DISTRICT OF COLUMBIA
WATER AND SEWER AUTHORITY

Board of Directors

Meeting of the
Environmental Quality and Sewerage Services Committee

5000 Overlook Avenue, SW, Room 407
Thursday, January 21, 2016
9:30 a.m.

	I. Call to Order	James Patteson Chairperson
9:30 a.m.	**II. BPAWTP Performance**	Aklile Tesfaye
9:45 a.m.	**III. NPDES Renewal – Status Update**	Aklile Tesfaye
10:00 a.m.	**IV. Northeast Boundary Design-Build Project Update**	Carlton Ray
10:30 a.m.	**V. Action Items**	Len Benson

Joint Use

1. Contract No. WAS-12-066-AA-RE, Polydyne, Inc.
2. Contract No. WAS-11-049-AA-GA, Electric Motor and Contracting Co., Inc.

Non-Joint Use

1. None

10:45 a.m. VI. Other Business/Emerging Issues

10:50 a.m. VII. Executive Session*

11:00 a.m.	**VIII. Adjournment**	James Patteson 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.

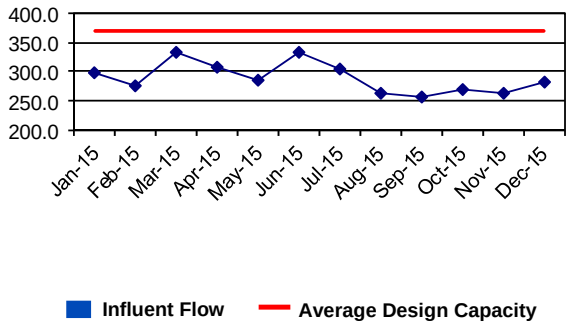
Follow-up Items from Prior Meetings:

1. Correct the plant influent flow and TSS graphs. ***{Incorporated in this month's BPAWTP update.}***
2. Provide a diagram illustrating the relationship between the WTPM and the various contracts and delivery methods (DBB, DB and DBO) being used for the Blue Plains program. ***{Information will be provided}***
3. OGC will review the Ferric Chloride contracts to ensure that the language is clear and defines when the clause to reduce/increase the supply to be provided by each vendor can be triggered. ***{To be addressed as part of contract execution.}***

DEPARTMENT OF WASTEWATER TREATMENT
December 2015

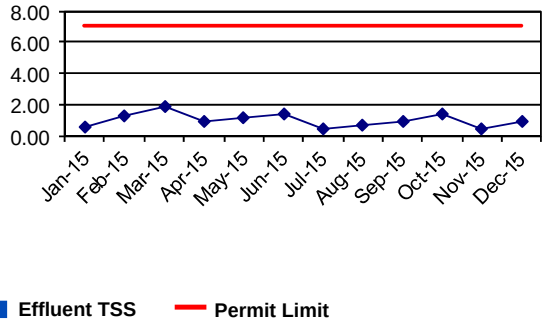
Average plant performance for the month was excellent with all effluent parameters well below the seven-day and monthly NPDES permit requirements. The monthly average influent flow was 283 MGD. There was 23 MG of Excess Flow during this reporting period. The following Figures compare the plant performance with the corresponding NPDES permit

Plant Influent Flow (mgd)



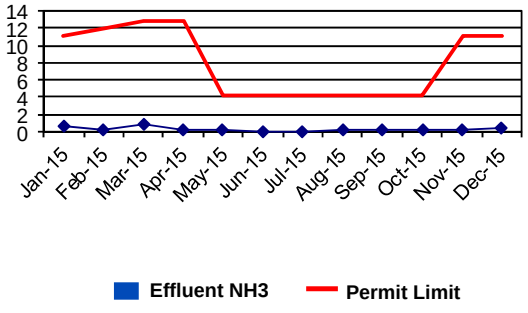
This graph illustrates the monthly average influent flow to the plant. The design average flow is 370 MGD. Blue Plains has a revised 4-hour peak flow capacity of 511 MGD through complete treatment. Flows up to 336 MGD in excess of the 511 MGD peak capacity receive primary treatment, disinfection and dechlorination.

TSS (mg/l)



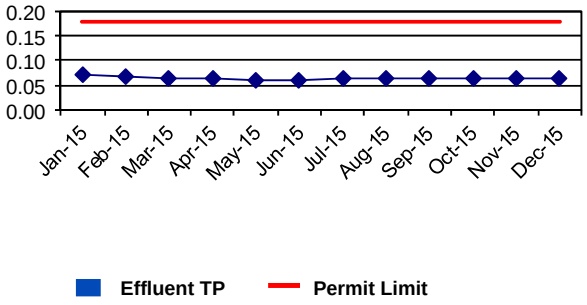
Effluent Total Suspended Solids (TSS) is a measure of the amount of solid material that remains suspended after treatment. The effluent TSS concentration for the month averaged 0.91 mg/L, which is below the 7.0 mg/L permit limit.

Ammonia (mg/l)

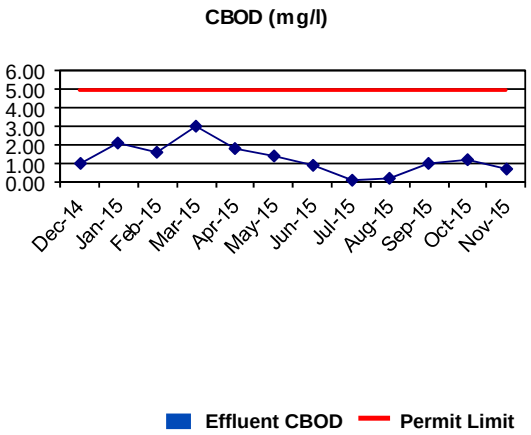


The Ammonia Nitrogen (NH3-N) is a measure of the nitrogen found in ammonia. For the month, effluent NH3-N concentration averaged 0.33 mg/L and is below the average 4.2 mg/L limit.

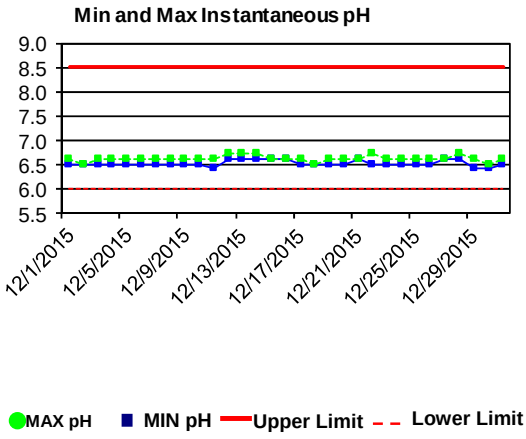
Total Phosphorus Annual Average (mg/l)



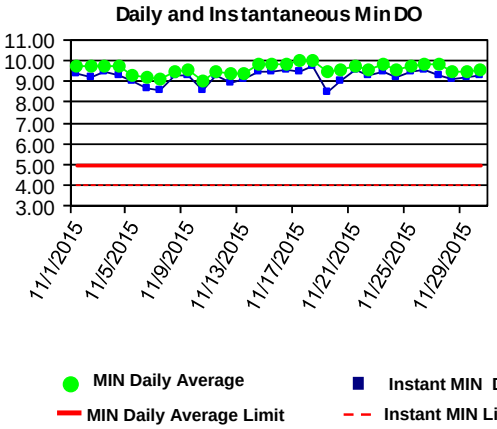
The Total Phosphorus (TP) is a measure of the particulate and dissolved phosphorus in the effluent. The annual average effluent TP concentration is 0.06 mg/L, which is below the 0.18 mg/L annual average limit.



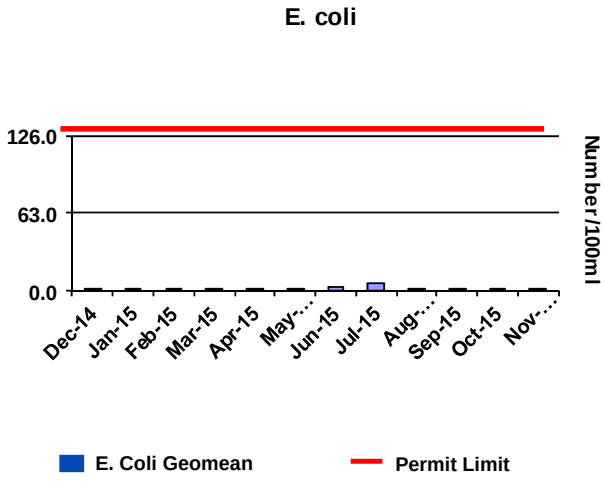
Carbonaceous Biochemical Oxygen Demand (CBOD) is a measure of the amount of dissolved oxygen required for the decomposition of organic materials. The effluent CBOD concentration averaged 1.12 mg/L (partial month) which is below the 5.0 mg/L limit.



pH is a measure of the intensity of the alkalinity or acidity of the effluent. The minimum and maximum pH observed were 6.4 and 6.7 standard units respectively. The pH was within the permit limits of 6.0 and 8.5 for minimum and maximum respectively.



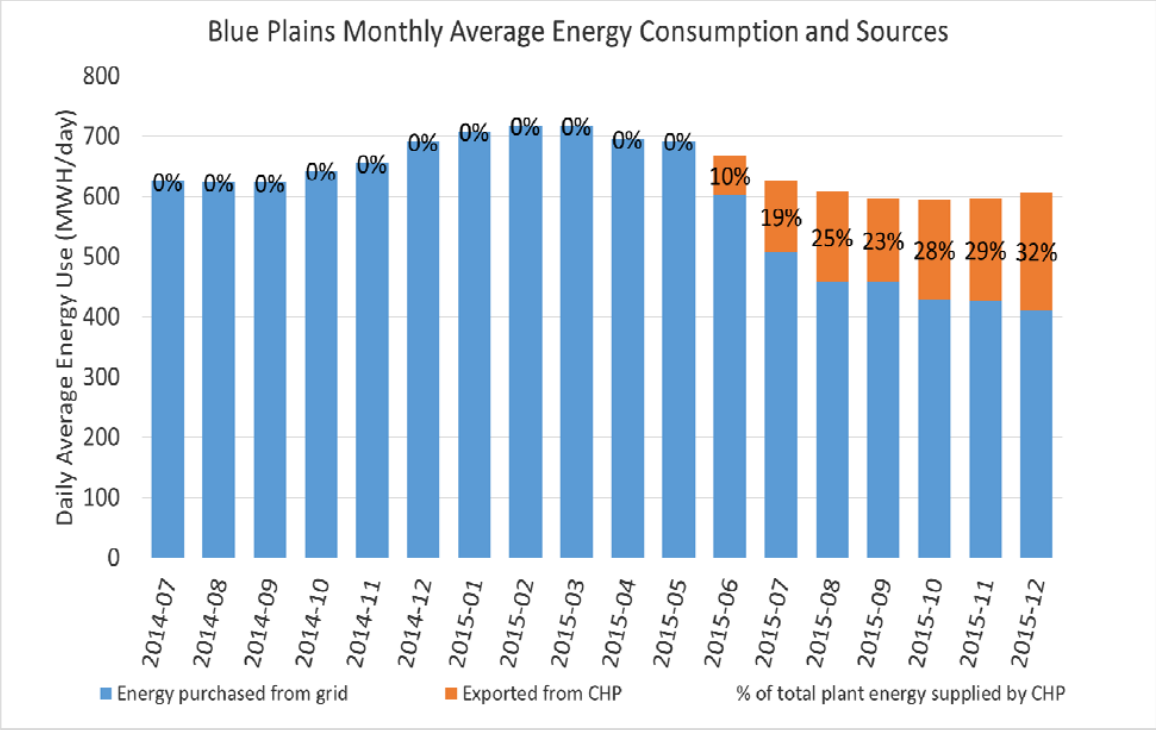
Dissolved Oxygen (DO) is a measure of the atmospheric oxygen dissolved in wastewater. The DO readings for the month are within the permit limits. The minimum daily average is 8.6 mg/L. The minimum instantaneous DO reading is 7.7 mg/L. The minimum permit limits are 5.0 mg/L and 4.0 mg/L respectively.



E.coli is an indicator of disease causing organisms (pathogens). The E.coli permit limit is 126/100mL. The E coli geometric mean is 1.0/100mL, and well below the permit limit.

BLUE PLAINS ELECTRICITY GENERATION AND USAGE

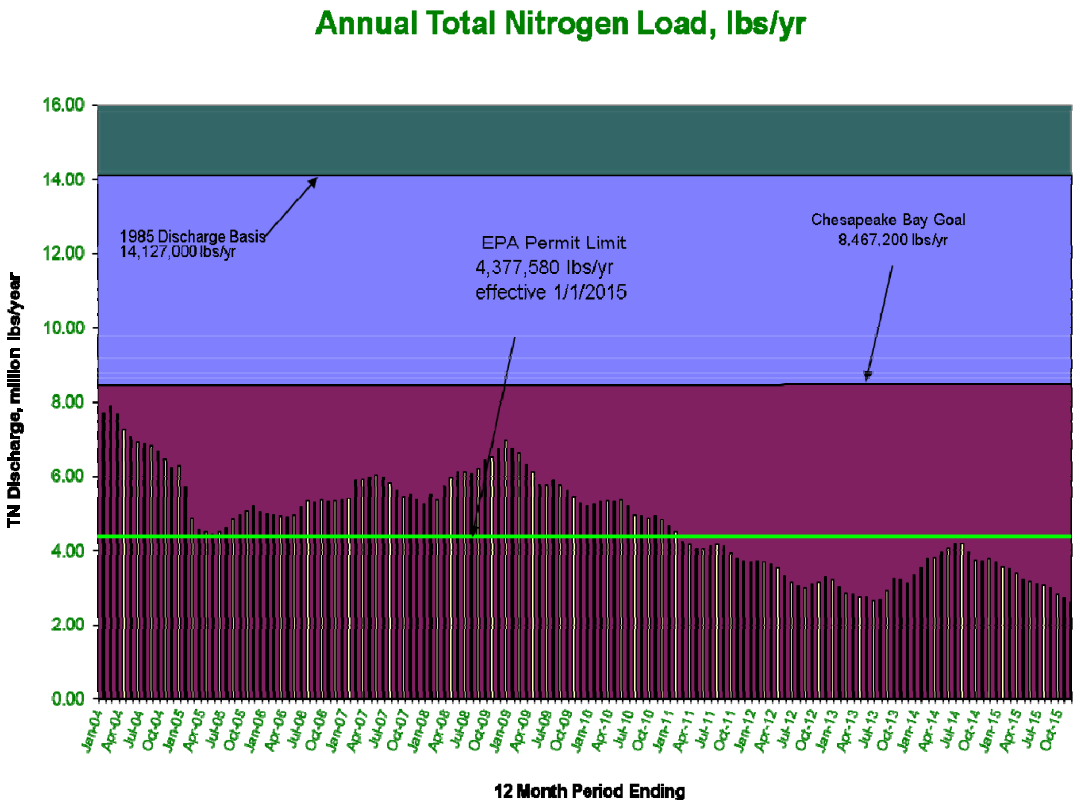
The average energy consumed at Blue Plains was 606 MWH/day for the month of December, while the average energy purchased from PEPCO decreased to 411 MWH/day. Performance testing and optimization of the CHP facility continued during this month. The CHP facility produced an average of 195 MWH/day, making up for 32% of total energy consumed at Blue Plains.



