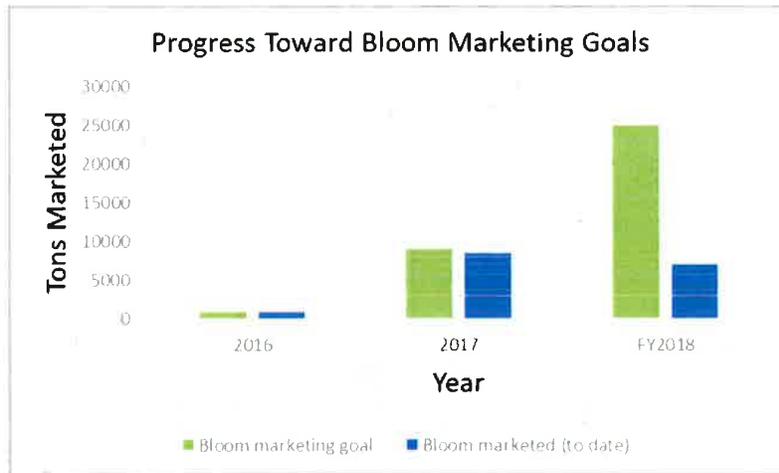


The graph below shows both Vector Attraction Reduction (VAR) and Fecal Coliform (FC) results in the Class A product, both of which are required to maintain the Class A Exceptional Quality (EQ) status. Vector Attraction Reduction is measured by the reduction in Volatile Solids (VS) or organic compounds that may be odorous and attract nuisance vectors such as flies and rodent. DC Water anaerobic digesters reduced VS by over 65 percent, well above the required 38 percent minimum. In addition, the graph shows fecal coliforms levels in the Class A product. Fecal coliforms are indicators of disease causing organism (pathogens), and must be below 1,000 MPN/g to meet Class A standards. The FC levels in the Class A product are two orders of magnitude less than the maximum allowable level.



Bloom Marketing

Bloom sales as of June 1st total 6,957 tons for the calendar year. This represents 28% of the 25,000 tons goal for the calendar year. Goals were set last year for this year, and we have reason to believe we will meet these goals.



The Bloom team achieved, in May with our partner Homestead Gardens, the first bagged material in stores (pictures below). Bagged Bloom is initially available in Homestead Gardens stores only, although we have a sales agreement that encourages wholesale to other garden centers. The Bloom team has reached out to some prominent DC garden centers, and there is interest in learning more.



Growth Trials in our New Greenhouse

In addition, staff ran growth demonstration trials in our new greenhouse, showing grass and vegetable growth in our various mixes, including one done with construction soil and Bloom for use in highway projects. The poor construction soil paired with the high nutrient Bloom grows lush, thick, grass, turning it into rich topsoil.



