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, April 16, 2015
9:30 a.m.

I. Call to Order — Howard Gibbs, Acting Chairperson

9:30 a.m. II. AWTP Status Updates — Walt Bailey
1. BPAWTP Performance

9:40 a.m. III. Status Updates: Potomac Interceptor Sewer — Liliana Maldonado
1. Odor Abatement Project

9:50 a.m. IV. Resource Recovery through Biosolids Blending: Future Plans, Start-up Schedule and Regulatory Issues — Chris Peot

10:20 a.m. V. Other Business/Emerging Issues

10:25 a.m. VI. Executive Session*

10:30 a.m. VII. Adjournment — Howard Gibbs, Acting 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.

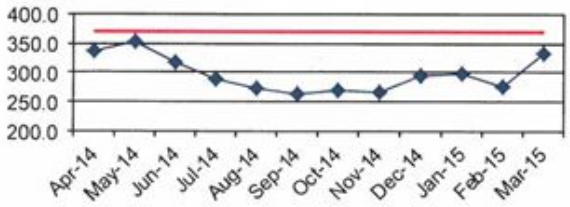
Follow-up Items from Prior Meetings:

1. Report on the back-log improvements and benefits of the CMMS in maintenance crew redeployment at a future EQSS committee meeting. **(May or June Meeting)**
2. Provide a full report on the water main lining pilot at a future WQWS committee meeting (**May or June Meeting.)**

DEPARTMENT OF WASTEWATER TREATMENT
March 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 333 MGD. There was 11 MG of Excess Flow during this reporting period. The following Figures compare the plant performance with the corresponding NPDES permit

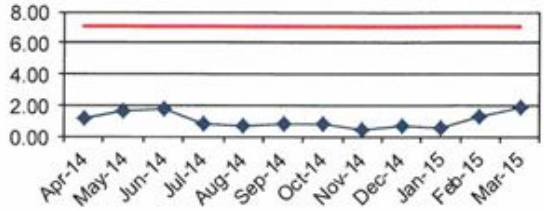
Plant Influent Flow (mgd)



Influent Flow — Average Design Capacity

This graph illustrates the monthly average influent flow to the plant. The design average flow is 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 TSS — Permit Limit

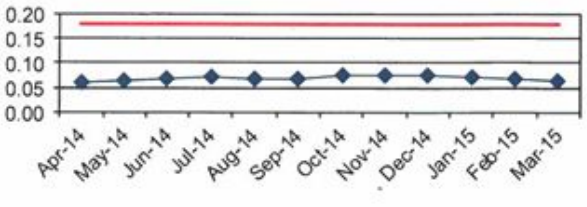
Effluent Total Suspended Solids (TSS) is a measure of the amount of solid material that remains suspended after treatment. The effluent TSS concentration for the month averaged 1.81 mg/L, which is below the 7.0 mg/L permit limit.

Ammonia (mg/l)

Effluent NH3 — Permit Limit

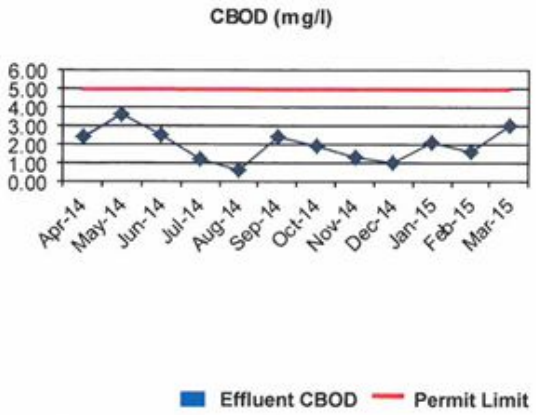
The Ammonia Nitrogen (NH3-N) is a measure of the nitrogen found in ammonia. For the month, effluent NH3-N concentration averaged 0.91 mg/L and is below the average 12.8 mg/L limit.

Total Phosphorus Annual Average (mg/l)

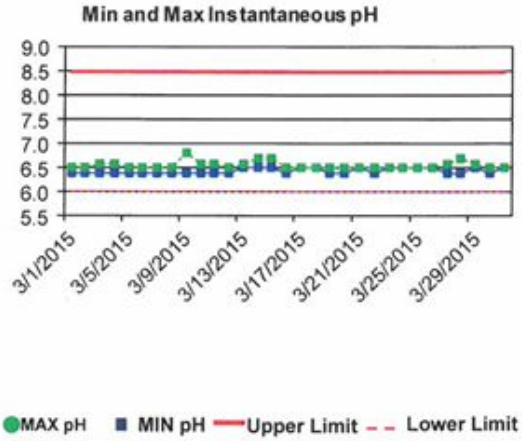


Effluent TP — Permit Limit

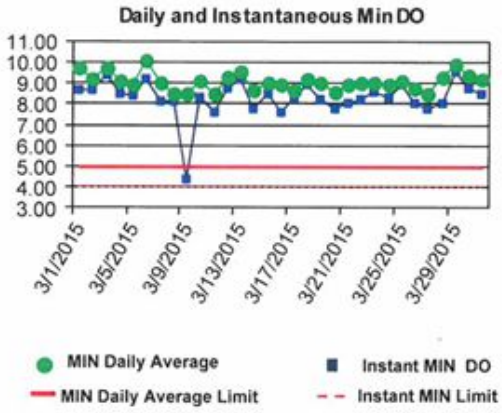
The Total Phosphorus (TP) is a measure of the particulate and dissolved phosphorus in the effluent. The annual average effluent TP concentration is 0.07 mg/L, which is below the 0.18 mg/L annual average limit.



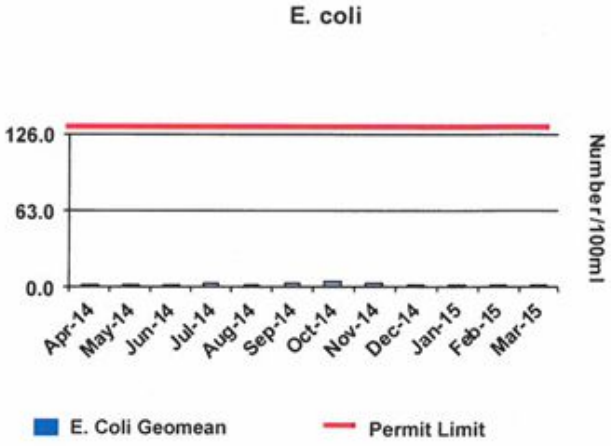
Carbonaceous Biochemical Oxygen Demand (CBOD) is a measure of the amount of dissolved oxygen required for the decomposition of organic materials. The effluent CBOD concentration averaged 3.07 mg/L (partial month) which is below the 5.0 mg/L limit.



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 6.8 standard units respectively. The pH was within the permit limits of 6.0 and 8.5 for minimum and maximum respectively.



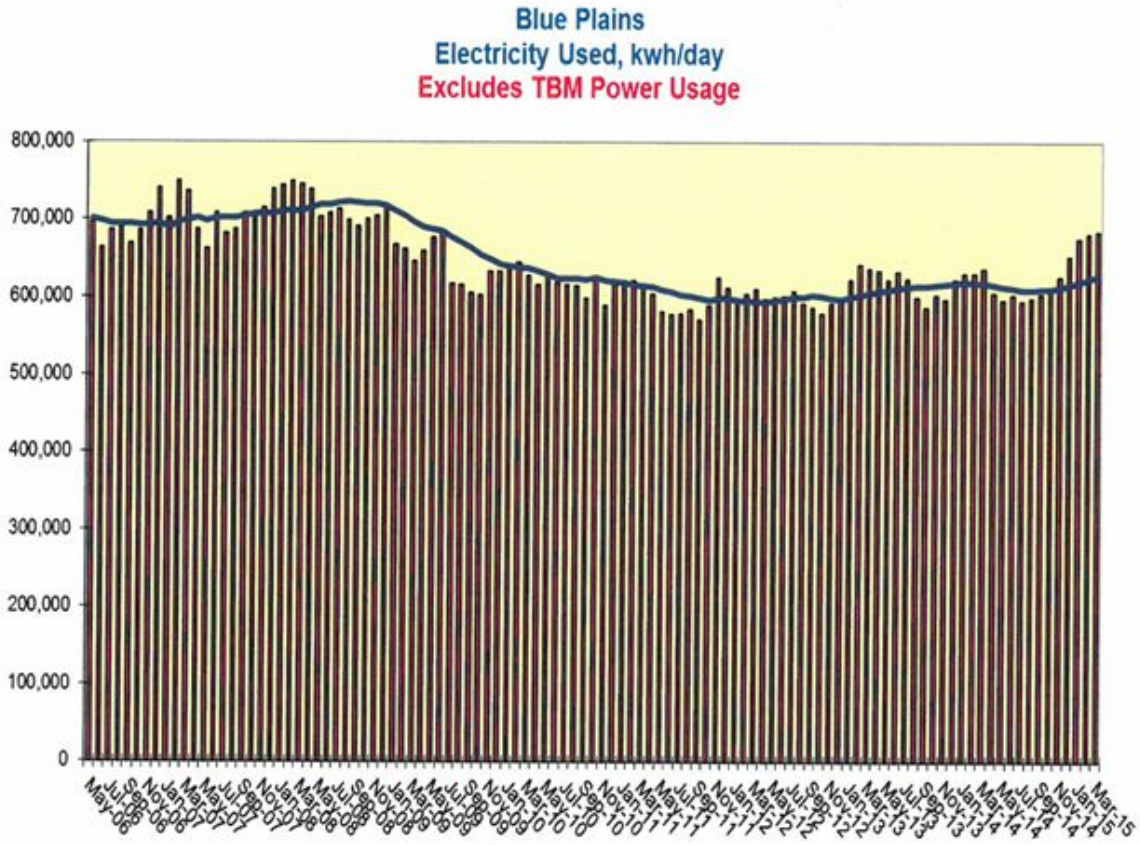
Dissolved Oxygen (DO) is a measure of the atmospheric oxygen dissolved in wastewater. The DO readings for the month are within the permit limits. The minimum daily average is 8.5 mg/L. The minimum instantaneous DO reading is 4.4 mg/L. The minimum permit limits are 5.0 mg/L and 4.0 mg/L respectively. The low instantaneous reading on March 9 was due to a planned full air outage for construction. This was completed without permit impact.