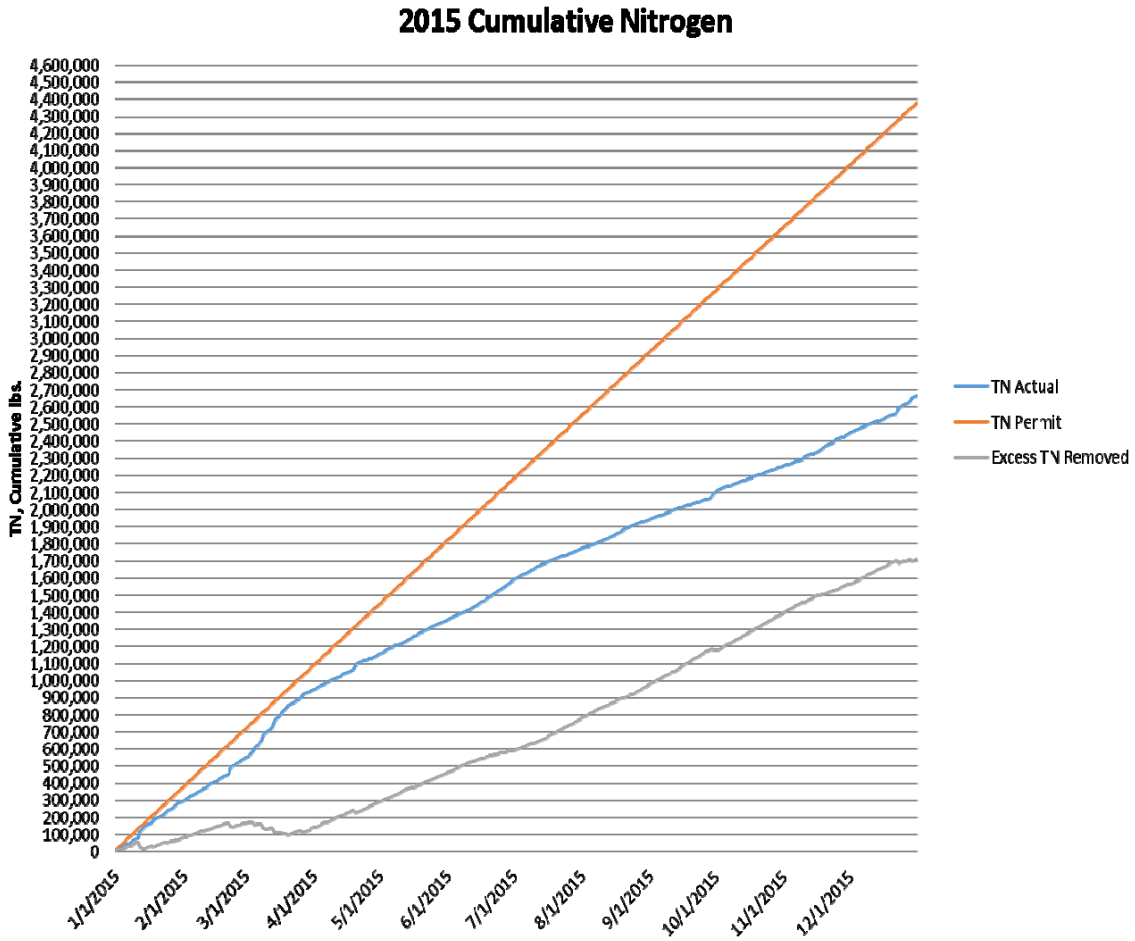
The graph above is based on power monitors installed at the Main Substation and CHP, and reflects total average energy consumed at Blue Plains in MWH/day. Of the total average use, the energy purchased from PEPCO and net energy supplied (exported) by CHP are indicated by the blue and orange highlights,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

BIOLOGICAL NUTRIENT REMOVAL PERFORMANCE

During the month the full-scale BNR process produced an effluent with average total nitrogen concentration of 3.02 mg/l. The figure below shows Blue Plains effluent total nitrogen (TN) since the implementation of full scale BNR.

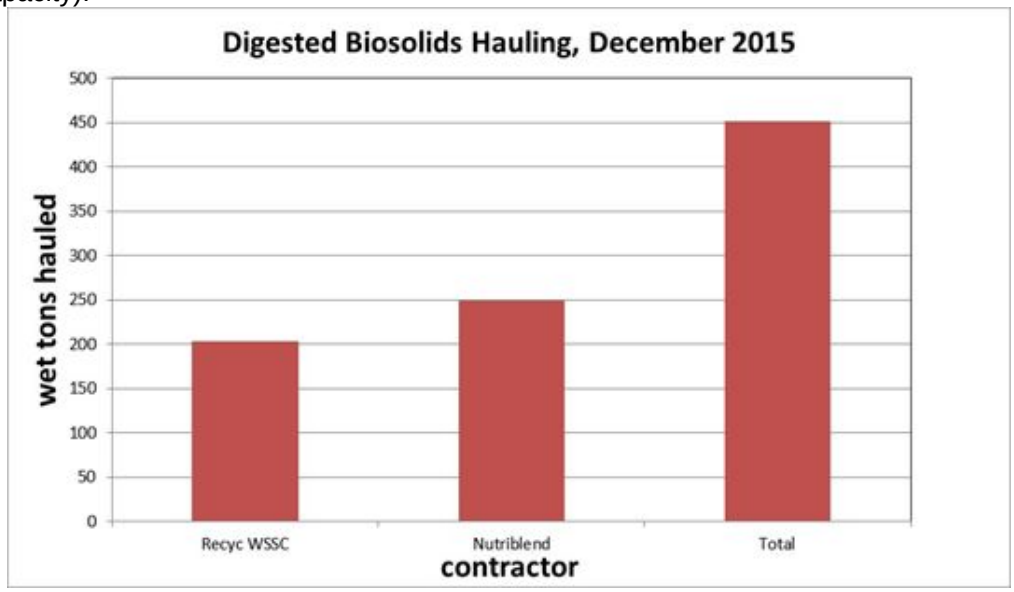


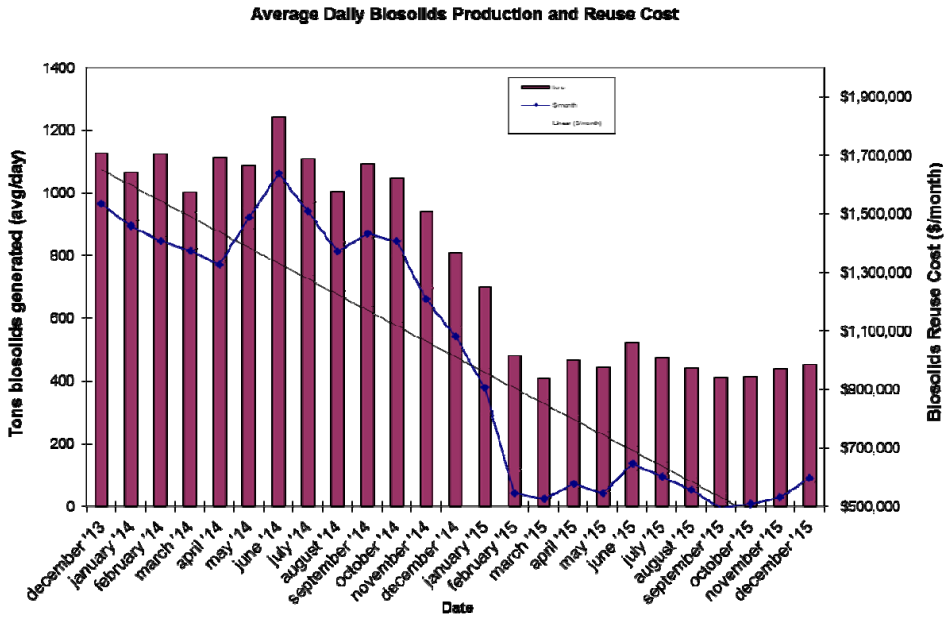
TN Removal at Blue Plains exceeded its target limits for 2015 as seen in the graph below.



BLUE PLAINS RESOURCE RECOVERY REPORT – DECEMBER 2015

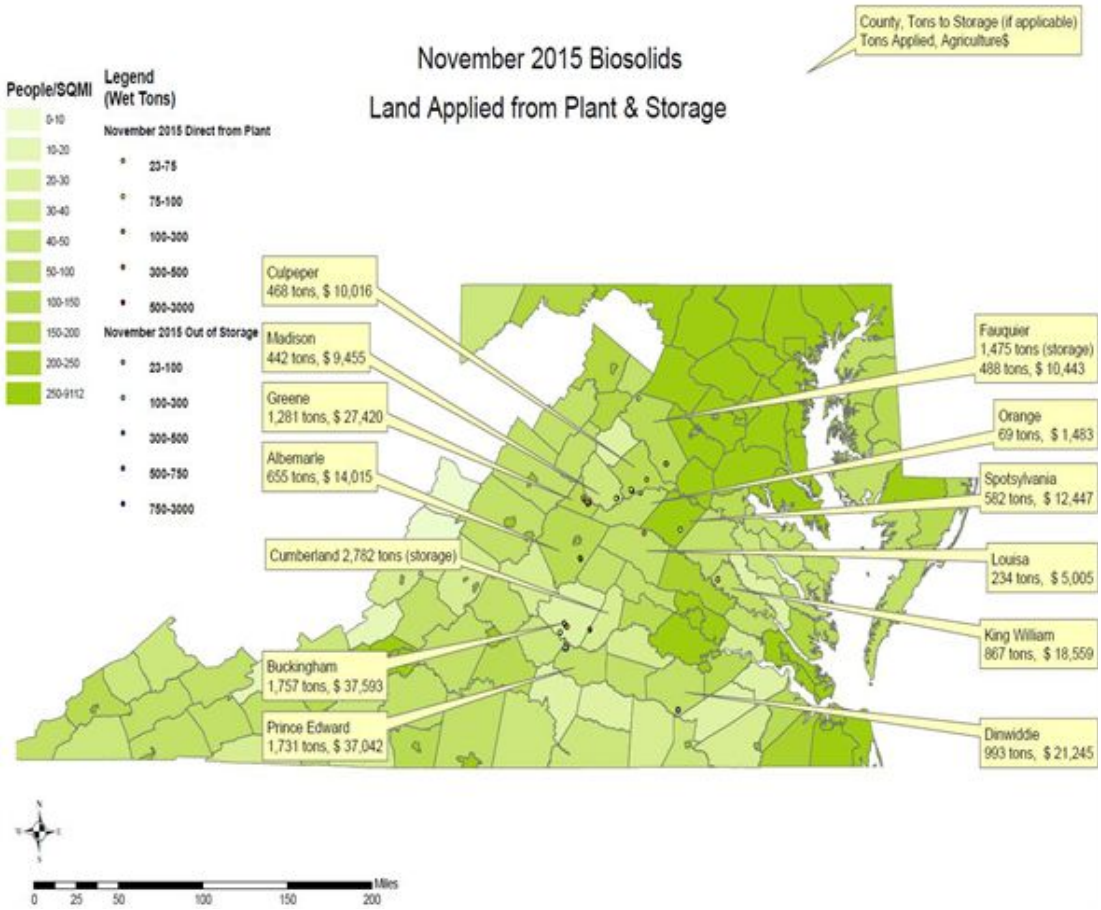
In December, biosolids hauling averaged 452 wet tons per day (wtpd). The graph below shows the total hauling by contractor for the month of December. The average percent solids for the digested material was 30.1%. At the end of December the Cumberland County storage pad had approximately 11,561 tons (~25,000 tons capacity), Cedarville lagoon had approximately 0 tons of Blue Plains biosolids (~30,000 tons capacity), Goochland pad had 1000 tons, and Fauquier lagoon had 1126 tons (~15,000 tons capacity).