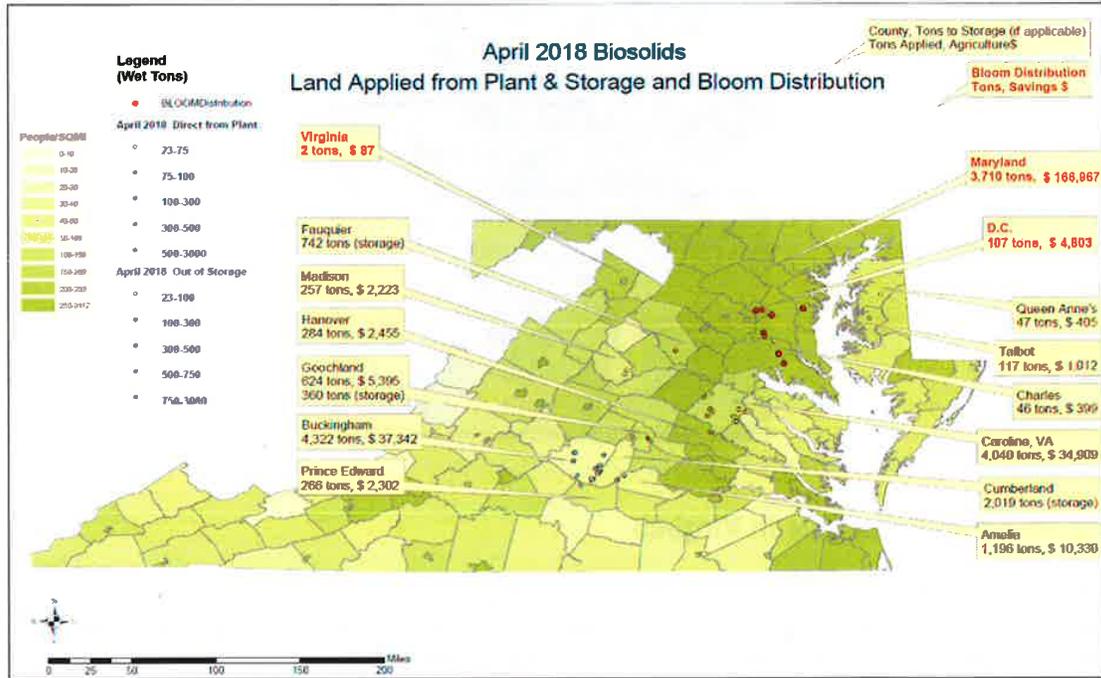
First Direct-to-Farm Sale in Virginia

Staff made our first direct sale to a farm in VA (see photo below) this month. This is done through a unique marketing partnership with a spreader and direct contact with the farmer. With a handful more in the works and word spreading, this is hopefully the start of a big market for us—and helps to further change the dynamic in our industry. More to come!



Bloom Reuse and Value Map

This map shows where Bloom was reused on agricultural land and sold into the market as a soil amendment product. We now possess our Distribution and Marketing permit for the state of VA, and are beginning to make deliveries to VA.



CLEAN WATER QUALITY AND TECHNOLOGY

The Department of Clean Water Quality and Technology includes the research and development, pretreatment and laboratory programs. A summary of activities for each group is provided below.

Research and Development

The research and development team focuses on research topics associated with the planning and operation of Blue Plains. The current focus of research is to optimize treatment process capacity and to work toward achieving energy neutral operations. Activities during March and April included continued work by our research team in the carbon removal/redirection, nitrogen removal, and solids treatment focus areas. In addition, members of the R&D team were involved with the activities below.

Meeting stringent nitrogen limit using deammonification coupled with nitrate based partial denitrification-anammox control

For the past several years, the research group has been looking at a new technology to replace the current nitrogen removal system at Blue Plains to significantly reduce our carbon consumption. The new technology involves shortcutting the nitrogen removal pathways using a two-step process consisting of partial nitritation [converting NH_4 to NO_2 with ammonia oxidizing bacteria or AOB] and deammonification using anammox bacteria [converting NH_4 and NO_2 to N_2 gas using anaerobic ammonia oxidizers or AnAOB]. The second step does not require organic carbon and thus significantly reduces the need for methanol. This process strategy can be achieved under the right conditions in an intermittently aerated zone. While a proof of concept was demonstrated in our pilot system, the effluent total nitrogen concentration was not low enough to satisfy the Blue Plains discharge permit requirement.

To achieve lower TN concentrations using a short-cut nitrogen removal strategy, the research team has recently worked to develop a cost effective TN polishing step. A post polishing step relying on partial denitrification [converting NO_3 to NO_2] and deammonification using anammox was implemented downstream of the intermittent aeration zone. Figure 1 shows a flow schematic of the combined process configuration.

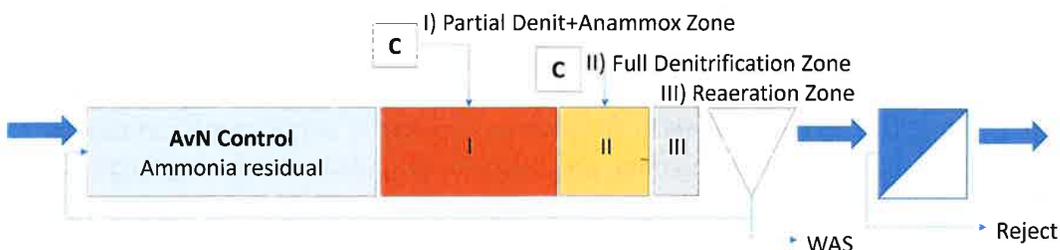


Figure 1: Anammox final polishing concept including short-cut N removal with integrated final anoxic zone. The polishing strategy includes (i) partial denitrification and deammonification [PdN-AnAOB] using a NO₃ based COD dosing strategy to maintain the selected NO₃ residual, (ii) Full denitrification zone [FdN] to further reduce TIN to very low limits, and (iii) an optional re-aeration zone.