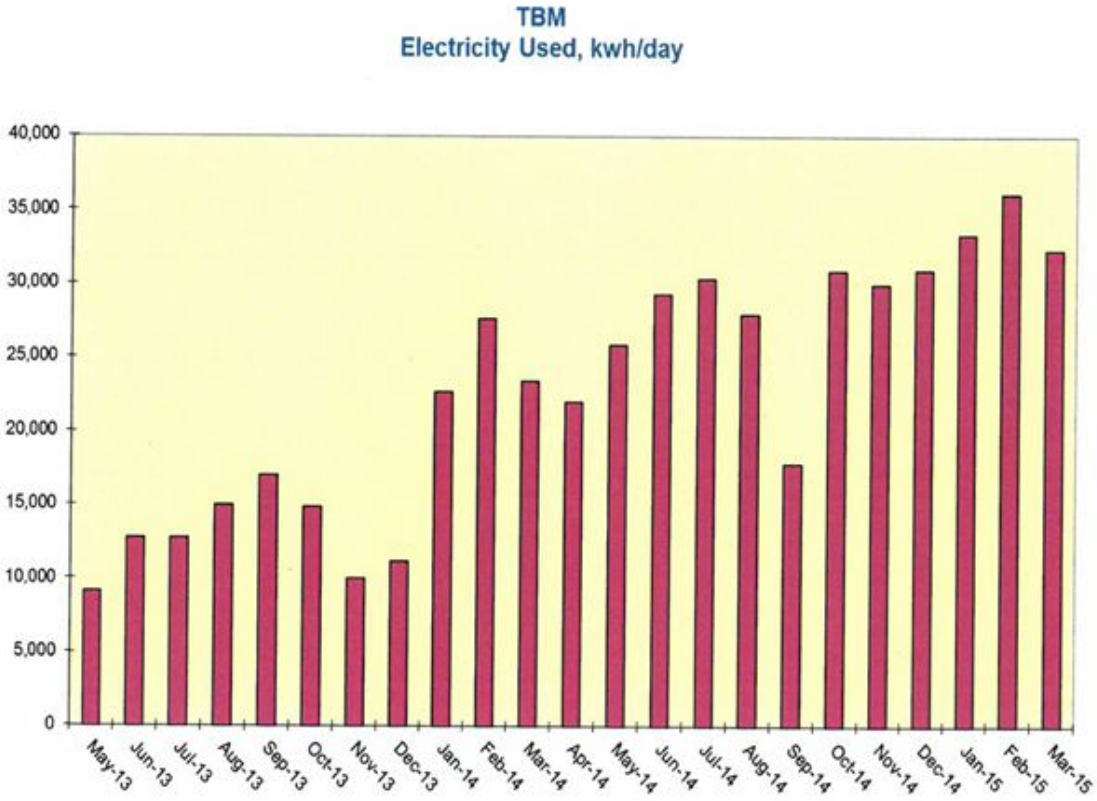


E.coli is an indicator of disease causing organisms (pathogens). The E.coli permit limit is 126/100mL. The E coli geometric mean is 1.0/100mL, and well below the permit limit.

BLUE PLAINS ELECTRICITY USAGE

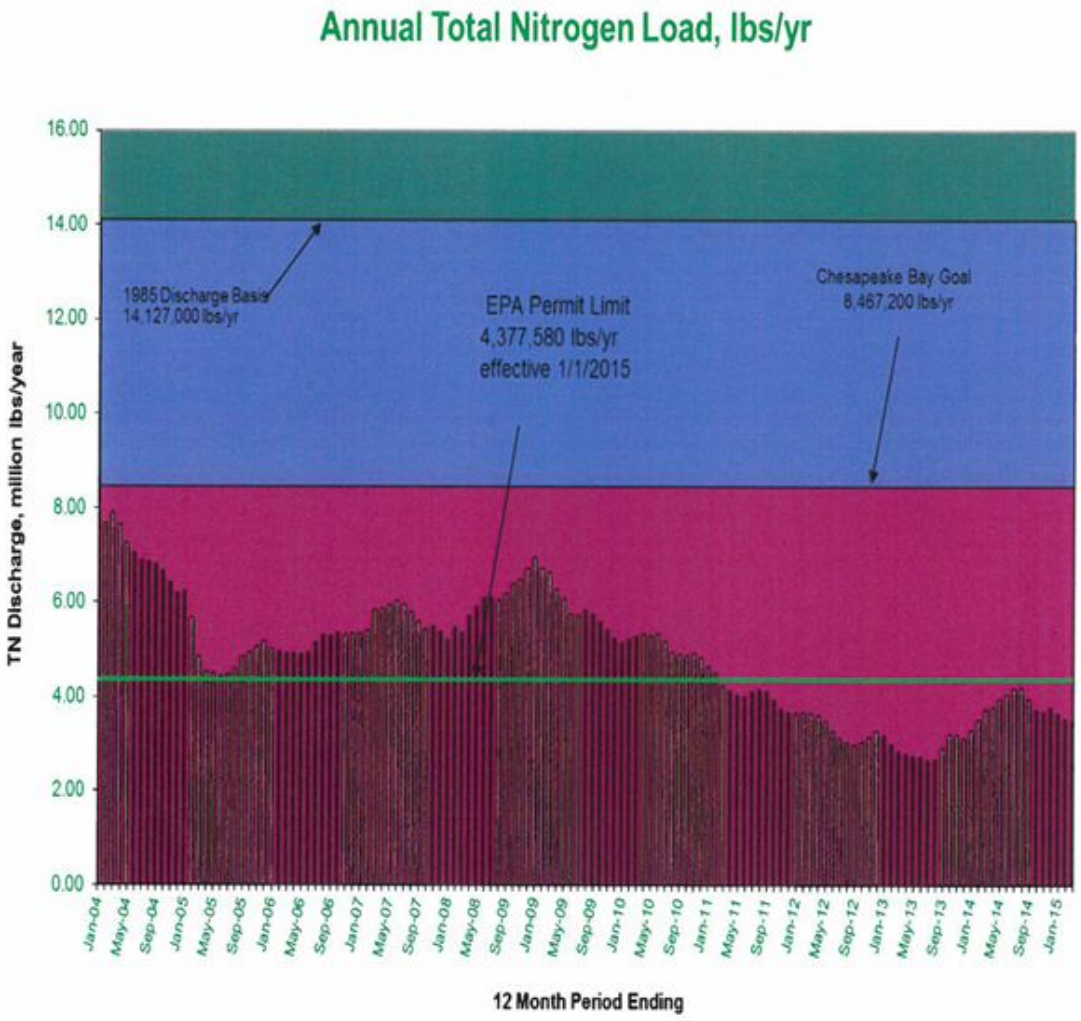
Blue Plains AWWTP has installed Power Monitors at critical points within the power distribution system to monitor power usage. The graph below is based on the installed power monitors and reflects usage at Blue Plains. As new processes are brought on line, the total plant power consumption has increased. This will start decreasing once CHP power is fed into the system.