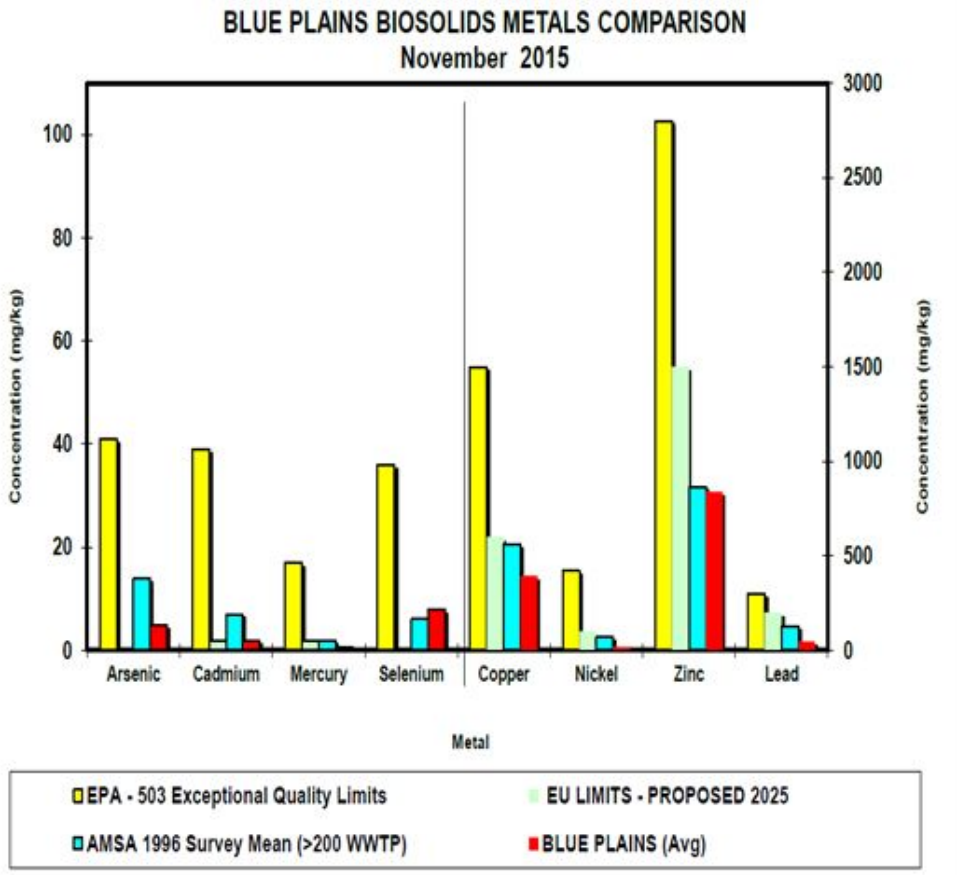


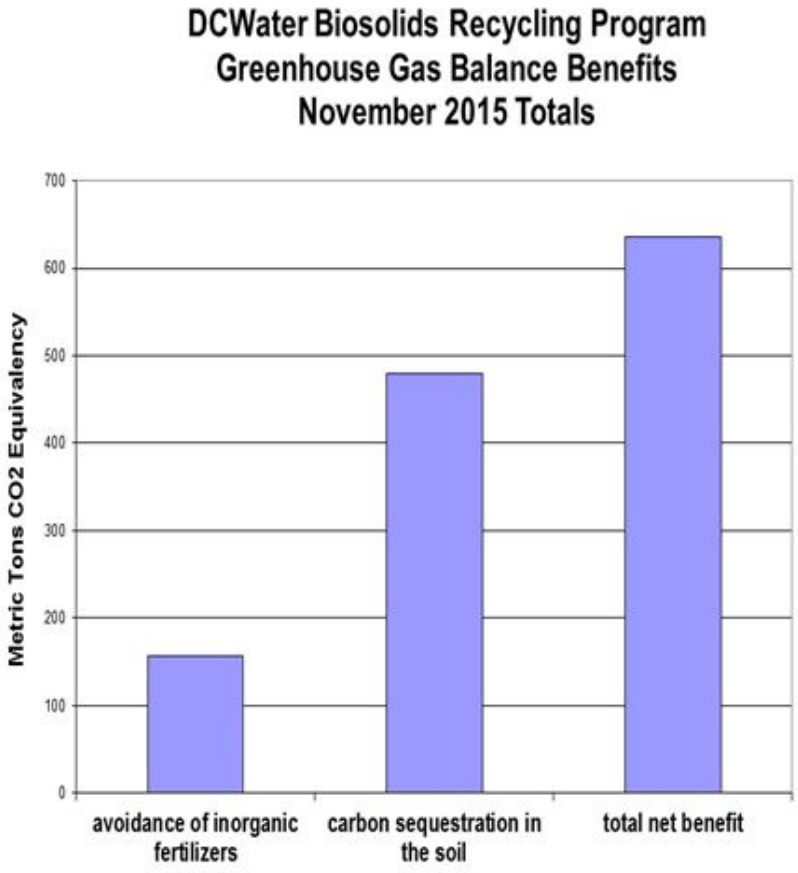
Please note the drop in biosolids management costs (second graph below, right vertical axis) due to the reduction in solids production since digesters came on line, and also due to the drop in fuel costs. In December, diesel prices averaged $2.47/gallon and with the contractual fuel surcharge the weighted average biosolids reuse cost in December for the two contracts (DC Water and WSSC) was $39.75/wet ton. For comparison, in December 2014 the average diesel price was $3.49/gal and the average contract cost was $42.54/wet ton.

Map of Blue Plains Biosolids Applications and Agricultural $'s for November 2015



The graph below show the EPA regulated heavy metals in the Blue Plains biosolids for the month of November 2015. As can be seen in the graphs, the Blue Plains levels are considerably below the regulated exceptional quality limits, the national average levels surveyed in 1996, and the European Union (EU) limits. The EU limits are more conservative than the USEPA limits, and Blue Plains biosolids metals content is lower than the EU standards as well.





Environmental Benefits

The quantity land applied in November coming directly from the plant and from storage facilities equaled 13,882 tons. Taking into account the fuel required to transport biosolids to the field, the net benefit of the land applied material is 636 metric tons CO_2 equivalent avoided emissions. This is equivalent to taking 1,295,737 car miles off the road in the month of November (assumes 20 mpg, 19.4 lb CO_2 equivalent emissions/gallon gas – EPA estimate). The cumulative total avoided carbon emission since December, 2006 is 142,337 metric tons CO_2 equivalent.

Clean Water Quality and Technology – December 2015

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

Research and Development Program

The research and development team continues to work on research topics associated with the planning and operation of Blue Plains. The current focus of research is to optimize plant processes' capacities and to pave the road for achieving energy neutral operations at Blue Plains advanced wastewater treatment plant (Blue Plains AWTP).

Research Highlights – Optimization of belt filter dewatering of thermally hydrolyzed biosolids

The CAMBI thermal hydrolysis process (THP) and mesophilic anaerobic digesters were commissioned at Blue Plains in 2015. Some of the advantages of this new solids process included reduced capital cost, a Class A biosolids product, and better digested sludge dewaterability compared to conventional digesters. Belt filter press dewatering (BFP) was selected as the preferred dewatering technology. BFP dewatering has the advantage of minimizing odors and regrowth of bacteria in the biosolids compared to centrifuge dewatering while producing a cake with similar solids content. In addition to the promising cake solids, belt filter press dewatering usually produces a filtrate of higher quality.

A full scale Demon deammonification process is presently under construction to treat the high strength filtrate from the belt presses. Filtrate quality directly affects operation of this process. In contrast to conventional digestates, we found that THP filtrates contain inhibitory compounds that affect both aerobic ammonium oxidizing bacteria (AerAOB) as well as anoxic ammonium oxidizing (anammox) bacteria (AnAOB) needed for the deammonification process (Zhang et al. 2015). More recently, a detailed analysis has shown that particulate and colloidal material in the filtrate affected AerAOB reaction rates because these materials limited the diffusion of substrate to the bacteria. It was also found that soluble COD directly influenced AnAOB growth rates [GM report update, July 2015].

Once the full-scale filtrate stream became available during the digester commissioning period, a series of bench tests were conducted to improve our understanding of the impact of Blue Plains full-scale filtrate quality on the deammonification process. The bench testing included dewatering studies to evaluate the effect of different flocculant polymer doses on filtrate characteristics. In addition, an inorganic coagulant (FeCl3) and an organic coagulant polymer (polyDADMAC) added prior to dewatering were assessed for their ability to produce filtrate that contains less colloidal material. The overall goals include optimizing filtrate quality and the future filtrate treatment process while obtaining dewatered cake with high total solids content.

These lab-scale dewatering tests were performed using the methodology developed by Dr. Matthew Higgins of Bucknell University. Filtrate samples from the full-scale process

as well as lab-scale experiments were analyzed for TSS, VSS, total COD, particulate COD, colloidal COD, soluble COD and nitrogen species (NH4, NO3,NO2). The inhibitory effect of the different filtrates on AerAOB and AnAOB was determined through activity batch tests, which were designed and conducted at our research facilities at Blue Plains.

The lab scale testing showed that inhibition of AerAOB activity by the filtrate could be minimized when an optimal flocculant polymer dose was applied to the dewatering process (**Exhibit A, Graph I A**). Flocculant polymer under-dosing caused an increase in the COD content of the filtrate and resulted in higher inhibition, while filtrate generated from bench dewatering tests where polymer was overdosed seemed to negatively affect AerAOB possibly as the result of residual polymer in the filtrate. When coagulants were added **(Exhibit A, Graph II A)**, especially in the case of PolyDADMAC coagulant polymer, the inhibition effect on AerAOB was reduced. It was hypothesized that the removal of the colloidal material (particles size between 0.45 and 1 um, referred to as "big" colloidal) was essential for minimizing inhibition of AerAOB. A difference in activity rates also was observed between filtrate samples generated during a period when the full scale digester was experiencing process upset and during stable operation. When digestion performance was stable, the "big" colloidal fraction was lower, decreasing the net effect of coagulant addition for improving AerAOB rates (**Exhibit A, Graph II A**).

AnAOB activity rates are shown in **Exhibit A, Graphs I B and II B**. In contrast to results observed for AerAOB, changes in dewatering efficiency and removal of colloidal material by adding coagulant did not result in large differences in the activity rate. This was probably because soluble organics were affecting AnAOB more significantly. In longer term reactor tests, AerAOB had been identified as the limitation for deammonification of CAMBI filtrate and AnAOB limitation was never observed. Therefore, reducing the inhibitory effect on AerAOB by removing more of the colloidal material during the dewatering process would be very beneficial for the downstream treatment process.

As the coagulant addition seemed promising for reducing inhibition on AerAOB, additional bench scale dewatering tests were performed to evaluate the filtrate quality resulting from different combinations of coagulant and flocculant doses. From the tests, significant improvement in removal of colloidal material could only be obtained at minimum doses of coagulant polymer of 4 lb/dry ton. The bench tests also showed that the flocculant polymer dose could be decreased to obtain better filtrate quality at similar overall total polymer dose (**Exhibit B, Graphs A and B**). This concept will be further tested at full-scale to evaluate both cake solid impact as well as filtrate quality improvement.

Commissioning of the BFPs began in November 2014. Digested solids characteristics changed over time because of the load ramp-up associated with commissioning of the anaerobic digesters. This ramp-up was completed in April 2015 and belt press feed solids conditions have been relatively steady since that time. Operating results have also been consistent, with cake solids in the range of 30 to 32% TS, flocculant polymer consumption of approximately 20 lb/dt, and the feed solids concentration to the belt presses is controlled with dilution water to a target of approximately 3.5% TS. The process engineering, R&D and operations teams are now working on optimization studies for the belt press operation. A first phase was recently completed (December 2015) to examine impact of different flocculant polymer doses on cake solids and full-

scale filtrate quality. This testing will continue over the next several months and will include testing of coagulant polymer and other optimization strategies.

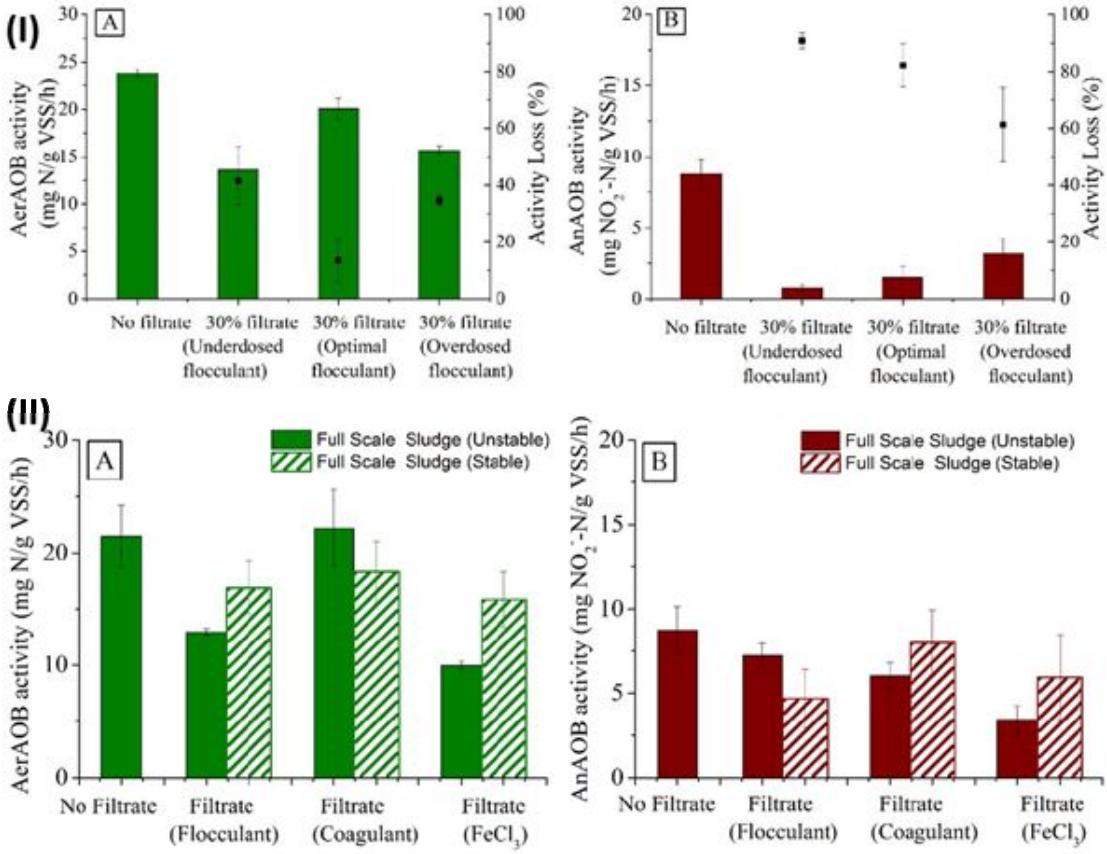


Exhibit A. The first two graphs (I) show AerAOB (A) and AnAOB (B) activity rates when exposed to filtrate of different qualities (resulting from under dose, optimal dose, and over dose of flocculant polymer and without addition of coagulant polymer). The second set of graphs (II) show AerAOB (A) and AnAOB (B) activity rates when exposed to filtrate of different qualities produced by adding coagulant (4 lb/ton PolyDADMAC or FeCl3) in addition to a flocculant polymer dose of 20 lb/ton. These tests were conducted during a period of digester upset as well as during a period of stable operation.