This pilot study demonstrates for the first time the feasibility of controlling the combined process using our proprietary AvN control strategy coupled with partial denitrification and deammonification [PdN-AnAOB] polishing control for achieving low TIN effluent concentrations (< 4 mg N/L) within a single-sludge system. With intermittent aeration control, AvN control can yield the desired ammonium and nitrate concentrations to feed into the final polishing zones where simultaneous removal of these substrates takes place via PdN - AnAOB process. COD dosing is based on maintaining a nitrate residual of 2 mg N/L in zones where partial denitrification is desired and below this threshold when full denitrification (FdN) is needed to meet low effluent limits. Furthermore, the more TIN that is removed through deammonification (by AnAOB) either as a result of preventing full nitrification (NOB out-selection) or by combining AvN with PdN - AnAOB, the less external carbon is required (methanol or acetate dosing). During the most balanced phase, only 0.9 ± 0.1 g COD was added (acetate) per g TIN removed which shows significant potential to reduce external carbon requirements.

Figure 2 shows the nitrogen profile through each zone of the pilot reactor. AvN control in Zones 1 through 10 is able to maintain equal concentrations of ammonia and nitrate in Cell 10 before flow enters the PdN zone. Ammonia and nitrate were further removed in the PdN + AnAOB zones (11 through 15). In the FdN zone (16 and 17) nitrate was reduced to approximately 1 mg N/L and in the reaeration zone (18) ammonia was removed.

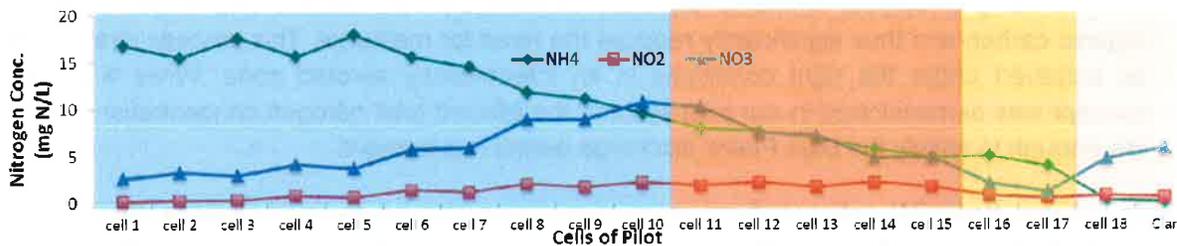


Figure 2: Nitrogen profiles through pilot reactor. AvN control was applied in cells 1 through 10, PdN+AnAOB control is applied in cells 11 through 15, full denitrification is provided in cells 16 and 17, and reaeration is provided in cell 18. Acetate was added in Cell 11 to maintain a target NO₃ concentration of 2 mg N/L in cell 15. Acetate was also added to Cell 16 to remove nitrate to less than 1 mg/L in Cell 17.

Summer Internship Program – May 22nd, 2018

We have officially received our new interns for this summer to work on various exciting projects in our research group. The interns started off their internship with a safety training conducted by Mr. Norman Dockett. During their internship, they will be exposed to experiences conducting experimental work in our labs, analyzing data, and brainstorming ideas about designing and developing new technologies. The following is a list of the summer interns and their associated academic institutes:

Erfan Alikhani – Catholic University – Environmental Engineering

Khiem Nguyen – Catholic University – Civil Engineering

Sophia Ertel – George Washington University – Civil Engineering

Mojolaouwa (Demi) Ladipo-Obasa – George Washington University – Civil Engineering.