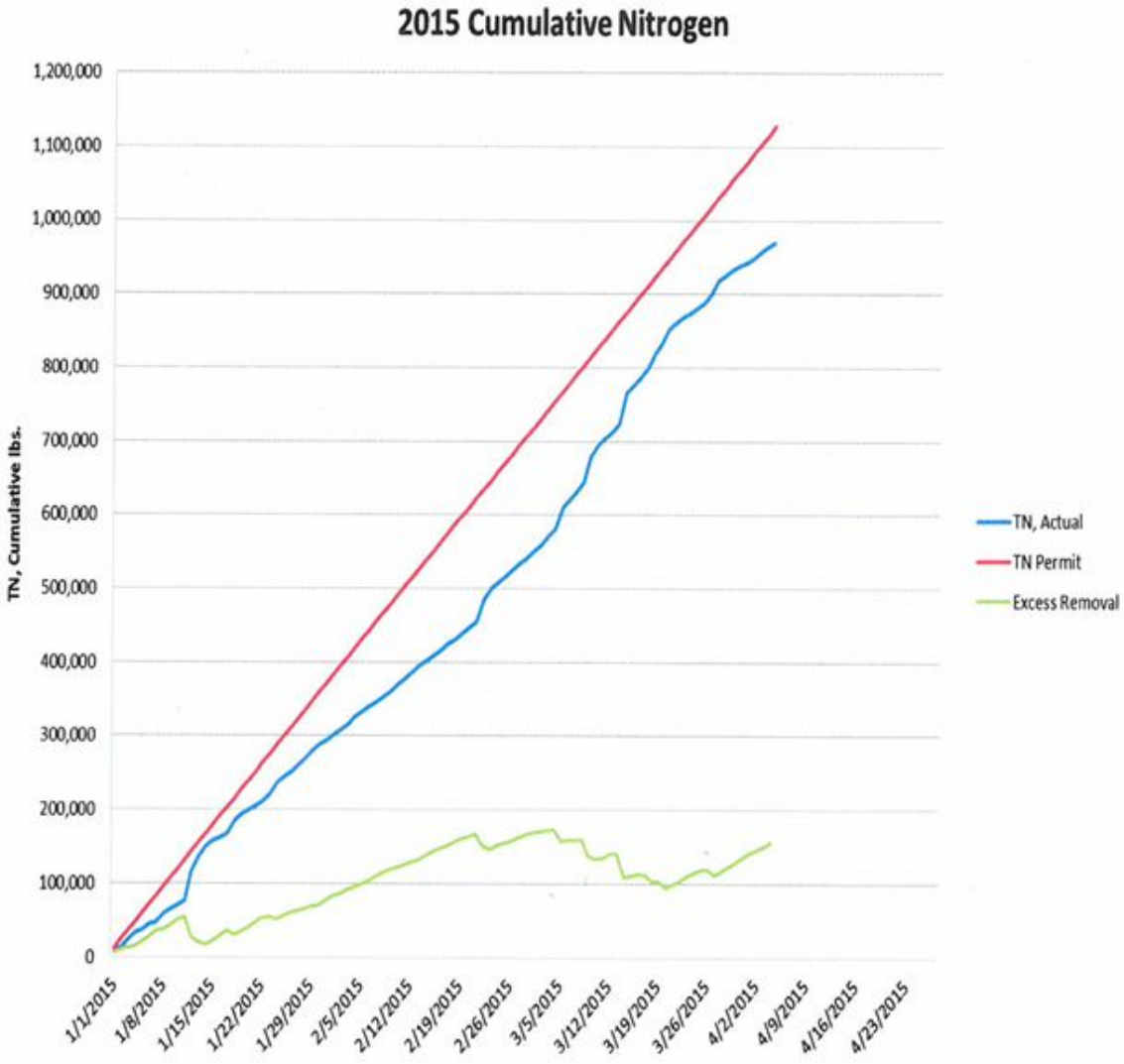



TBM
Electricity Used, kwh/day
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15

BIOLOGICAL NUTRIENT REMOVAL PERFORMANCE

During the month the full-scale BNR process produced an effluent with average total nitrogen concentration of 4.49 mg/l. The figure below shows Blue Plains effluent total nitrogen (TN) since the implementation of full scale BNR. The Figure shows Blue Plains meeting the Chesapeake Bay Goal of discharging less than 8,467,200 lbs/yr of TN.




2015 Cumulative Nitrogen
TN, Cumulative lbs.
1,200,000
1,100,000
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1/1/2015
1/8/2015
1/15/2015
1/22/2015
1/29/2015
2/5/2015
2/12/2015
2/19/2015
2/26/2015
3/5/2015
3/12/2015
3/19/2015
3/26/2015
4/2/2015
4/9/2015
4/16/2015
4/23/2015
TN, Actual
TN Permit
Excess Removal

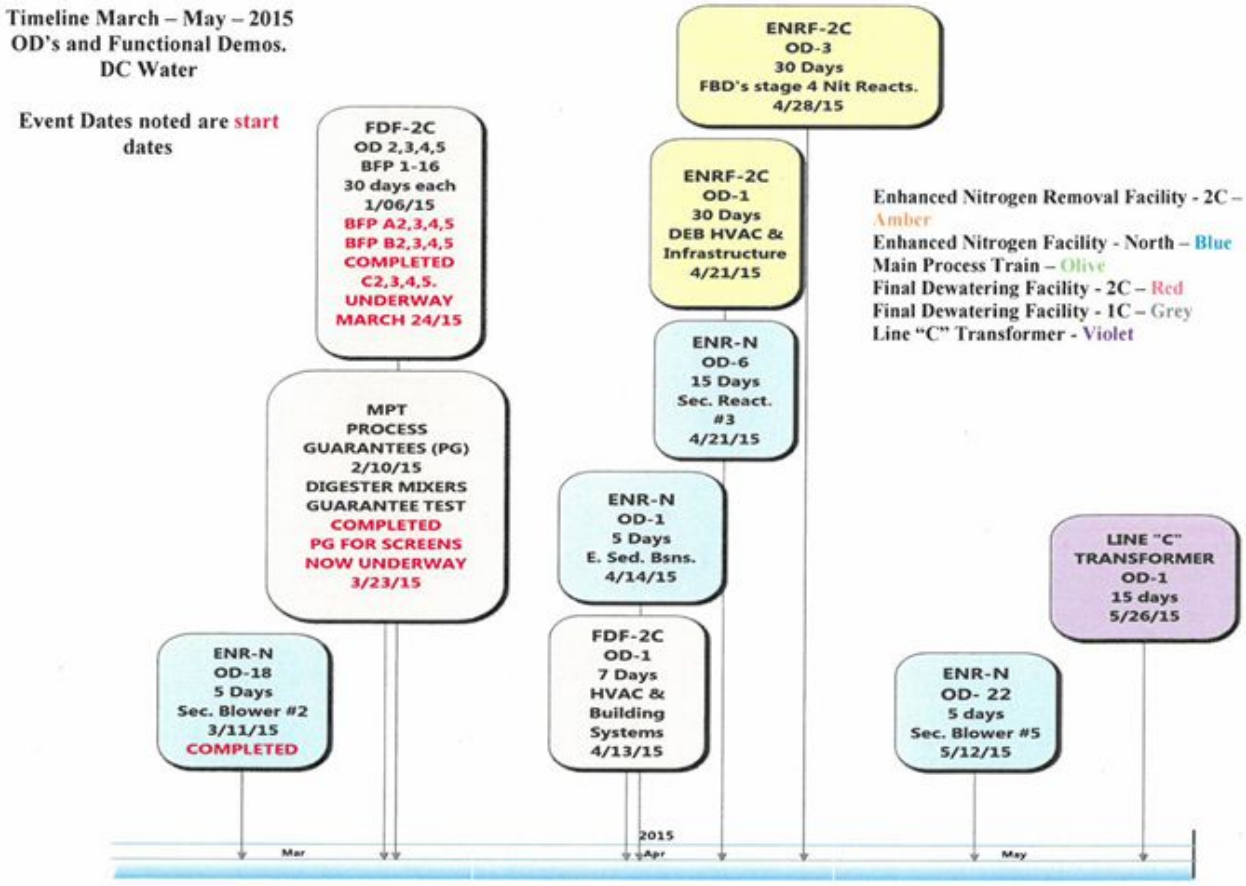
START-UP AND COMMISSIONING UPDATE

As some parts of the nearly $1 billion in construction activities at Blue Plains are winding down, the start-up and commissioning process is moving ahead. This process involves testing the newly built facilities to ensure:

1. the facilities perform as designed,
2. they are completed in accordance with an integrated schedule,
3. interfaces with Blue Plains have been made,
4. capture all new assets,
5. identify and order critical spare parts,
6. develop standard operating procedures, and
7. train personnel to take over the new facilities.

Operational Demonstrations:

One part of the construction checkout process is called the Operational Demonstration (OD). The OD process provides a platform for the contractor and DC Water to prove out the newly constructed process under the various design conditions which can last from 5 days to 1 year. Following is the three month OD look-ahead for 2015.



The Digested Sludge Dewatering Belt Filter Press Operational Demonstration for Final Dewatering Facility Second Contract is underway. Eight out sixteen belt filter presses have successfully completed the demonstration and the operational demonstration four more belt filter presses is currently in progress. Secondary Blower #2 has successfully completed its operational demonstration. The Process Guarantee for digester mixing for the Main Process Train Contract has also successfully completed its demonstration and the Process Guarantee for the screens is underway. Additionally, several systems are

Preparation for Operational Demonstration: Building FDF-2C (OD 1)

- All of the infrastructure for the new final dewatering facility will undergo an operational demonstration. This demonstration will ensure the proper operations of the buildings: HVAC, fire systems (alarms, sprinklers, etc), lighting, electrical outlets and plumbing (potable water, process service water, and sumps).
- This OD is anticipated to commence April 13th and all systems shall be tested and approved within 7 days.

Preparation for Operational Demonstation: Stage 4 Nitrification Reactor ENRF-2C (OD 3)

- Removing nitrogen from the wastewater is done in 2 steps. Nitrification which converts ammonia to nitrate and denitrification which converts nitrate to nitrogen gas. Both of these process were performed in the existing nitrification tanks; however, due to more stringent discharge regulations, these processes were split and denitrification is now done in the new denitrification tanks and only nitrification is done in the existing nitrification tanks. To allow 100% nitrification in the nitrification tanks, additional diffusers were installed enabling all of the tank to be aerated.
- This OD will demonstrate the performance of the new diffusers installed in the nitrification tanks and is anticipated to start on April 28th.

being prepared for operational demonstration as noted below.

PROCESS GUARENTEE – SLUDGE SCREENS

The Process Guarantee demonstration for the Pre-Cambi Sludge Screens is underway. This demonstration will show that the screens meet or exceed the specified performance criteria.

These criteria require the screens to have a throughput capacity of 65 dry tons per day and to produce screened solids that are at least 35% dry material over the 3 day test period.

Training:

Successful operation of the new facilities will require significant training of operations and maintenance employees on new processes, procedures and equipment. We are also continuously working with Human Capital Management with the Cornerstone Training program to schedule and track employee training.