Table 1. Characteristics of Filtrate Used During Activity Testing

Test	NH4-N mg/L	Total COD mg/L	sCOD mg/L	pCOD mg/L	Big cCOD mg/L	Small cCOD mg/L	TSS mg/L	VFA mg/L
Flocculant Only (Filtrate evaluated in graphs IA and IB								
Under-dose	1883	4978	-	587	1211		1027	68
Optimal dose	1885	4052	-	218	76		377	61
Over dose	1800	3850	-	148	32		307	77
Flocculant + Coagulant (Filtrates evaluated in graphs IIA and IIB)								
Flocculant only	2217/ 1793	5975/ 3788	3770/ 2694	1275/ 478	515/ 222	415/ 394	595/ 290	-/ 55
Coagulant + flocculant	2205/ 1688	5250/ 3500	3775/ 2684	895/ 286	155/ 114	425/ 502	495/ 155	-/ 54
FeCl3 + flocculant	2170/ 1752	4470/ 3082	3395/ 2640	685/ 240	220/ 68	170/ 134	430/ 158	-/ 55

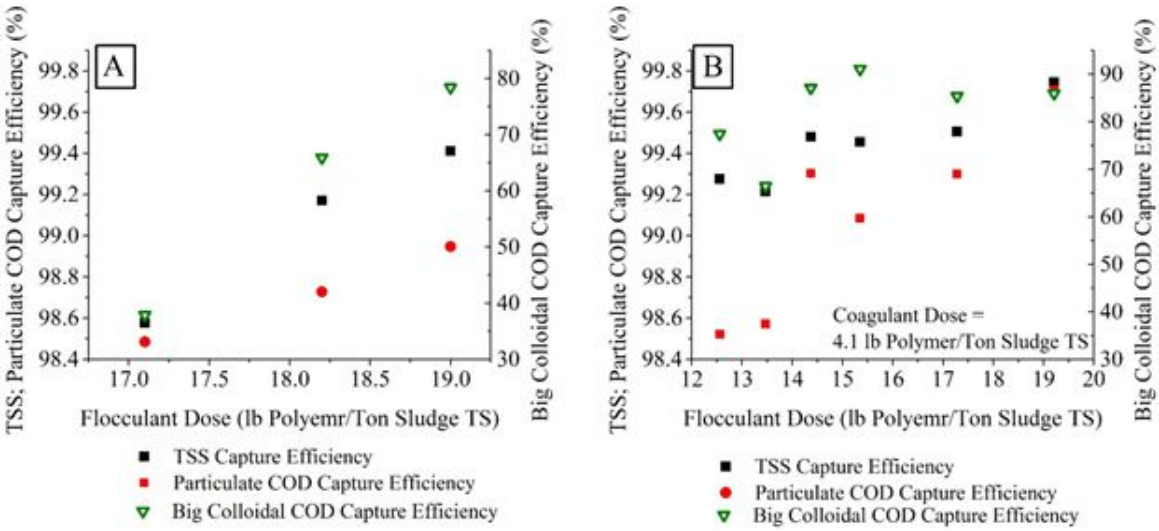


Exhibit B: COD capture efficiency when using only flocculant polymer (A) or using 4.1 lb coagulant polymer/ton TS in addition to different flocculant polymer doses (B).

Highlighted Events

October 23, 2015 – Carbon and Nitrogen Pilot design – Process Control Strategies
Mr. Ahmed Al-Omari (Manager R&D) and Ms. Christine deBarbadillo (Director of CWQ&T) organized a workshop to discuss the future carbon and nitrogen removal pilot. The pilot is designed to demonstrate a pathway towards an intensified and more efficient [doing more with less] Full-scale plant. A group of key staff from DC Water, AECOM, HRSD, and world water works reviewed the process configuration and testing scenarios.

The group collectively finalized the set of process control strategies for all scenarios and reviewed the pilot general design layout.

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.

This month, the laboratory continued the analysis of Belt Filter Press cake samples for fecal coliform bacteria for DCWater's Class A Biosolids reporting, as well as digester samples from the new Cambi Thermal Hydrolysis and Anaerobic Digestion facility, including Total and Volatile Solids, Total and Volatile Suspended Solids, Ammonia Nitrogen, and pH. Fecal coliform 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.

This month, the laboratory also undertook extensive additional analyses of Biosolids Digester Process samples, as well as Centrifuge samples, for Total Solids and Total Suspended Solids, to monitor and evaluate Process equipment performance and compliance.

The laboratory also assists the Department of Sewer Services on a regular basis conducting microbiological analysis of water samples for E. Coli bacteria. Laboratory staff also participates in the WWOA Executive Board.

Blue Plains Pretreatment Program

The Blue Plains Pretreatment Program staff of two manages the Industrial Pretreatment Program, including temporary dewatering dischargers from construction activities, as well as the Hauled Waste Program. Additional responsibilities include providing specialized sampling and program management support for the Blue Plains NPDES permit and facilitating the quarterly Blue Plains Storm Water Committee meeting, which was conducted this month.

<u>Industrial Pretreatment Program</u>

DC Water currently manages fifteen (15) Significant Industrial User (SIU) permits and sixteen (16) Non-Significant Industrial User (NSIU) wastewater discharge permits. One SIU permit was renewed this month for the Metropolitan Washington Airports Authority Dulles Airport. One NSIU permit was also renewed this month for the DC Consolidated Forensics Lab. DC Water is still waiting on payment from the Veterans Affairs Medical Center (VAMC) before their NSIU permit can be renewed.

One inspection was conducted this month at the Bureau of Engraving and Printing to tour the new treatment system and wipe solution recycling plant being constructed. Compliance monitoring was conducted at one SIU this month: WMATA Shepherd Parkway Bus Facility. WMATA reported a zinc violation of 5.8 mg/L (discharge limit is 3.4 mg/L) for the WMATA Bladensburg Bus Facility Outfall 001 this month. A Notice of Violation was issued to WMATA on November 30, 2015. Follow-up monitoring conducted on December 15, 16, and 17, 2015, showed the facility back in compliance with the zinc discharge limit for all three sampling events. All other SIUs and NSIUs are in compliance with discharge standards for the current month.

The owner of 2201 Channing St., NE, complied with the Directive issued last month to cap and fill the trench drain on their property by the sidewalk in public space. This resolves the issue of storm runoff entering the separate sanitary sewer.

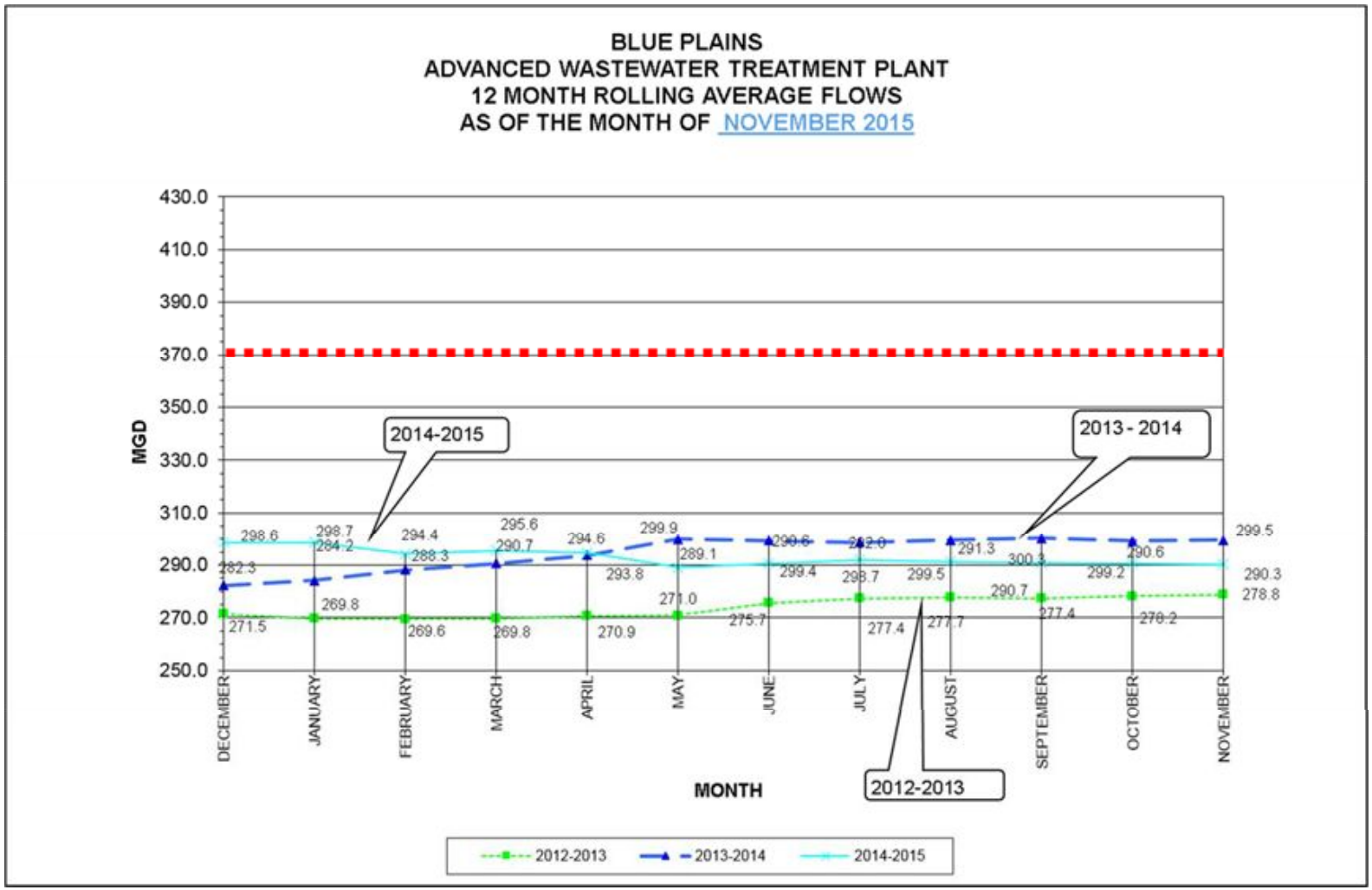
DC Water currently manages 69 Temporary Discharge Authorization (TDA) permits, primarily for construction site discharges of groundwater and/or surface runoff in the combined sewer area. Two new TDA permits were issued this month. All TDA discharges are currently in compliance with pretreatment standards.

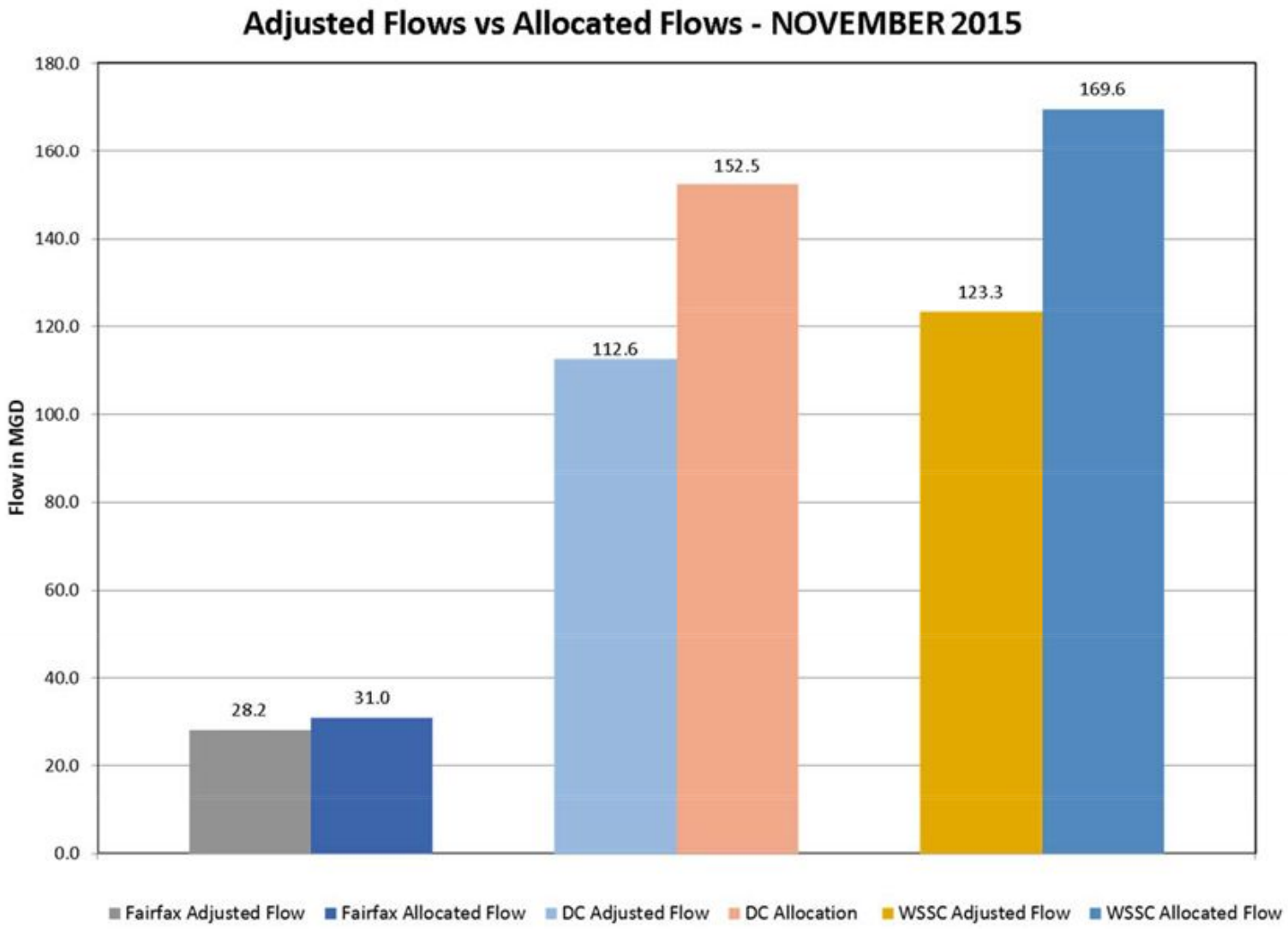
Hauled Waste Program

As of the end of the current month, the hauled waste program had 22 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. DC Water collected fees from seven waste haulers this month, including those on a monthly payment plan option. DC Water received 361 hauled waste loads (829,173 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. Data is entered into an Excel spreadsheet to track the volume and type of loads being discharged daily and the results of sampling. Two hauled waste samples were collected this month, one grease trap waste and one runoff sample were collected this month. The grease trap waste sample was collected from Storm Oil on November 23, 2015, and violated the discharge standard for pH at 3.87 (limit is 5.0 to 10.0). A Notice of Violation (NOV) was issued on December 9, 2015. No impact to the treatment plant was observed due to this exceedance.