Elena Gardner – American University – Environmental Sustainability and Global Health

Victor Lalwani – Virginia-Maryland College of Veterinary Medicine – Biochemistry

Jessica Balerna – University of South Florida – Integrative Biology

Blue Plains Main Laboratory

The Main Laboratory staff conducts analyses on Blue Plains AWTP effluent for NPDES Permit requirements, as well as on biosolids, pretreatment samples, storm water runoff, and process samples, on a daily basis, 365 days a year. The laboratory currently analyzes approximately 2,800 samples each month and conducts approximately 8,000 analyses, including Total Suspended Solids; Volatile Suspended Solids; Total and Volatile Solids; Ammonia Nitrogen; Nitrite and Nitrate Nitrogen; Total, Soluble, and Ortho Phosphorus; Total and Soluble Kjeldahl Nitrogen; Carbonaceous Biochemical Oxygen Demand; Chemical Oxygen Demand; Total Alkalinity and Hardness; and Fecal Coliform and E. Coli microbiological testing.

In addition to comprehensive testing to support operation of liquid stream processes, the laboratory analyzes Belt Filter Press cake samples for fecal coliform bacteria for DC Water's Class A Biosolids reporting, as well as digester samples from the Cambi Thermal Hydrolysis and Anaerobic Digestion facility, including Total and Volatile Solids, Total and Volatile Suspended Solids, Ammonia Nitrogen, alkalinity and pH. Fecal coliforms in the BFP dewatered cake and TS and VS upstream and downstream of the digestion process are monitored to show compliance with 40 CFR 503 Pathogen and Vector Attraction Reduction requirements. The laboratory continued analysis of samples from the new Filtrate Treatment Facility which removes nitrogen from the belt press dewatering filtrate. Parameters analyzed include ammonia, nitrate, and nitrite nitrogen; ortho-phosphorus; COD; TSS; VSS and alkalinity.

The laboratory also assisted the Department of Sewer Services conducting microbiological analysis of water samples for E. coli bacteria, as well as monitoring the Northeast Boundary Swirl Facility Effluent for NPDES compliance. Laboratory staff also participated in the WWOA Executive Board.

This month the laboratory also continued the analysis of parameters for the USEPA's DMR-QA Study 38, which began on March 23, 2018 and ends on July 6, 2018. Parameters analyzed include Alkalinity, Total Hardness, Total Suspended Solids, Ammonia Nitrogen, Nitrate + Nitrite Nitrogen, ortho-Phosphate, Total Kjeldahl Nitrogen, Total Phosphorus, Nitrite Nitrogen, CBOD, COD, Total Residual Chlorine, and E. Coli.

Water Quality & Pretreatment

The Blue Plains Water Quality & Pretreatment group, now a staff of three due to a new hire this month, manages the Industrial Pretreatment Program, including temporary dewatering dischargers from construction and other activities, as well as the Hauled Waste Program. A new program for Dental Dischargers is being implemented as regulations were finalized requiring compliance with reporting and best management practices as well as installation of an amalgam separator, for those dental facilities placing or removing dental amalgam fillings. Staff also provide specialized sampling and program management support for the Blue Plains NPDES permit, including PCB monitoring and storm water management. Additional activities, with contractor support, include developing a Spill Prevention and Countermeasures Control (SPCC) Plan, conducting inspections of storm water structures and facilitating cleaning and repairs, as well as coordinating quarterly Blue Plains Storm Water Committee meetings and other SWPPP compliance activities. Staff attended a regional Industrial Pretreatment Conference this month in Eastern Pennsylvania.