Training completed from February 13, 2015 – March 12, 2015:

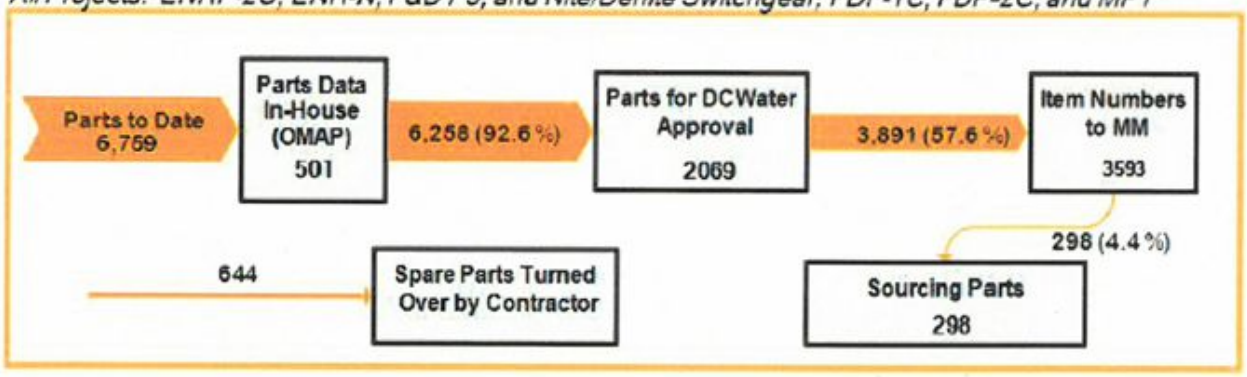
- 1,364 hours of vendor training were completed by DC Water personnel.
- 72 hours of other required training were completed by DC Water personnel.

Asset Integration:

The process of asset integration involves capturing and identifying over 15,000 unique assets associated with the new projects coming on-line. This is done to facilitate ordering of critical spare parts through Maximo, identify qualified vendors, and to develop standard operating procedures. Efforts up through the month of Mid-March 2015 include:

- Asset attributes based on approved service manuals continue to be logged into the Maximo maintenance program,
- Working with Materials Management (MM) to identify vendors for critical spare parts.
- Parts work flow is as follows:

All Projects: ENRF-2C, ENR-N, F&D P3, and Nite/Denite Switchgear, FDF-1C, FDF-2C, and MPT

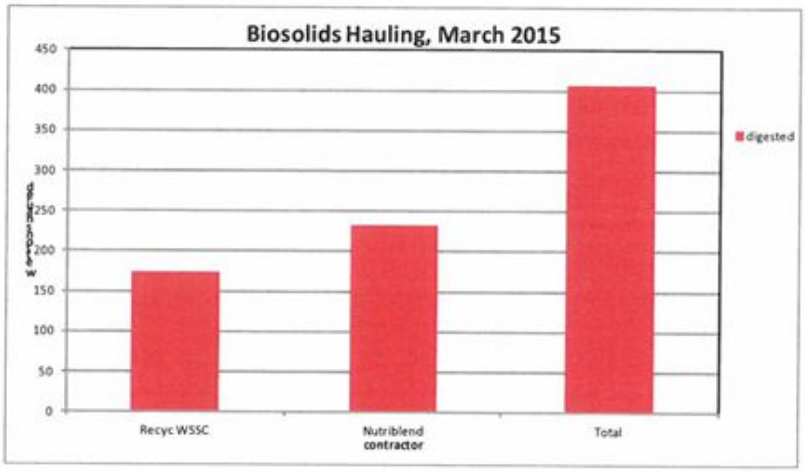


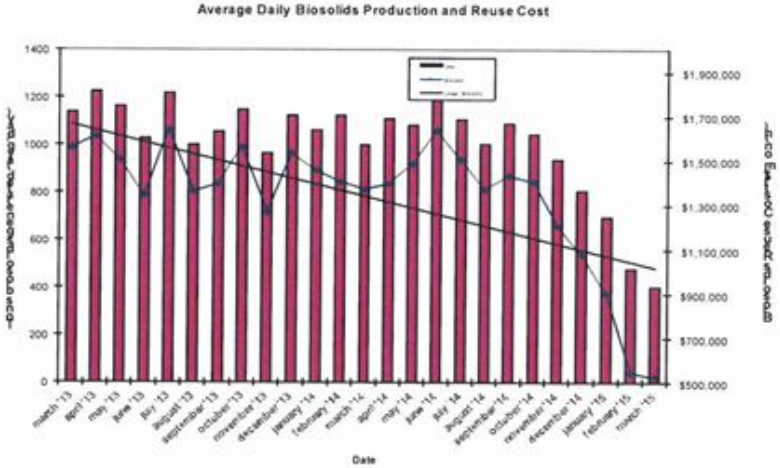
Project Acronym Key:
ENRF-2C: Enhanced Nitrogen Removal Facility 2nd Contract
ENR-N: Enhanced Nitrogen Removal – North
F&D P3: Filtration and Disinfection Electrical Upgrades Phase 3
Nite/Denite Switchgear: Nitrification/Denitrification Electrical Upgrades
FDF-1C/2C: Final Dewatering Facility 1st and 2nd Contracts
MPT: Main Process Train

BLUE PLAINS RESOURCE RECOVERY REPORT

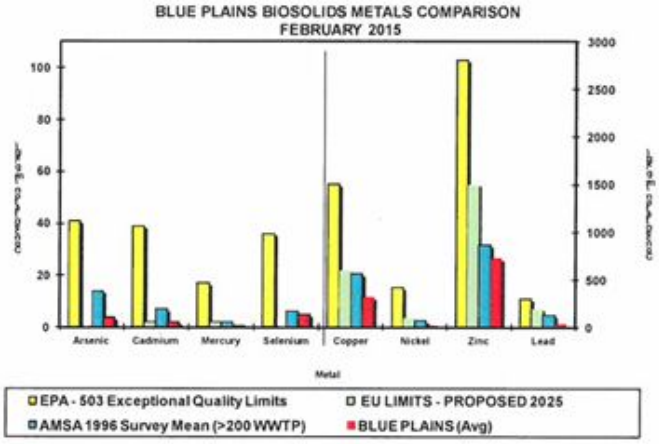
In March, biosolids hauling averaged 407 wet tons per day (wtpd). Of this total, 0 wtpd were lime stabilized Class B, and 407 wtpd (100%) were digested. This si the first month we produced 100% digested biosolids. The graph below shows the total hauling by contractor for the month of March. The average percent solids for the digested material was 31.3%. At the end of March the Cumberland County storage pad had approximately 8,000 tons (~25,000 tons capacity), Cedarville lagoon had approximately 8,000 tons of Blue Plains biosolids (~30,000 tons capacity), and Fauquier lagoon had 3000 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 March, diesel prices averaged $3.27/gallon and with the contractual fuel surcharge the weighted average biosolids reuse cost in March for the two contracts (DC Water and WSSC) was $41.66/wet ton. For comparison, in March 2014 the average diesel price was $4.16/gal and the average contract cost was $44.10/wet ton.



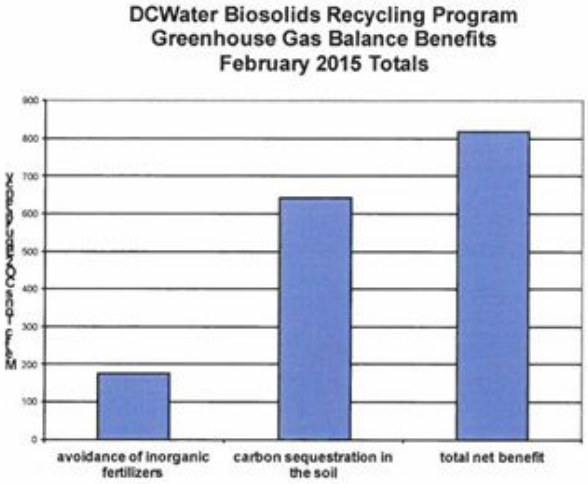


The graphs below show the EPA regulated heavy metals in the Blue Plains biosolids for the month of December 2014. As can be seen in the graphs, the Blue Plains levels are considerably below the regulated exceptional quality limits, the national average levels surveyed in 1996, and the European Union (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 February coming directly from the plant and from storage facilities equaled 12,368 tons. Taking into account the fuel required to transport biosolids to the field, the net benefit of the land applied material is 818 metric tons CO_2 equivalent avoided emissions. This is equivalent to taking 1,665,301 car miles off the road in the month of February (assumes 20 mpg, 19.4 lb CO_2 equivalent emissions/gallon gas – EPA estimate). The cumulative total avoided carbon emission since December, 2006 is 139,017 metric tons CO_2 equivalent.