NPDES Permit Sampling

Pretreatment staff collected the quarterly plant influent, effluent, and biosolids samples this month as well as the bimonthly metals at outfall 002, which included low-level mercury using clean sampling techniques. Staff also collected one wet weather 24-hour composite sample at outfall 002 and a grab sample at outfall 001 for low level PCB analysis using EPA Method 1668 this month, as well as additional samples at outfall 001 required for the NPDES permit renewal.


BLUE PLAINS
ADVANCED WASTEWATER TREATMENT PLANT
12 MONTH ROLLING AVERAGE FLOWS
AS OF THE MONTH OF NOVEMBER 2015
MGD
430.0
410.0
390.0
370.0
350.0
330.0
310.0
290.0
270.0
250.0
2014-2015
2013 - 2014
2012-2013
298.6
298.7
294.4
295.6
294.6
299.9
299.6
299.5
284.2
288.3
290.7
289.1
291.3
300.3
290.6
282.3
293.8
299.4
298.7
299.5
299.2
290.3
269.8
271.0
290.7
278.8
271.5
269.6
269.8
270.9
275.7
277.4
277.7
277.4
270.2
DECEMBER
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
MONTH
2012-2013
2013-2014
2014-2015


Adjusted Flows vs Allocated Flows - NOVEMBER 2015
Flow in MGD
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
28.2
31.0
112.6
152.5
123.3
169.6
Fairfax Adjusted Flow
Fairfax Allocated Flow
DC Adjusted Flow
DC Allocation
WSSC Adjusted Flow
WSSC Allocated Flow

District of Columbia Water and Sewer Authority
George S. Hawkins, General Manager

Briefing on:

NPDES Permit Reissuance

Briefing for:

Environmental Quality and Sewerage Services Committee

January 21, 2016

DCWATER.COM

Agenda

- Background
- DC Water's Requested Permit Revisions
- Status of Permit Reissuance
- Next Steps

dc clean RIVERS PROJECT

Background

- National Pollutant Discharge Elimination System Permit (NPDES)
  - Issued to DC Water by USEPA Region III
  - District Department of Environment certifies Permit
- Permit authorizes discharges:
  - From Blue Plains
  - From CSO outfalls in combined sewer system
- Permit issued for 5 year period Sept. 30, 2010 to Sept. 30, 2015
- Permit administratively extended provided reapplication made 6 months in advance of expiration (DC Water applied in March 2015)

dc clean RIVERS PROJECT

Existing NPDES Permit

- Permit is a Phase 2 permit per the CSO Policy

- Permit is 'forward looking'
  - Includes conditions for current configuration of Blue Plains and sewer system
  - Includes conditions for system after implementation of Tunnel System and Wet Weather Treatment facility at Blue Plains

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DC Water's Requested Permit Revisions
(Only significant revisions shown)

- Classification of Outfall 001
- Design capacity of Blue Plains Outfall 002
- E. Coli TMDL

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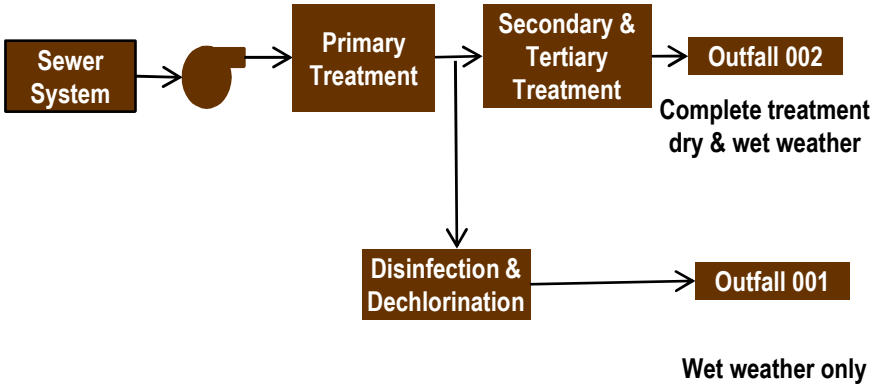
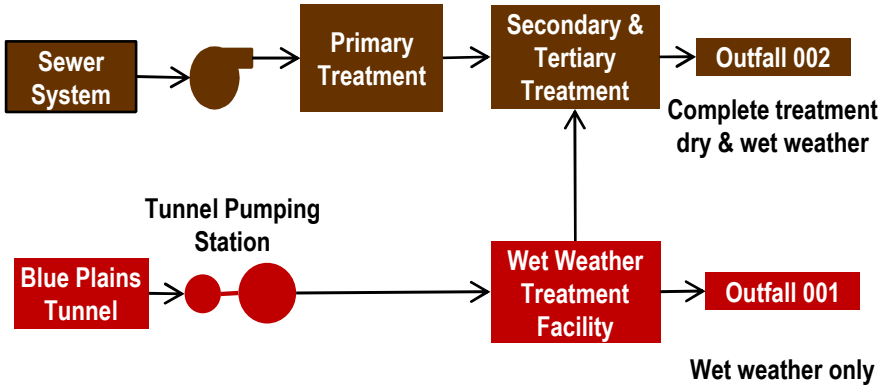
DC Water's Requested Permit Revisions:
Classification of Outfall 001

Existing System Configuration



System Configuration After Tunnel & Wet Weather Treatment Facility (2018)



Existing Permit:

- 001 classified as 'CSO Bypass'
- No effluent limits, monitoring only
- Bypass must be approved by EPA each permit cycle and can contain weekly & monthly limits

DC Water Proposed Revision:

- Classify 001 as separate CSO (new configuration with separate headworks justifies classification)
- No effluent limits, monitoring only
- Does not require re-evaluation of bypass at each permit cycle

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DC Water's Requested Permit Revisions:

Reasons for Outfall 001 Classification

- Classification as a CSO does not require re-evaluation of bypass at each permit cycle – provides more certainty
- Variability of CSO flows and loads makes achieving weekly or monthly effluent limits challenging
- Classification as CSO allows more latitude in establishing performance required of treatment system
  - 001 treatment can be evaluated based on post construction monitoring rather than assigning weekly or monthly permit limits
- Classification as a CSO best manages risks as system moves into operation

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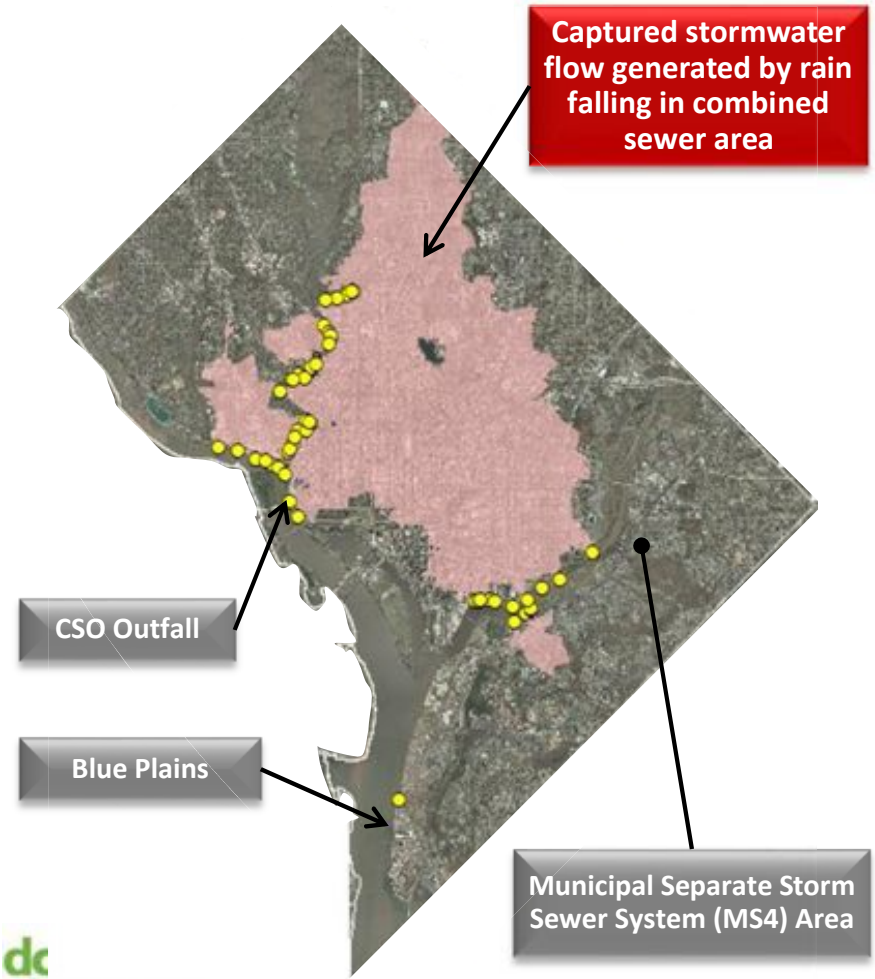
DC Water's Requested Permit Revisions:

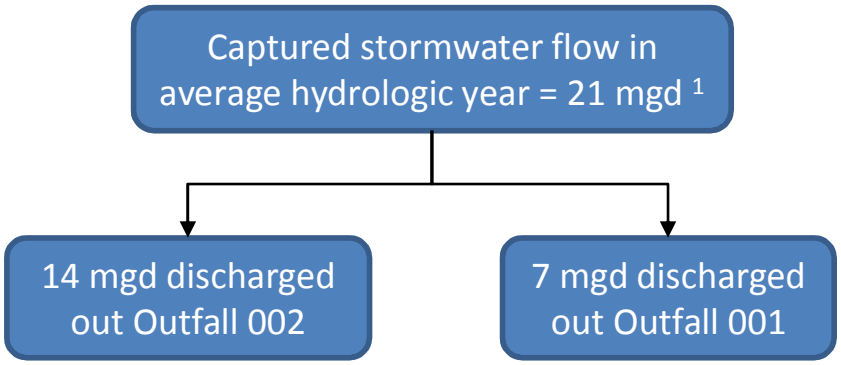
Blue Plains 002 Design Capacity



- Existing permit lists design capacity of Outfall 002 (complete treatment) as 370 mgd
- 1984 Blue Plains Feasibility Study established 370 mgd design capacity based on **dry weather flow**
  - Wet weather flow considered to be incidental
  - Treatment process had capacity to handle wet weather flow without quantifying it
  - Captured stormwater flow not part of 370 mgd flow projection
- Quantification of **captured stormwater flow** has become necessary given development of LTCP and Ches. Bay TMDL program

dc RIVERS PROJECT

DC Water's Requested Permit Revisions:
Blue Plains 002 Design Capacityt



Source	Design Capaity of Outfall 002 (mgd)
1. Dry Weather Flow	370
2. Captured Stormwater	14
3. Total	384

Notes:

(1). Based on predictions from the LTCP CSS wet weather model for the average year using the LTCP hydrologic period 1988 through 1990

- Design capacity of 384 mgd has been incorporated into Intermunicipal Agreement of 2012 signed by
- DC Water not requesting changes to loads in existing TMDLs. Loads to be re-evaluate if TMDLs revised or new TMDLs issued
- Why is it important?
  - Recognizes what is actually occurring
  - Matches up permit with IMA
  - Design capacity in permit is used to establish load allocations for Blue Plains
    - TMDLs

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E. Coli TMDL

- EPA approved a new Total Maximum Daily Load for E. Coli bacteria on Dec. 31, 2014
- Blue Plains would be unable to meet the daily allocations established
- DC Water appealed EPA's approval of TMDL in Nov 2015
- TMDL appeal will affect establishing e. coli limits in permit
- Unlikely that permit limits will be established until appeal is resolved

dc clean RIVERS PROJECT

Status of Permit Reissuance and Next Steps

- Status
  - Application filed March 2015
  - EPA made one request for additional information in August 2015 and DC Water provided additional information
  - EPA meeting held Jan. 11, 2016 to review DC Water' proposed revisions
  - EPA reviewing proposed revisions
- Next Steps
  - Additional meeting and exchange of draft permit language before draft permit is public noticed
  - Schedule for permit reissuance may be affected by E. coli TMDL appeal

dc clean RIVERS PROJECT

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

ACTION REQUESTED

GOODS AND SERVICES CONTRACT MODIFICATION:

Polymer - Dewatering
(Joint Use)

Approval to extend option year two of the contract for polymer for dewatering in the amount of $910,000.