Industrial Pretreatment Program

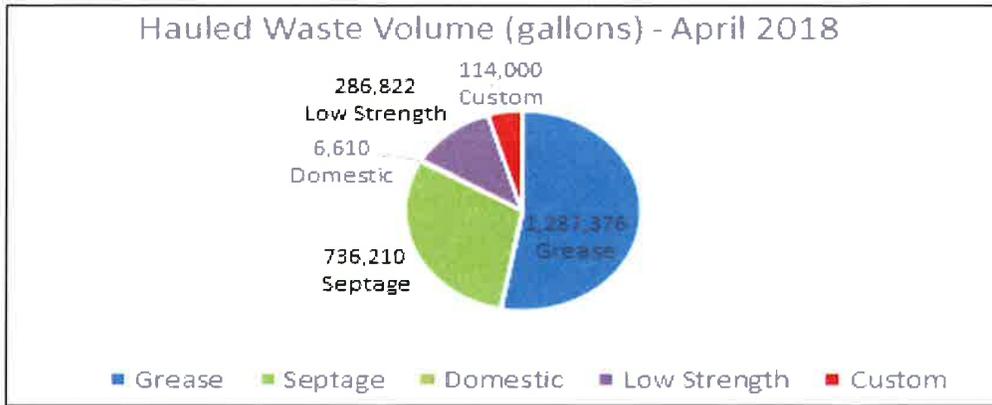
DC Water currently manages twelve (12) Significant Industrial User (SIU) and eighteen (18) Non-Significant Industrial User (NSIU) wastewater discharge permits. Staff conducted three SIU inspection and sampling events this month at Bureau of Engraving and Printing, GSA Central Heating Plant, and the Capitol Power Plant. DC Water reviewed monthly self-compliance monitoring reports for six (6) SIUs and one NSIU. All SIUs and NSIUs are in compliance with discharge standards for the current month.

DC Water currently manages 79 Temporary Discharge Authorization (TDA) permits, primarily for construction site discharges of groundwater and/or surface runoff in the combined sewer area. Eight new TDA permits were issued this month. All TDA permits are currently in compliance with discharge standards.

Hauled Waste Program

As of the end of the current month, the hauled waste program had 36 permitted haulers authorized to discharge domestic septage, portable toilet waste, grease trap waste, groundwater or surface runoff, and other types of waste, if approved in advance and have been characterized and meet pretreatment standards. Staff issued four new hauled waste permits and renewed three hauled waste permits this month under the new volumetric fee structure.

DC Water received 1,225 hauled waste loads (2,431,018 gallons) from permitted haulers this month. Manifest forms from each truck entering the plant are collected by the security guards and picked up daily by Pretreatment staff and information is manually entered into an access database. Two hauled waste samples were collected this month to check compliance with discharge standards.



NPDES Permit Sampling

Staff collected one wet weather composite sample at outfall 002 and one grab sample at outfall 001 this month for low level PCBs.

Status Report of Public Fire Hydrants for DC Water Services Committee - June 4, 2018

	March Cmte. Report (Mar 05, 2018)	April Cmte. Report (Apr 04, 2018)	May Cmte. Report (May 04, 2018)	June Cmte. Report (Jun 04, 2018)
Public Fire Hydrants:	9,548	9,547	9,867	9,868
In Service:	9,497	9,493	9,815	9,820
Marked Out-of-Service (OOS)	51	54	52	48
OOS - defective requiring repair/replacement	22	32	31	28
% OOS requiring repair or replacement (DC Water goal is 1% or less OOS)	0.23%	0.34%	0.31%	0.28%
OOS - due to inaccessibility or temp construction work	29	22	21	20

Note: The number of public hydrants in the DC Water system fluctuates; this number fluctuates as hydrants are added and removed during development or construction activities as well as at the request of the Fire Dept.

Breakdown of Public Fire Hydrants Out-of-Service (OOS) as of June 4, 2018 48

Breakdown of Defective

	0-7 Days	8-14 Days	15-30 Days	31-60 Days	61-90 Days	91-120 Days	> 120 Days	Total
Hydrant Needs Repair/Investigation	2	3	2	2	0	0	3	12
Needs Valve Investigation for Low Flow/Pressure or Shut Test for Replacement	0	0	0	0	0	0	2	2
Needs Replacement	0	0	0	2	4	1	7	14

Defective 28

Breakdown of Others

	0-7 Days	8-14 Days	15-30 Days	31-60 Days	61-90 Days	91-120 Days	> 120 Days	Total
Temporarily OOS as part of operations such as a main repair	0	0	0	0	2	0	5	7
Construction* - OOS	0	0	0	0	1	1	6	8
Obstructed Hydrant – OOS hydrant due to operation impeded by an obstruction.	0	0	0	0	0	0	5	5