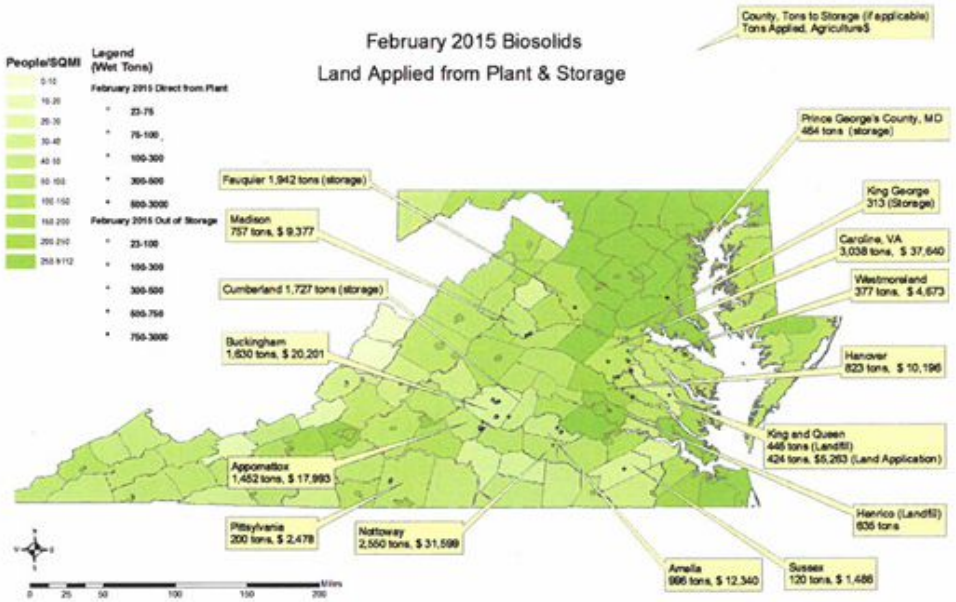
March Highlights

Staff presented at the 8th annual Rooting DC conference—a day-long urban agriculture and gardening forum, with dozens of workshops and "60+ green businesses and nonprofit from throughout the region at an information fair". More than 40 people attended the talk entitled, "Improving Urban Soils with Biosolids" and most evaluations rated the presentation as Excellent. Attendees were enthusiastic about this recycling effort, and even asked what they could do to help accelerate the availability of biosolids products in this area and started a brief chant of "we want biosolids!". A reporter who was in the talk said she had been considering writing a negative article about biosolids, but was now considering writing a piece about the use of biosolids compost at community and school gardens in D.C.

ROOTING DC

An annual forum. A perennial movement.

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



Clean Water Quality and Technology

The Clean Water Quality and Technology department includes research and development, pretreatment and laboratory programs.

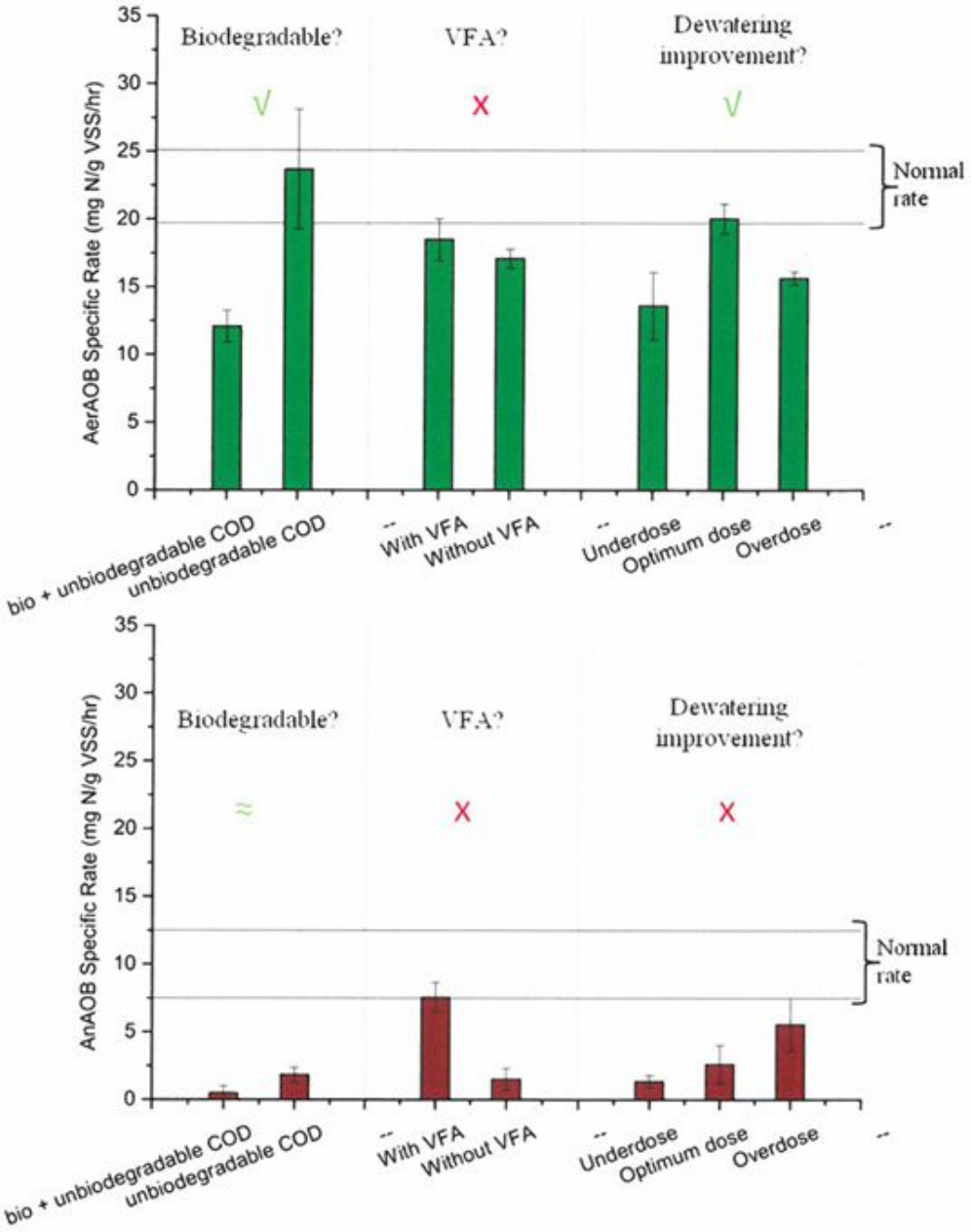
Research and Development Program

Can we minimize the inhibition factors in CAMBI-AD filtrate before reaching sidestream DEMON?

In a previous report, we have presented results from our pilot scale filtrate treatment process (i.e. deammonification process) which has shown that organics present in the CAMBi-AD filtrate inhibit the key microbial organisms needed to obtain nitrogen removal through sidestream deammonification. We have optimized the operational strategy for filtrate treatment by increasing the DO set-point to 1 mg O2/L. However, we believe that by identifying the specific organic fraction responsible for the inhibition we could potentially either remove this fraction before it enters into the filtrate treatment facility (FTF) (e.g. by improved dewatering) or more specifically deal with it in the process itself. Based on performing batch experiments we could elucidate the following factors (see also Exhibition A) for two key groups of micro-organisms aerobic ammonia oxidizers (AOB) and anammox:

1. For AOB:
    - Inhibition is caused by a biodegradable fraction which means that it can be either removed in the digester or in the FTF itself
    - Inhibition was more likely related to fine particulate fraction (colloids).
    - Inhibition could be minimized by optimizing the polymer dosing during dewatering. This allows avoidance of major inhibitory factor reaching the DEMON SBR.
2. For anammox:
    - Inhibition is caused by a biodegradable fraction as well. However, effect was less substantial.
    - Inhibition was caused by a dissolved component and could therefore not be altered by improving dewatering.
    - As digester performance improved after an upset, soluble organic fraction decreased as well as the inhibition of anammox bacteria. Therefore, inhibition of anammox bacteria will be dependent on digestion performance and FTF rather than dewatering.

These evaluations thus far have been associated with direct impact of filtrate on FTF performance. Future work will focus on long term studies and evaluating acclimation potential in the FTF as well as focusing on the optimization of the dewatering process by addition of coagulants to capture fine colloids, which can hopefully further eliminate the inhibition on AOB.



Exhibition A: Aerobic ammonium oxidizing (AerAOB) activity and anammox (AnAOB) activity associated with different organic fractions or pretreatment (removal of VFA and dewatering). The horizontal lines represent the activity range of the microbial groups without having inhibition.

Events in February:

- **Feb 18th – School of Engineering and Applied Science (SEAS) R&D Showcase at George Washington University (GWU)**: During this annual event, Dr. Haydee De Clippeleir (R&D program manager) visited the showcase upon an invitation from Dr. Rumana Riffat (Associate Dean, GWU) followed by a visit to the new laboratory facility at the department. This was part of maintaining communication and relationship building between our utility and GWU.

- **Feb 23rd - Modeling Workshop:** The R&D group arranged for a workshop to discuss several research topics associated with process modeling. A number of experts in the field attended the workshop including Dr. Imre Takacs (Dynamita) and Dr. Bernhard Wett (ARA consult), Dr. Matthew Higgins (Bucknell Univ.) and Dr. John Novak (Virginia Tech). The topics that were discussed included the following:
  - Modeling thermal hydrolysis and anaerobic Digestion
  - Dual substrate limitation modeling representation
  - Learning process controllers (combining deterministic models with stochastic models)
  - Sludge settleability and final clarifier modeling

- **Feb 24th - Carbon and Nitrogen Removal Workshop:** A workshop was arranged by the R&D group to discuss research topics associated with the intensification of the carbon and nitrogen removals at Blue Plains. The workshop was attended by a number of key participants including Mr. Walter Bailey (AGM, DC Water), Ms. Chris DeBarbadillo (Director CWQT, DC Water), Dr. Sudhir Murthy (Innovation Chief, DC Water), Dr. Imre Takacs (Dynamita), Dr. Bernhard Wett (ARA Consult), Mark Miller (researcher, HRSD), Jon DeArmond (researcher, HRSD), Dr. Greg Bowden (AECOM), Mr. Ahmed Al-Omari (Manager R&D, DC Water), Dr. Haydee De Clippeleir (PM R&D, DC Water) and the whole team of research associates working under the R&D program. The two main topics covered during the workshop were:
  - High rate pilot data discussion including HRSD and DC Water pilots
  - Fullscale plant modifications in secondary and tertiary processes to improve treatment capacity and reduce operational costs. Short term and long term scenarios were discussed and real progress was made. Monthly meetings will be conducted to track progress.