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:	PARTICIPATION:
Polydyne, Inc. One Chemical Plant Road Riceboro, GA 31323	Hardy & Son Trucking	15%

DESCRIPTION AND PURPOSE

Original Contract Value:	$1,803,739.00
Original Contract Dates:	01-01-2013 – 12-31-2013
Number of Option Years:	2
Modification No. 1 Values:	$490,000.00
Modification No. 1 Dates:	01-01-2015 – 03-01-2016
Option Year (1) Value:	$1,420,000.00
Option Year (1) Dates:	01-01-2014 – 12-31-2014
Option Year (2) Value:	$1,420,00.00
Option Year (2) Dates:	03-02-2015 – 03-01-2016
Modification No. 2 Value:	**$910,000.00**
Modification No. 2 Dates:	**03-02-2016 – 12-31-2016**

Purpose of the Contract:

To ensure the District of Columbia Water and Sewer Authority is able to meet its National Pollution Discharge Elimination System (NPDES) permits requirement under the Clean Water Act (CWA).

Contract Scope:

To provide polymer to the Blue Plains Advanced Wastewater Treatment Facility for solids dewatering, for the Department of Wastewater Treatment.

Spending Previous Years:

Cumulative Contract Value:	01-01-2013 – 03-01-2016 - $5,133,739.00
Cumulative Contract Spending:	01-01-2013 – 01-13-2016 - $4,574,103.90

Contractor's Past Performance:

The Contractor's past performance has been satisfactory.

Note:

This contract extension is to provide funds for continued testing of the contracted product. Polydyne has agreed to maintain current product pricing through the end of this contract extension.

PROCUREMENT INFORMATION

Contract Type:	Fixed Price Requirement Contract	**Award Based On:**	Lowest responsive and responsible bidder(s)
Commodity:	Goods and Services	**Contract Number:**	WAS-12-066-AA-RE
Contractor Market:	Open to Pre-Qualified Vendors Based on Field Trials of Samples Submitted.		

BUDGET INFORMATION

Funding:	Operating	**Department:**	Wastewater Treatment
Service Area:	Blue Plains AWTF	**Department Head:**	Salil Kharkar

ESTIMATED USER SHARE INFORMATION

User	Share %	Dollar Amount
District of Columbia	41.67%	$379,197.00
Washington Suburban Sanitary Commission	43.21%	$393,211.00
Fairfax County	10.45%	$95,095.00
Loudoun County & Potomac Interceptor	4.02%	$36,582.00
Others	0.65%	$5,915.00
TOTAL ESTIMATED DOLLAR AMOUNT	**100.00%**	**$910,000.00**

1/14/16
Gail Alexander-Reeves Date
Director of Budget

1/13/16
Dan Bae Date
Director of Procurement

01/15/16
Aklile Tesfaye Date
AGM, Blue Plains

George S. Hawkins Date
General Manager

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

ACTION REQUESTED

GOODS AND SERVICES CONTRACT OPTION:

Repair of Various Large Electrical Motors and Eddy Current Drives (Joint Use)

Approval to execute an option year four (4) for a contract for the repair of various electrical motors and Eddy Current drives in the amount of $671,534.00.

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:	PARTICIPATION:
Electric Motor and Contracting Co., Inc 3703 Cook Blvd. Chesapeake, VA 23323		

DESCRIPTION AND PURPOSE

Original Contract Value:	$634,518.48
Original Contract Dates:	01-23-2012—01-22-2013
No. of Option Years in Contract:	4
Option Year (1) Value:	$0.00
Option Year (1) Dates:	01-23-2013—01-22-2014
Option Year (2) Value:	$140,000.00
Option Year (2) Dates:	01-23-2014 – 01-22-2015
Option Year (3) Value:	$694,518.48
Option Year (3) Dates:	03-24-2015 – 03-23-2016
Contract Modification Values:	$360,000.00
Contract Modification Dates:	10-09-2013—03-23-2015
Option Year (4) Value:	**$671,534.00**
Option Year (4) Dates:	**03-24-2016 – 03-23-2017**

Purpose of the Contract:

To repair various large electrical motors and Eddy Current drives at various DC Water facilities, for the departments of Maintenance Services and Water/Sewer Pumping Maintenance.

Contract Scope:

The contractor provides personnel and parts necessary for the repair of various large electrical motors and Eddy Current drives at various DC Water facilities.

Spending Previous Years:

Cumulative Contract Value:	01-23-2012 to 01-22-2016—$1,689,036.96
Cumulative Contract Spending:	01-23-2012 to 01-04-2016—$1,466,329.56

Contractor's Past Performance:

The contractor's past performance has been satisfactory.

No LSBE participation

PROCUREMENT INFORMATION

Contract Type:	Fixed Unit Price	**Award Based On:**	Lowest Responsive & Responsible Bidder
Commodity:	Services	**Contract Number:**	WAS-11-049-AA-GA
Contractor Market:	Open Market with LBE and LSBE Preference Participation.		

BUDGET INFORMATION

Funding:	Capital	**Department:**	Maintenance Services
Service Area:	Blue Plains	**Department Head:**	Anthony Mack

ESTIMATED USER SHARE INFORMATION

User	Share %	Dollar Amount
District of Columbia	41.54%	$278,955.22
Washington Suburban Sanitary Commission	45.26%	$303,936.29
Fairfax County	8.64%	$58,040.68
Loudoun County	3.75%	$25,182.53
Potomac Interceptor	0.81%	$5,439.43
TOTAL ESTIMATED DOLLAR AMOUNT	**100.00%**	**$671,554.15**

Gail Alexander-Reeves / 1/14/16
Director of Budget — Date

Dan Bae / 1/13/16
Director of Procurement — Date

Aklile Tesfaye / 01/15/16
AGM Blue Plains — Date

George S. Hawkins / _____
General Manager — Date

District of Columbia Water and Sewer Authority
George S. Hawkins, General Manager

Briefing on:

DC CLEAN RIVERS PROJECT

Northeast Boundary Tunnel Design-Build Update

Briefing for:

EQSS Committee

January 21, 2016

DCWATER.COM

Background
2012 Flooding

Photo source unknown

1st St NW

Photo source unknown

Rhode Island & T St NW

Photo courtesy of: Greg Roberts

Rhode Island & T St NW

Photo source unknown

Rhode Island Metro

Photo courtesy of myfox.com

Rhode Island & T St NW

Photo source unknown

1st & V St NW

Photo courtesy of myfox.com

Flagler Pl NW

Photo source unknown

Photo courtesy of huffingtonpost.com

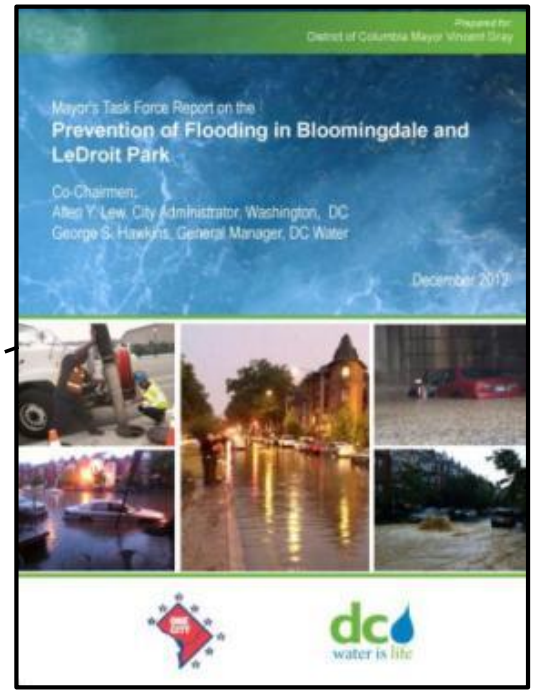
Rhode Island Between 1st & 2nd St

Background
Mayor's Task Force

4 storms caused major flooding: July 10, 18, 19 and Sept 2, 2012

Mayor formed Task Force in Aug 2012

Task Force report delivered end of Dec 2012



Over 25 Recommendations:

- Public Outreach
- Regulatory
- Code Changes
- Operations & Maintenance
- **Engineering Measures**
  - McMillan Stormwater Storage
  - First Street Tunnel
  - Northeast Boundary Tunnel (NEBT)

dc clean RIVERS PROJECT

Background
Mayor's Task Force Plan

1. SHORT-TERM (NOT ILLUSTRATED)

- Construction of green infrastructure projects
- Installation of storm drains and a five-foot-wide storm sewer
- Backwater valve and rain barrel program

2. MEDIUM-TERM

IRVING STREET GREEN INFRASTRUCTURE PROJECT

- Construction of bioretention facilities along Irving Street NW
- 0.4 million gallons. Completed

MCMILLAN STORMWATER STORAGE PROJECT

- Repurpose McMillan Sand Filtration cells as stormwater storage
- In-line storage in a sewer that runs along First Street NW
- 3.6 million gallons. Completed

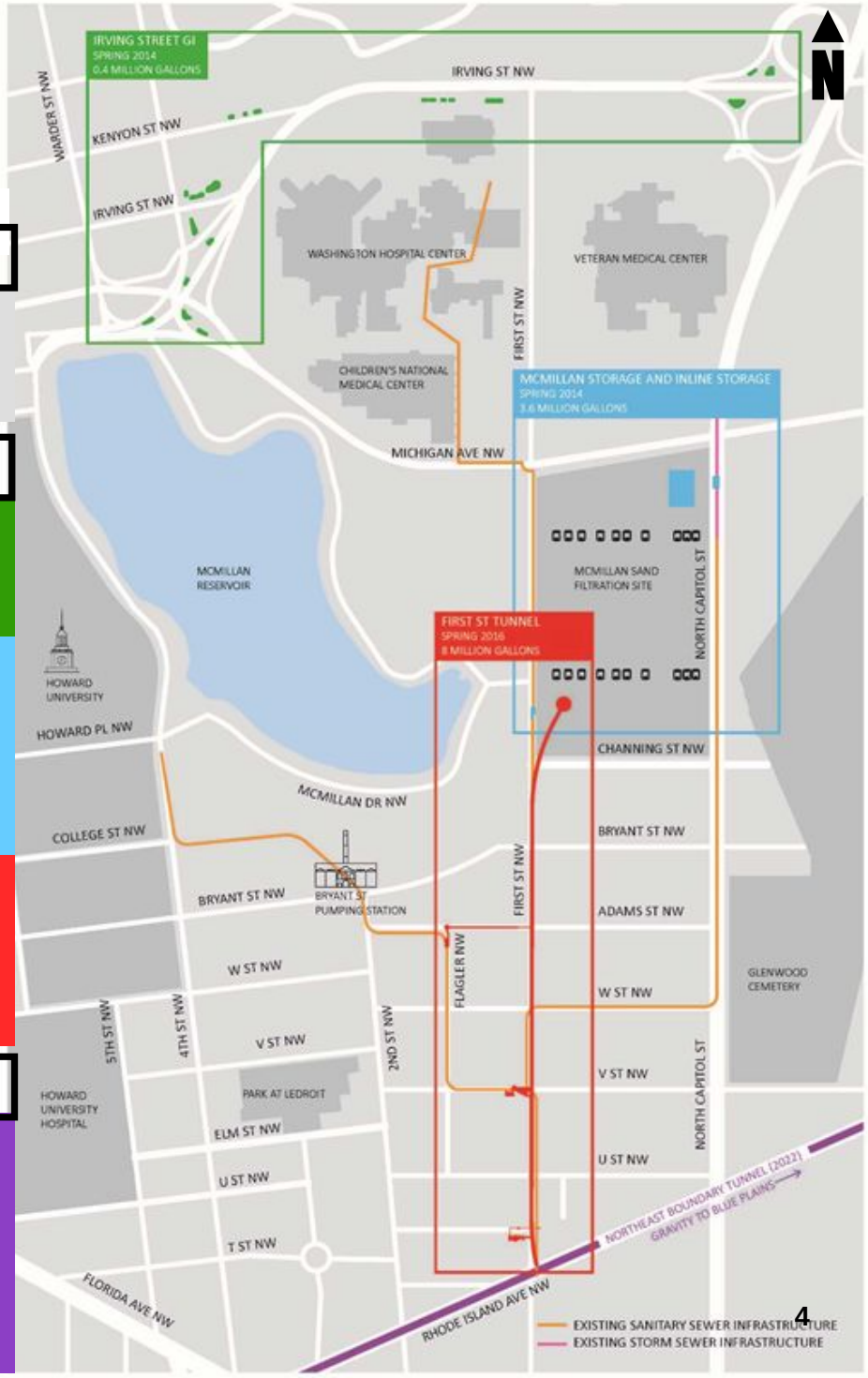
FIRST STREET TUNNEL PROJECT

- Construction of a new tunnel under First Street NW
- Construction of diversion facilities to divert flows to tunnel
- 9 million gallons, Completion in Spring 2016

3. LONG-TERM

NORTHEAST BOUNDARY TUNNEL PROJECT

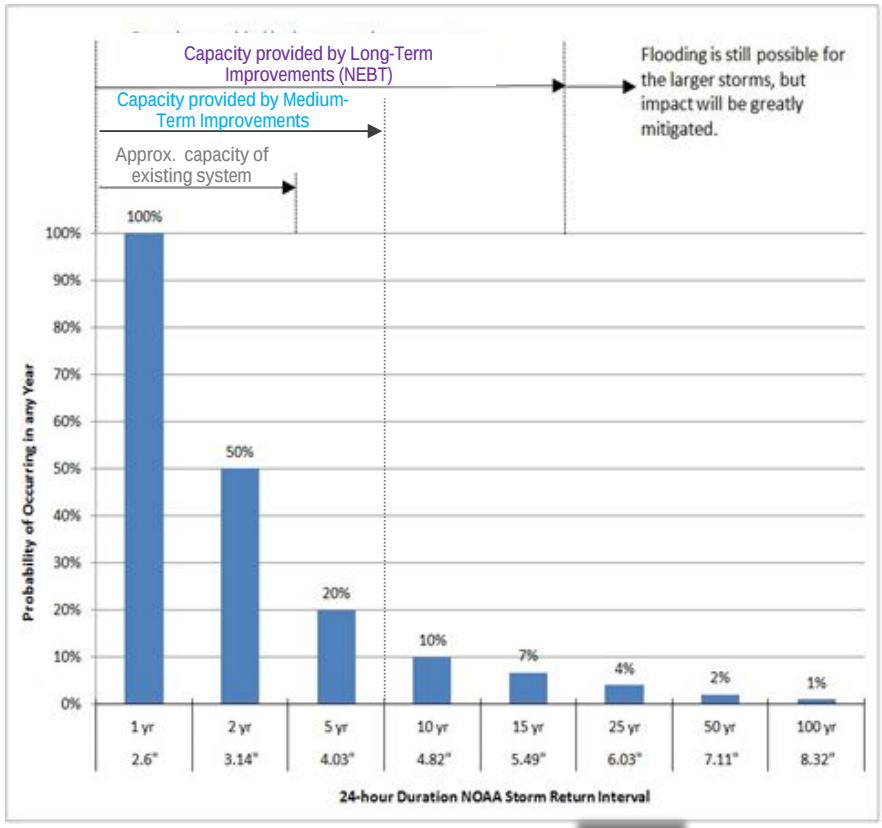
- A large, deep sewer tunnel that will increase the capacity of the sewer system to current design standards and control combined sewer overflow discharges to the Anacostia River