Others 20

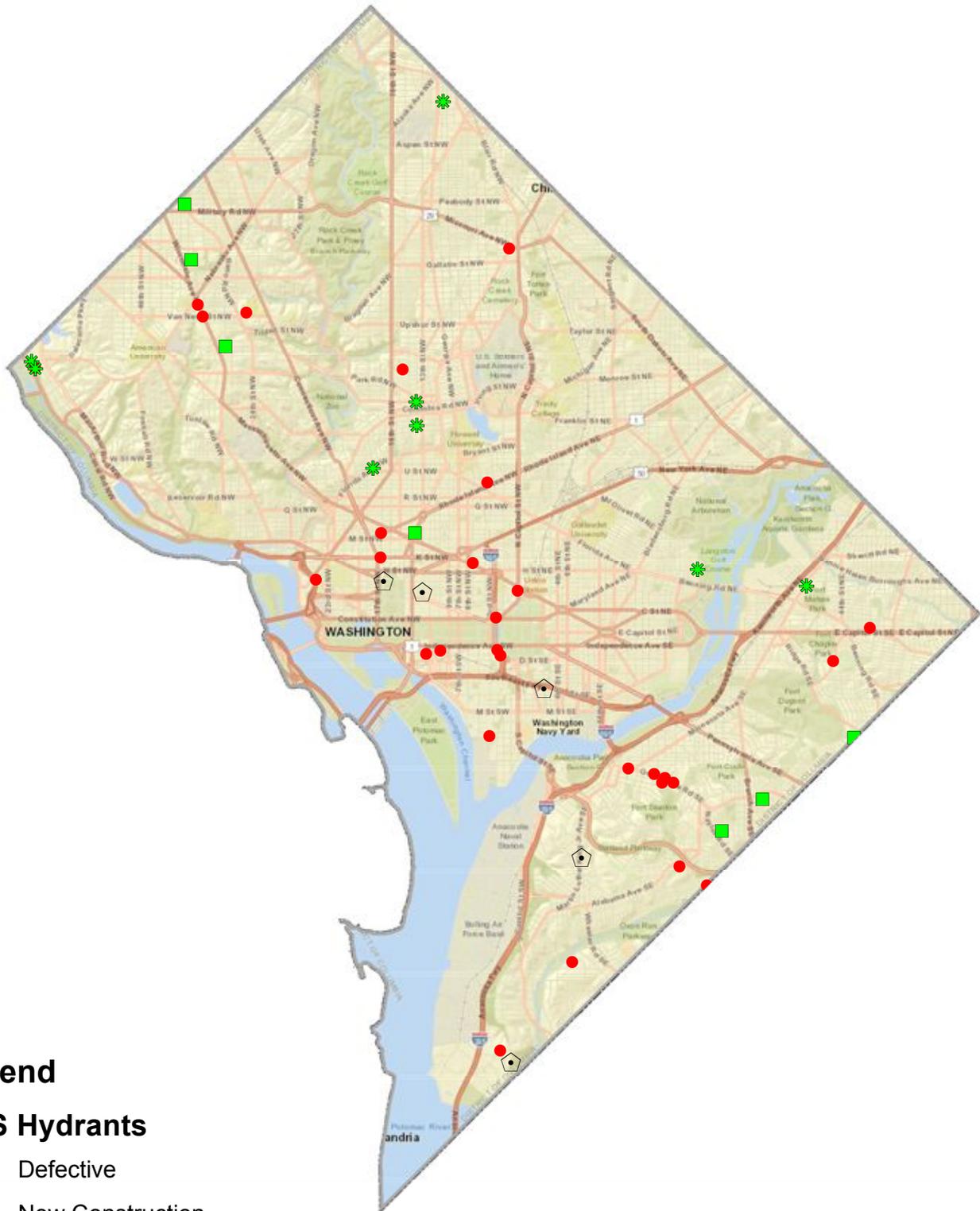
*Fire hydrants not accessible due to construction activities. Also includes new hydrants which have not yet been commissioned or old hydrants which will be abandoned as part of ongoing construction projects.

Status of Private Fire Hydrants-Based on FEMS Inspection Reporting

Private Hydrants:	1,308
• In Service:	1,173
• Out-of-Service (OOS):	135

Map of Public Out-of-Service Hydrants

June 4, 2018



Legend

OOS Hydrants

- Defective
- ✱ New Construction
- ⬠ Obstructed
- Temporary