- **Feb 25th – WERF granulation Kickoff Meeting:** A meeting lead by the principal investigator Dr. Belinda Sturm (University of Kansas) and Dr. Haydee De Clippeleir (PM R&D, DCW) was conducted at Blue Plains. The WERF project (awarded this year) includes 7 utilities that are participating in the research effort. The objective of this project is to evaluate the impact of internal and external selectors on creating granular sludge within existing infrastructure in mainstream treatment. This particularly of interest to Blue Plains to overcome capacity bottlenecks associated with sludge settling and clarifier performance. There is also a part of the research that will focus on implementing bio-P removal in addition to carbon and nitrogen removals within the same system.

- **Feb 26th – Sumo Modeling Training:** Dr. Imre Takacs and Dr. Tanush Wadhawan from Dynamita, France provided hands on training to research associates and DC Water employees from the R&D team on the use of SUMO for process modeling to assist them in their research projects. These training sessions will be conducted regularly to ensure proper and efficient use of SUMO to simulate pilot and fullscale processes.

Blue Plains Pretreatment Program

The Blue Plains Pretreatment Program staff of two manages the Industrial Pretreatment Program, including temporary 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 meetings.

Industrial Pretreatment Program

DC Water currently manages fifteen (15) Significant Industrial User (SIU) permits and sixteen (16) Non-Significant Industrial User (NSIU) permits. All SIUs and permitted NSIUs are currently in compliance with discharge standards. A draft of the annual pretreatment program report to EPA was prepared this month.

The non-permitted facility, Adams Row Condo, is still in violation of the EPA gas/vapor toxicity discharge screening criteria, and DC Water and DDOE, met with the remediation consultants the end of February to discuss objectives and scheduled due dates. A Directive Letter was issued to the responsible party, Atlantic Richfield Company, a BP affiliate, on March 9, 2015, extending the due date for evaluation and selection of a design for the storm water treatment system. A Directive Letter was also prepared this month for the non-permitted facility, Providence Hospital, to require submittal of a wastewater discharge questionnaire and permit application.

DC Water currently manages 64 Temporary Discharge Authorization (TDA) permits, primarily for construction site discharges of groundwater and/or surface runoff in the combined sewer area. Five new TDA permits were issued this month. All TDA discharges are currently in compliance with pretreatment standards.

Hauled Waste Program

The hauled waste program currently has sixteen (16) 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. One waste hauler permit, Stillwater Septic, was renewed this month. DC Water collected fees from four waste haulers this month, including those on a monthly payment plan option.

DC Water received 266 hauled waste loads (716,285 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 random hauled waste samples were collected this month, including one grease trap load. One waste hauler, Magnolia Plumbing, had a grease trap load with a pH of 4.38, which is in violation of discharge standards (pH must be 5-10), and a petroleum oil and grease concentration of 1,170 mg/L, which is in violation of the

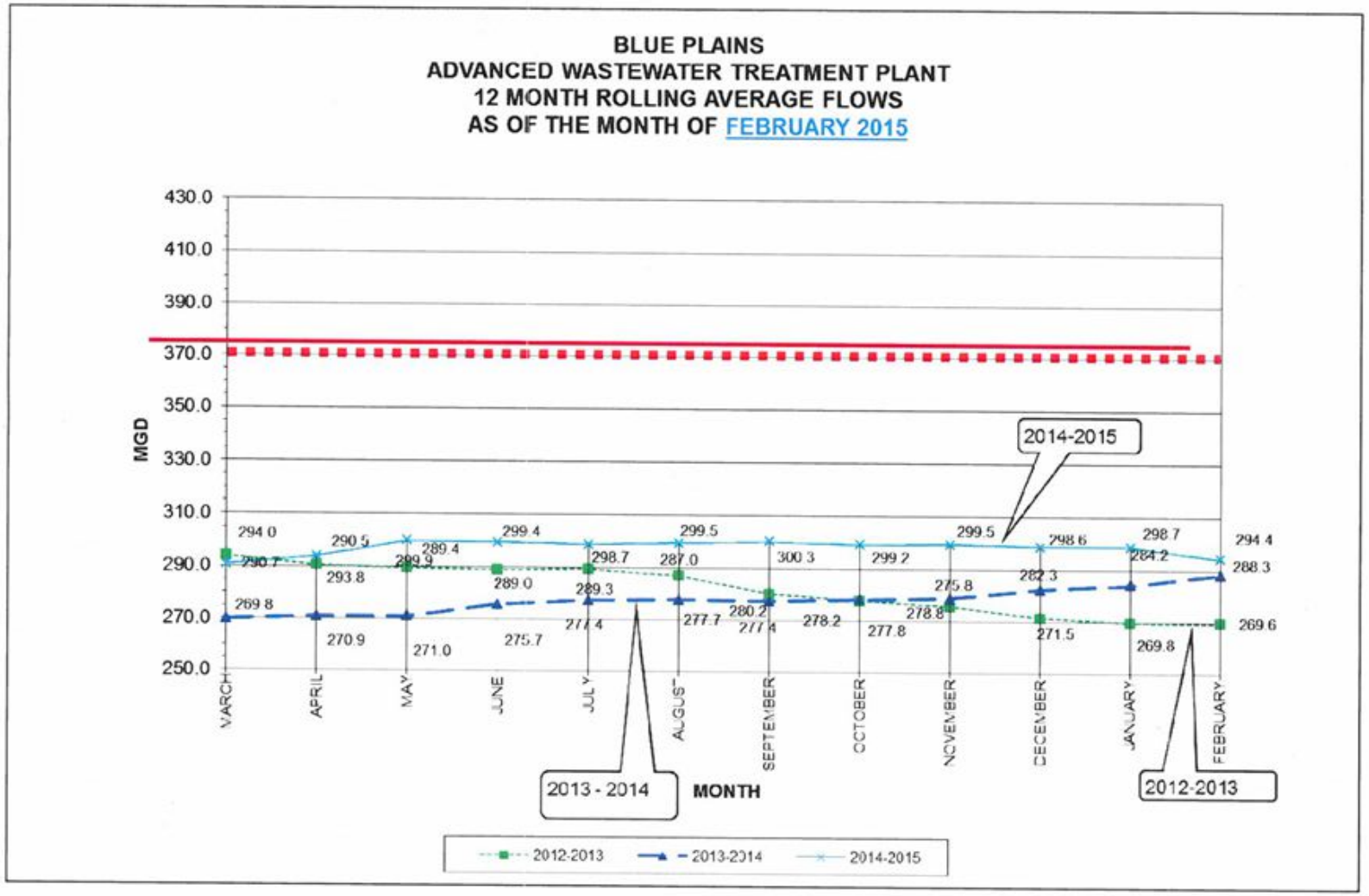
petroleum oil and grease limit of 100 mg/L. A Notice of Violation was issued on March 4, 2015.