Background
Project Benefits

- Significantly mitigate the frequency, magnitude and duration of sewer flooding and basement backups in the Northeast Boundary drainage area
- Control combined sewer overflow (CSO) discharges to the Anacostia River, significantly improving water quality
- Minimize the nuisance and economic costs associated with flooding
- Reduce risks to human health
- Greatly reduce the discharge of untreated wastewater into the District's receiving waterbodies
- Prevent deterioration of historic resources from water damage caused by flooding

Flood Relief



CSO Reduction to Anacostia River

CSO Reduction Project Timeline	CSO Overflow Volume to Anacostia River (mg/yr)	% Reduction from Baseline
1996: Baseline: Without Inflatable Dams or Pumping Station Rehab	**2,142**	
2008: After Inflatable Dams and Pumping Station Rehab	**1,282**	**40%**
2018: Blue Plains and Anacostia River Tunnels	**407**	**81%**
2022/3: Northeast Boundary Tunnel*	**54**	**98%**

SIGNIFICANT CSO REDUCTION

*** 2025 Consent Decree Deadline; Project accelerated due to Mayor's Task Force recommendations.**

Northeast Boundary Tunnel
Alignment and Project Sites

6

Northeast Boundary Tunnel
Construction Phases

Construction work has been divided into two contracts:

Contract	Description	Start	End
Division U	• Relocation of utilities (gas, electric, communication, water, sewer, etc.) that conflict with permanent tunnel structures • DC Water to contract with Prime Contractor - *Prime to perform water and sewer work* - *Prime to hire pre-approved utility subcontractors to complete electric, communication and gas work* • Typical linear trench-type utility work • Moving work areas	April 2016	Sept 2017
Division J	• Construction of NEBT and diversion facilities along tunnel alignment • Stationary work areas	April 2017	Dec 2022

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Northeast Boundary Tunnel
What Are We Building?

- Five (5) large underground diversion chambers, typically 30 to 40 ft deep
- Seven (7) approximately 100 ft deep shafts, ranging 20 to 45 ft in diameter
- Five (5) Adits, ranging from 8 to 15 ft in diameter
- Underground connections of tunnels to shafts, adits to shafts, adits to tunnels, tunnel to tunnel
- Ground improvement as required for underground connections
- Site restoration and landscaping
- Utility relocations
- *Working in busy urban environment that requires the maintenance of vehicular, pedestrian, bicycle and transit traffic*

Northeast Boundary Tunnel
Current Status

- Division U
  - Finalized design – January 2016
  - Coordination with District agencies for permitting
  - Procuring Contractor through design-bid-build methods with short collaboration period
- Division J
  - Reviewing qualifications for shortlisting
  - Finalizing design to 100% – June 2016
  - Coordination with District agencies for permitting
  - Field investigations to facilitate protection of existing structures

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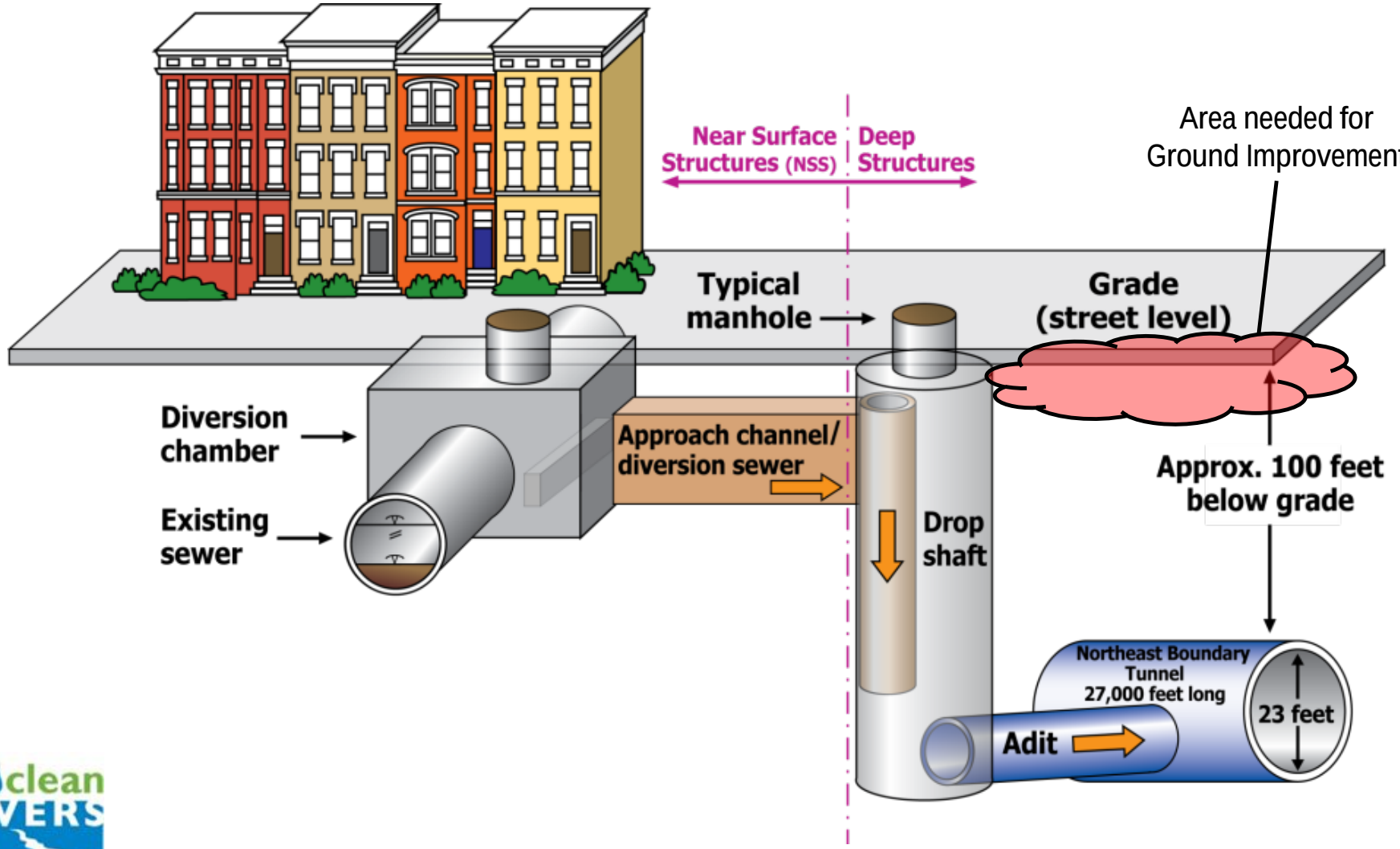
Northeast Boundary Tunnel (NEBT)
Typical Diversion Facility



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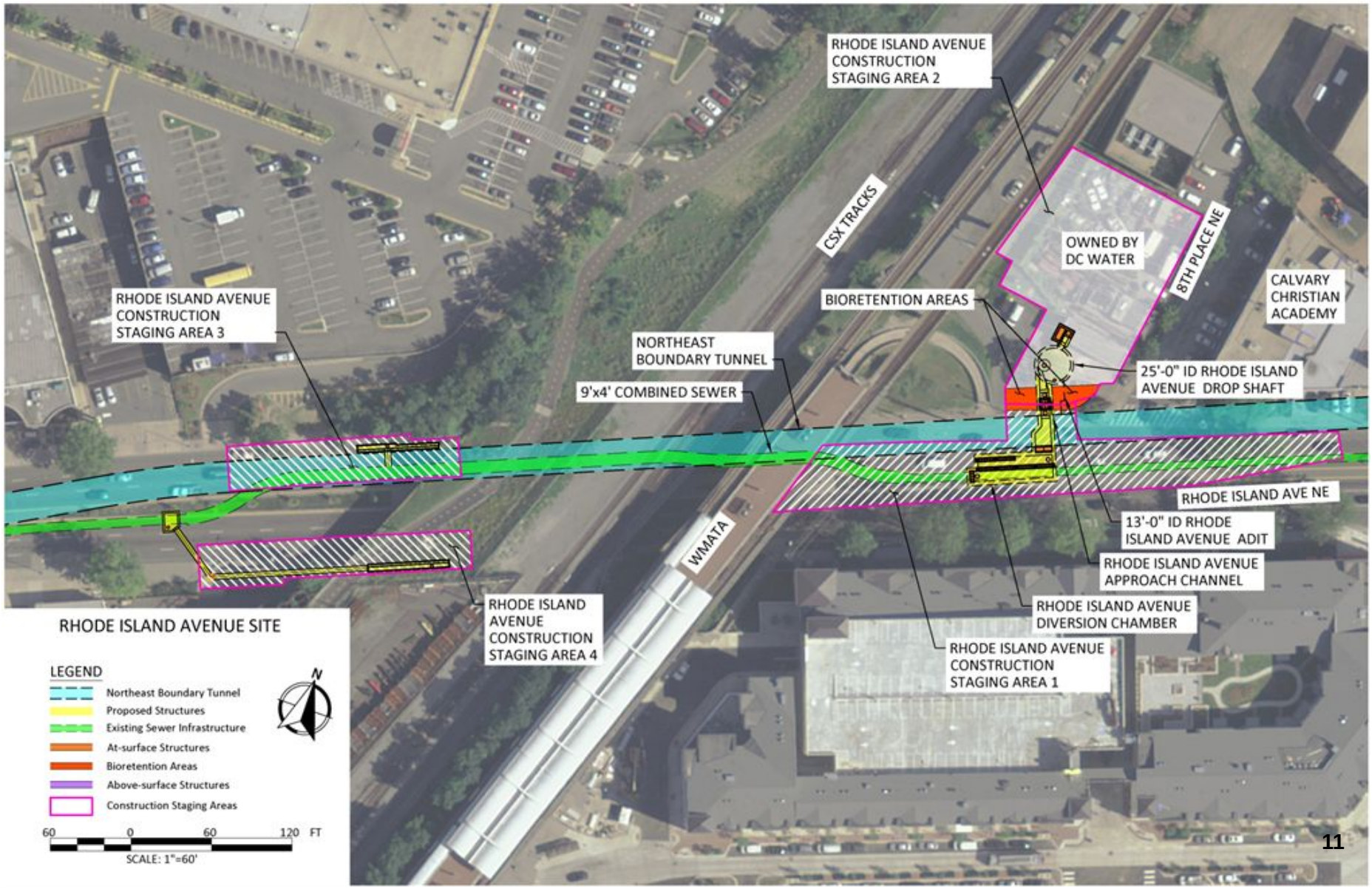
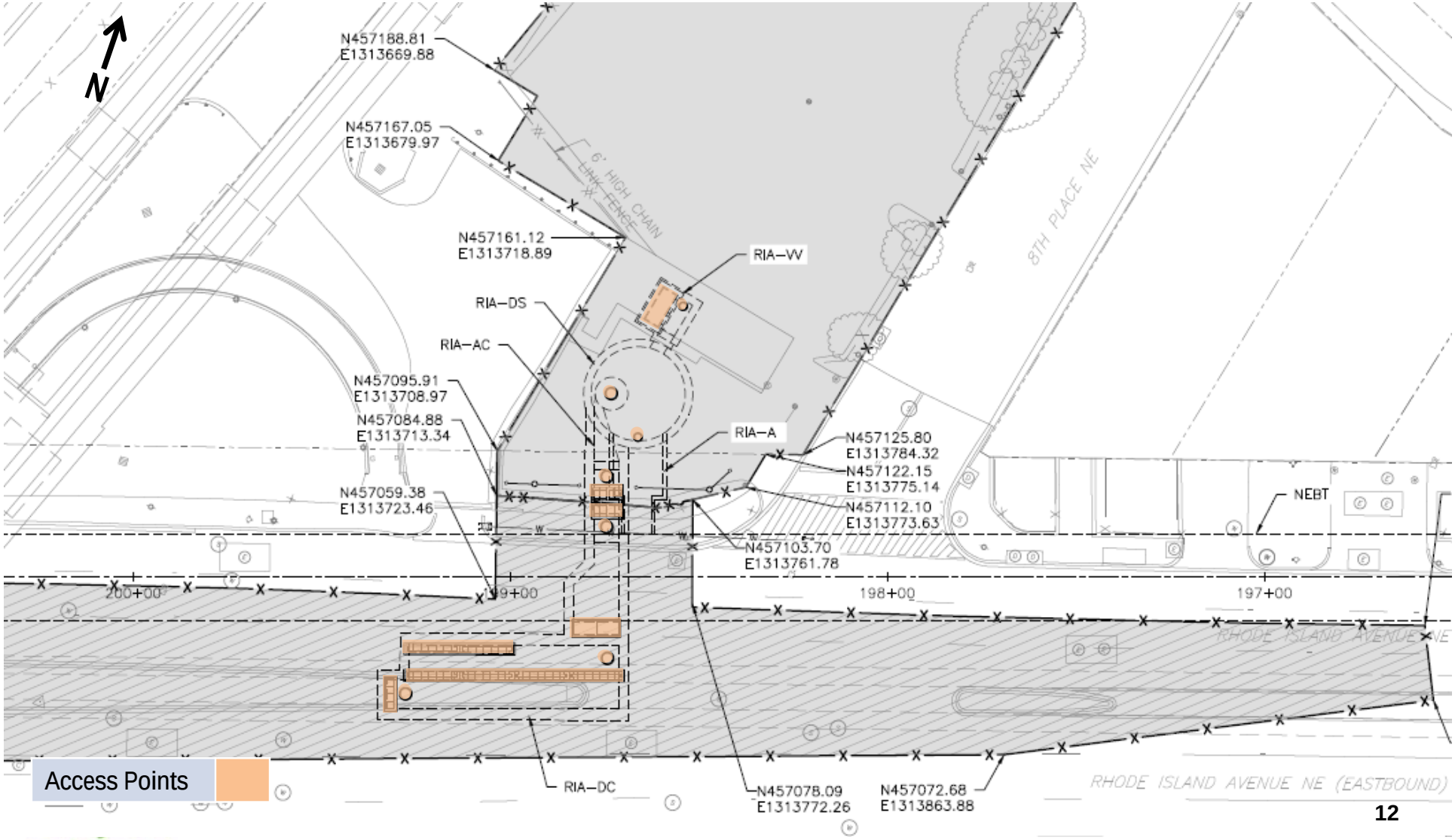
10