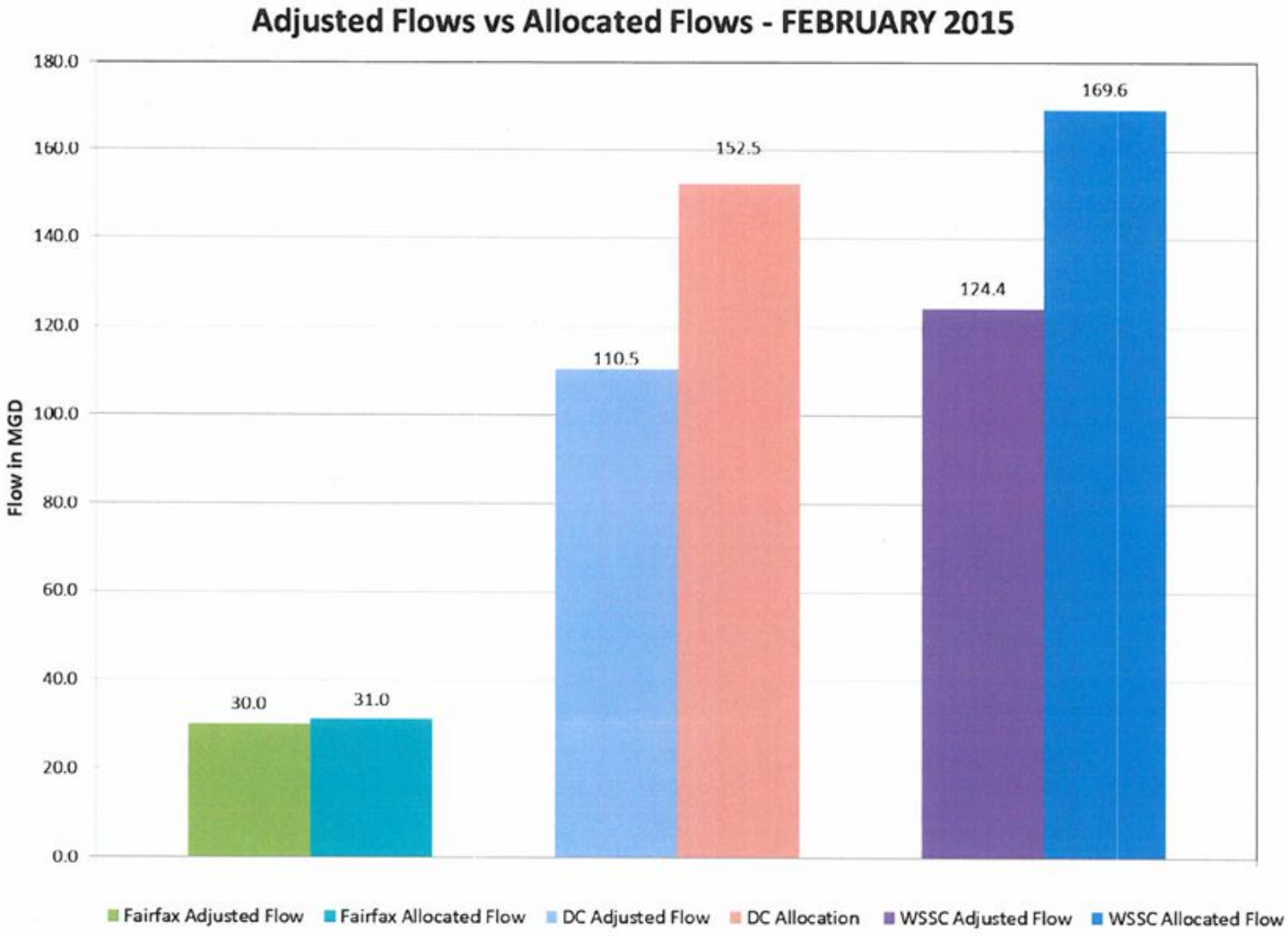
NPDES Permit Sampling

No NPDES permit sampling was conducted this month.

Department of Wastewater Treatment Main Laboratory

The **DWT Main Laboratory** conducts analyses on Blue Plains 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 a 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.
The **DWT Laboratory** assists the **Department of Sewer Services** on a regular basis conducting microbiological analysis of water samples for E. Coli bacteria.
The **DWT Laboratory** also assists the **Biosolids Division** with ongoing Odor Control and Lime Stabilization studies, as well as continued pH monitoring of biosolids for 40 CFR 503 Pathogen and Vector Attraction Reduction requirements.
The **DWT Laboratory** also participates in the **WWOA Executive Board.**
This month, the **DWT Laboratory** continued analysis of samples for the **Biosolids Division** related to DCWater's **Class A Biosolids Certification**.project, as well as analysis of digester samples from the new **Cambi Thermal Hydrolysis Digestion facility,** including Total and Volatile Solids, Total and Volatile Suspended Solids, Ammonia Nitrogen, and pH.


BLUE PLAINS
ADVANCED WASTEWATER TREATMENT PLANT
12 MONTH ROLLING AVERAGE FLOWS
AS OF THE MONTH OF FEBRUARY 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
MONTH
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
294.0
290.5
299.4
299.5
299.5
298.6
298.7
294.4
290.7
289.4
298.7
287.0
300.3
299.2
284.2
288.3
293.8
289.0
289.3
275.8
282.3
269.8
270.9
271.0
275.7
277.7
280.2
278.2
278.8
277.8
271.5
269.8
269.6
2012-2013
2013-2014
2014-2015


Adjusted Flows vs Allocated Flows - FEBRUARY 2015
Flow in MGD
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
30.0
31.0
110.5
152.5
124.4
169.6
Fairfax Adjusted Flow
Fairfax Allocated Flow
DC Adjusted Flow
DC Allocation
WSSC Adjusted Flow
WSSC Allocated Flow

Potomac Interceptor Long-Term Odor Abatement
Status Report March 2015

Project Description: This project provides for the long-term abatement of odors generated by the Potomac Interceptor by constructing six ventilation buildings along the main sections of the sewer. The six sites are located in the District of Columbia (Site 1995), Montgomery County, MD (Sites 4, 17 and 27), Fairfax County (Site 31) and Loudoun County (Site 46), VA. The constructed system draws gases from the sewer by vacuum, treats the gas stream with activated carbon and discharges the treated air to the atmosphere.

Summary Status:

General

Construction at the DC and three Maryland sites is substantially complete. Construction at the two Virginia sites is ongoing.

DC Site (Site 1995)

Facility is running.

Maryland Sites

Site 4 (Little Falls PS) – Facility is running.

Site 17 (Beltway) – Facility is running.

Site 27 (Old Angler's Inn) – Construction is substantially complete and the facility is running. The counteractant delivery system is also running and odor monitoring was performed each week in March. Exhaust-stack modifications will be performed in April 2015. The system will be run and monitored to observe the impacts of the stack modification. Daily observations for odor will be conducted along the interceptor and noted on observation forms. Additionally, an odor complaint has been received and is being investigated.

Virginia Sites

Site 31 (Fairfax) – Under Construction, progressed from 85 to 87% complete. Coordination with Verizon is ongoing for site service. Verizon's NVRPA permit has been executed by all parties. Permanent power installation and conduit construction is complete. Mechanical and electrical installations are ongoing inside the building. Exterior stone work is ongoing. Manual checkout and startup began April 17, 2015. Full auto-mode operational demonstration test start date is projected by early July based on planned delivery and installation dates for the air handling unit.

Site 46 (Loudoun) – Under Construction, 98% complete. Interior building work is ongoing for punch list work items. The Fire Marshall has certified the fire protection system. The full auto-mode operational demonstration test started on March 31, 2015.

Design & Construction Activities	Projected		Actual		Status
	Start	End	Start	End	
Place in operation, Site 31 (Fairfax)	7/06/15				Delay in delivery of motor starter for air handling unit is dictating the schedule. Permanent power delivered as of 3/11/15
Place in operation, Site 46 (Loudoun)	4/01/15		3/31/15		Full auto-mode started on 3/31/15.

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

Resource Recovery through Biosolids Blending: Future Plans, Start-up Schedule, and Regulatory Issues

Presented to:

Environmental Quality and Sewerage Services Committee

Chairman, Bo Menkiti
April 16, 2015

Past Economics of DC Water Biosolids Recycling Program

- Pay a third party ~$43/wt for full service contract (transport, land app, reporting) of Class B biosolids
- $19M/yr program cost =21% of the Blue Plains operating budget
- Delivered free to farmers
- Farmers value product at $300/acre (nutrients, lime, etc.), approximately $15/wt
- Nutrient rebate back to DC Water ($2/wt), $500K/yr designated for research and outreach.
- Value to farmers @ $15/wt, 1200 wtpd = $6,570,000/yr
- We do not extract this value

dc water is life


Bobcat

Blue Plains Garden & Compost Giveaway

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Connecting with the DC Gardening Community

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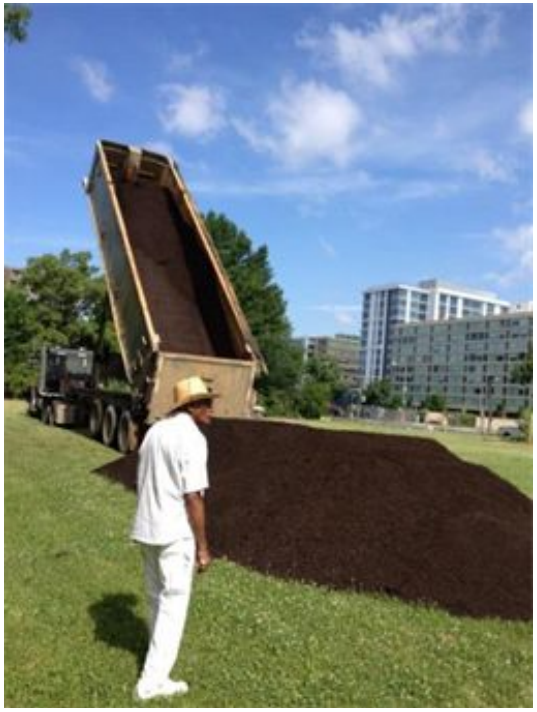
Urban gardening community outreach