Typical Diversion Facility (Rhode Island Avenue)
Aerial Plan



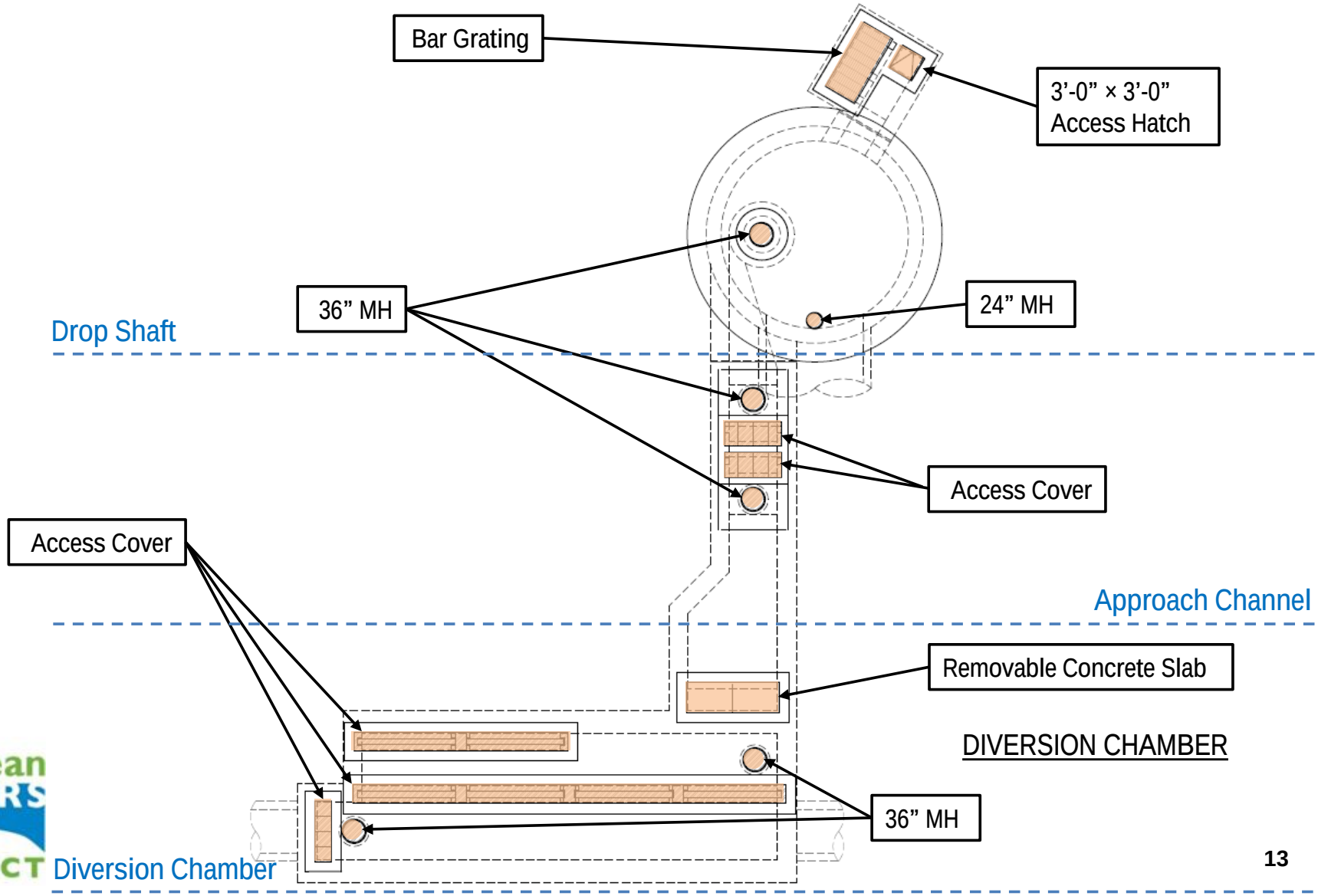
11

Typical Diversion Facility (Rhode Island Avenue)
Site Plan



12

Typical Diversion Facility (Rhode Island Avenue)
Plan View



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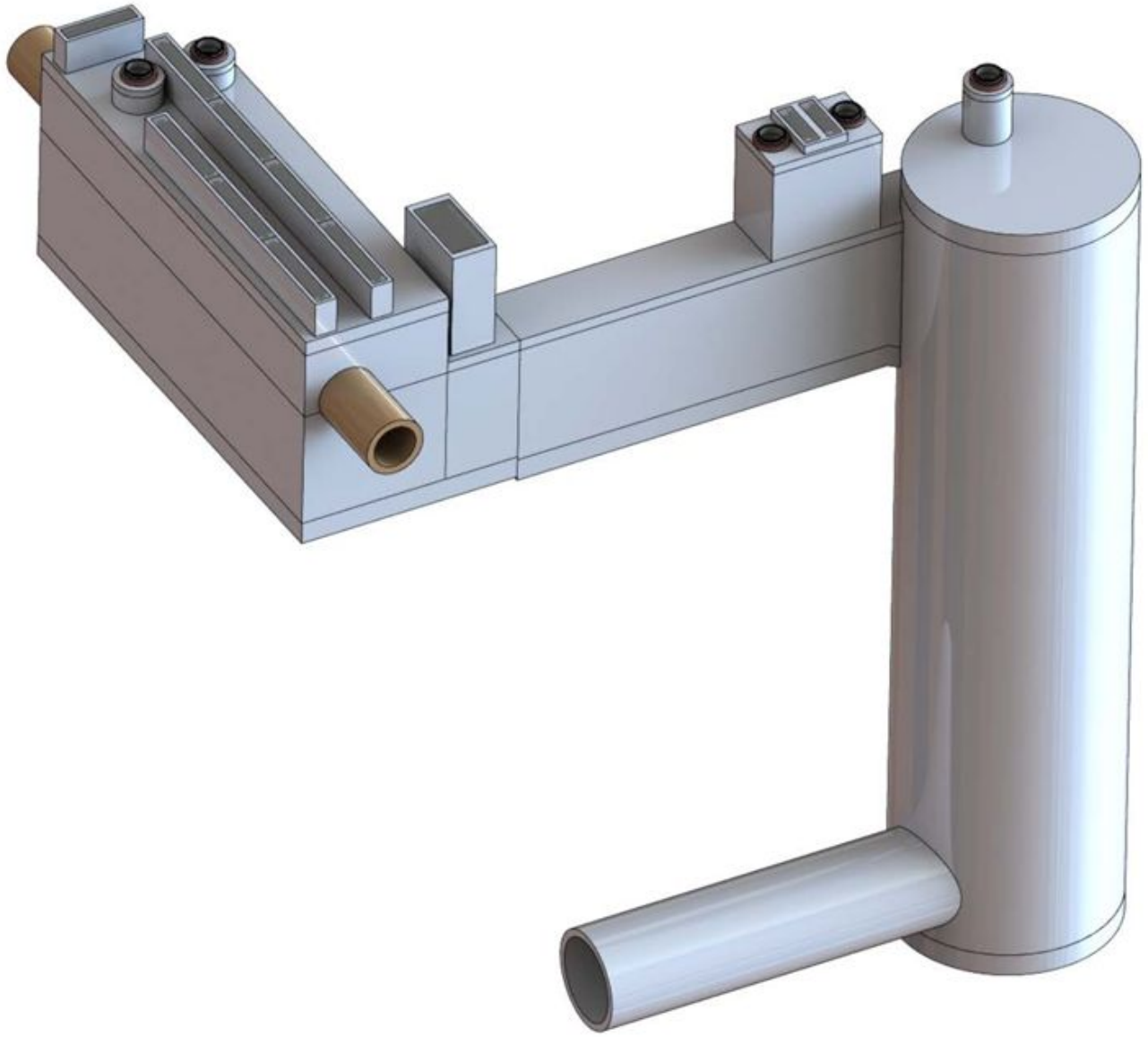
Typical Diversion Facility (Rhode Island Avenue)
3D Renderings



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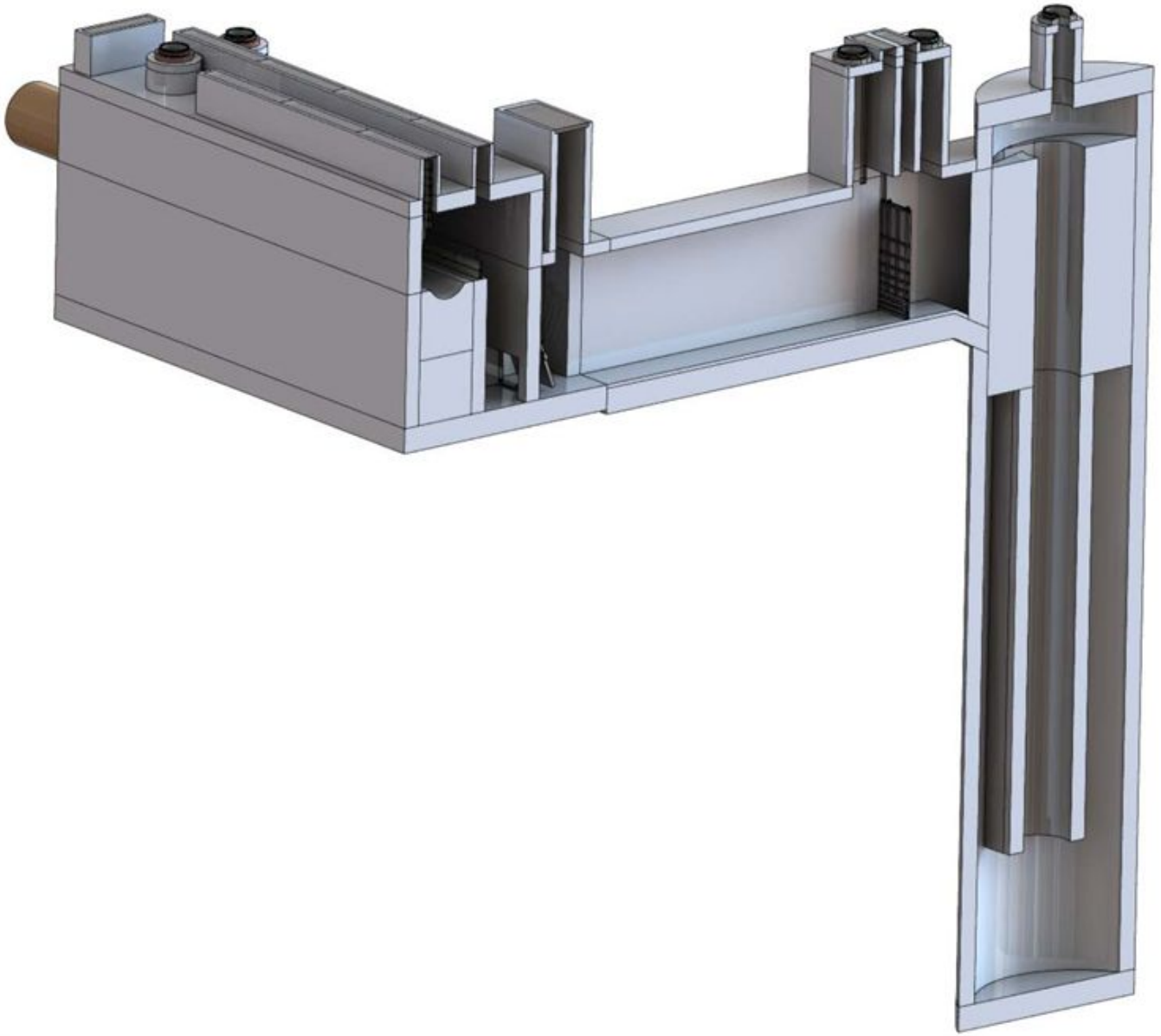
Typical Diversion Facility (Rhode Island Avenue)
3D Renderings



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Northeast Boundary Tunnel
Key Project Factors

- Schedule – achieve goals set by Mayor's Task Force
- 23-ft diameter tunnel in soft ground
- Adit connections between shafts and tunnel
- Maintenance of vehicular, transit, pedestrian and bicycle traffic
- Protection of existing structures
- Public outreach
- District coordination

dc clean RIVERS PROJECT

Next Steps

Division U:

Milestone	Date
Issue Contract Documents to Shortlisted Teams	January 7, 2016
Brief Collaboration	January 25, 2016
Bids Due	February 17, 2016
NTP	April 2016
Final Completion	September 2017

Division J:

Milestone	Date
Shortlist Design-Build Teams	February 2016
Finalize Design/ RFP Documents	June 2016
Collaboration Period	June 2016 – December 2016
Notice to Proceed	April 2017
Final Completion	December 2022