dc water is life

Community Gardens



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Casey Trees Donations

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Anaerobic Digestion

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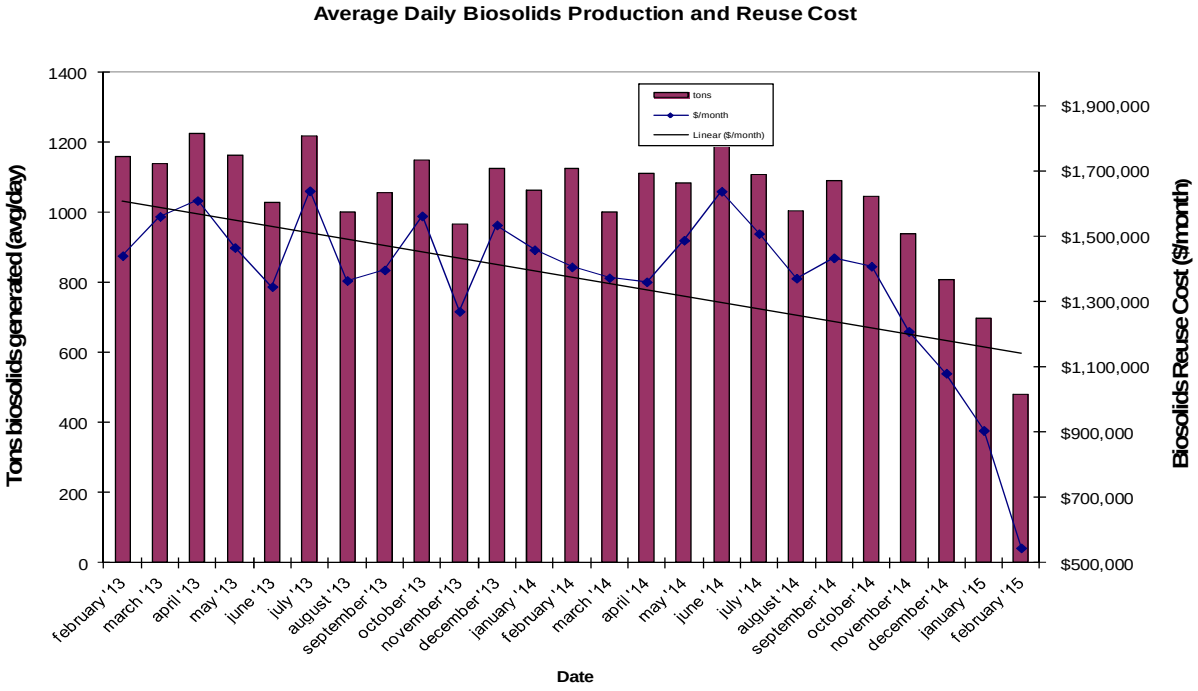
Biosolids Management Program Costs Dropping

volume reduction and lower fuel costs

- reduction in solids production since digesters came on line,
- increase in cake solids content (was 27%, now 30.5% solids)
- drop in fuel costs
  - In February, diesel prices averaged $2.86/gallon and with the contractual fuel surcharge the average biosolids reuse cost for the two contracts (DC Water and WSSC) was $40.54/wet ton.
  - In February 2014 the average diesel price was $4.34/gal and the average contract cost was $44.59/wet ton.



Class B vs. Class A Product

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Future Plans for Class A Biosolids

- Continue land application of remaining Class A dewatered biosolids
- Produce a blended soil product (similar to compost)
- Use product in service area for tree planting, restoration, green infrastructure, etc.

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VA DEQ and MDE New Biosolids Source Certification

- VA DEQ requires 90 days of data before a generator can land apply biosolids
- Initially stated that we would have to store 90 days of material digested Class A biosolids (~25,000 tons).
- DEQ agreed to allow for certification of batches
  - Four one week batches, each of which will fit in an individual bunker
  - 5th week production will exceed 1000 tons
- Batches approved for first month – all data clearly showed material met Class B standards, DEQ has since agreed to allow for land application of material directly from the plant without prior lab analysis approval
- Because of elevated fecal coliform numbers, 90-day certification period had to wait until our dewatered cake was below 1000 MPN/g dry weight
  - Estimated that reduction would occur after 2 HRTs in digesters
  - Last seeded digester just dropped (on schedule predicted) below 1000
  - 90-day certification period began March 1st

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Digested Dewatered Biosolids Fecal Coliform

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Biosolids Blending Trials

Ingredients:

1. Biosolids
2. Soil (DC soil from Clean River project)
3. Sand – from Harvest Garden Pro
4. Sawdust – River End Sawmill
5. Hardwood bark fines (composted) - from Harvest Garden Pro
6. Pine bark fines - from Harvest Garden Pro
7. Ground money

Blends:

1. TM hardwood – 2 biosolids : 1 hardwood bark fines : 1 sand (TAGRO Mix)
2. TM sawdust - 2 biosolids : 1 sawdust : 1 sand (TAGRO Mix)
3. TPS hardwood – 1 biosolids : 1 sawdust : 3 hardwood bark fines (TAGRO potting soil)
4. TPS pine bark – 1 biosolids : 1 sawdust : 3 pine bark fines (TAGRO potting soil)
5. AC – 1 biosolids : 1.5 sand : 1 hardwood bark fines (Abbottsford Classic)
6. AC Topsoil - 1 biosolids : 1.5 soil : 1 hardwood bark fines (Abbottsford Classic)
7. 3TP : 1B – 3 soil : 1 biosolids
8. 2TP : 1B - 2 soil : 1 biosolids
9. 2TP/S/B – 2 soil : 1 sawdust : 1 biosolids
10. Money 1 – 1 biosolids : 1 soil : 1 money
11. Money 2 - 2 biosolids : 1 sand : 1 money : 1 hardwood bark

Blended Product Analysis

Page: 1 of 2

Report Number: 13-211-0206
Account Number: 73496
Submitted By: MIKE BECK

A&L Eastern Laboratories, Inc.
7621 Whitepine Road Richmond, Virginia 23237 (804) 743-9401 Fax (804) 271-6448
www.aleastern.com

Send To: VA TECH/GREG EVANYLO
DEPT OF CSES
421 SMYTH HALL
BLACKSBURG, VA 24061-0403

Project : ERIC

Lab Number : 94783
Sample Id : 4

REPORT OF ANALYSIS

Date Sampled: 7/3/2013 00:00:00
Date Received: 07/30/2013 00:00
Date Reported: 08/01/2013

PARAMETER	RESULT (%)	RESULT (mg/kg)	QUANTITATION LIMIT (mg/kg*)	ANALYST	ANALYSIS DATE/TIME	METHOD
Total Solids *	60.06	600600	100.0	JM	07/30/2013 14:15	SM-2540G
Moisture *	39.94		100.0	JM	07/30/2013 14:15	SM-2540G
Total Kjeldahl Nitrogen	1.41	14100	10.0	JM	07/31/2013 07:54	SM-4500-NH3C-TKN
Total Phosphorus	0.91	9120	100	KM	07/31/2013 12:04	SW 6010C
Total Potassium	0.09	918	100	KM	07/31/2013 12:04	SW 6010C
Total Sulfur	0.31	3120	100	KM	07/31/2013 12:04	SW 6010C
Total Calcium	0.81	8130	100	KM	07/31/2013 12:04	SW 6010C
Total Magnesium	0.16	1550	100	KM	07/31/2013 12:04	SW 6010C
Total Sodium	0.02	218	100	KM	07/31/2013 12:04	SW 6010C
Total Iron		21500	100	KM	07/31/2013 12:04	SW 6010C
Total Aluminum		3000	100	KM	07/31/2013 12:04	SW 6010C
Total Manganese		282	5	KM	07/31/2013 12:04	SW 6010C
Total Copper		132	5	KM	07/31/2013 12:04	SW 6010C
Total Zinc		265	5	KM	07/31/2013 12:04	SW 6010C
Ammonia Nitrogen	0.34	3380	10.0	JM	07/31/2013 07:54	SM-4500-NH3C
Organic N	1.07	10720	10.0		07/31/2013 07:54	CALCULATION
Nitrate+Nitrite-N		2.83	2.00	JM	07/31/2013 07:55	SM-4500NO3F
Total Cadmium		<2.0	2.0	KM	07/31/2013 12:04	SW 6010C

All values are on a dry weight basis except as noted by asterisk. Detection limit on all N series is on a wet basis.

Debbie Holt

Blended Product Analysis

Report Number: 13-211-0206
Account Number: 73496
Submitted By: MIKE BECK

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Lab Number : 94783
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Date Sampled: 7/3/2013 00:00:00
Date Received: 07/30/2013 00:00
Date Reported: 08/01/2013

PARAMETER	RESULT (%)	RESULT (mg/kg)	QUANTITATION LIMIT (mg/kg*)	ANALYST	ANALYSIS DATE/TIME	METHOD
Total Chromium		620	5	KM	07/31/2013 12:04	SW 6010C
Total Nickel		210	5	KM	07/31/2013 12:04	SW 6010C
Total Lead		30	5	KM	07/31/2013 12:04	SW 6010C
Total Arsenic		16.0	3.0	KM	07/31/2013 12:04	SW 6010C
Total Mercury		<0.4	0.4	MW	07/31/2013 09:55	SW-7471B
Total Selenium		<5.0	5.0	KM	07/31/2013 12:04	SW 6010C
pH (Standard Units) *	8.62		2.00	JM	07/31/2013 07:54	SW-9045D
Calcium Carbonate Equivalent	2.11	21100	100	JM	07/31/2013 11:39	AOAC 955.01
Total Volatile Solids	24.24	242400	100.0	JM	07/30/2013 14:15	SM-2540G
Total Molybdenum		7	5	KM	07/31/2013 12:04	SW 6010C

Comments:
QUALIFIER: THE LRB WAS OUT OF LIMITS FOR "NO3/NO2-N". THE MATRIX SPIKE WAS OUT OF LIMITS FOR "Fe" AND "Se". AND ALL OTHER QC DATA IS ACCEPTABLE.

All values are on a dry weight basis except as noted by asterisk. Detection limit on all N series is on a wet basis.

Debbie Holt

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BLOOM
GOOD SOIL,
BETTER EARTH.


BLOOM

Working with local soil blenders

- VA blender interested in developing commercial products
  - Spent a day with their marketing team
  - Coordinating with Va Tech on research
  - Willing to participate in a yr-1 blending pilot
  - Have 12-compartment computerized blending equipment
- MD blender closer by, but a smaller operation
  - Interested in highly specialized soil blends
  - Have 8-compartment computerized blending equipment
  - Interested in serving the DC Metro land development community with a top quality soil product.
- Working with DC Water Fleet to determine the best trucking scenario

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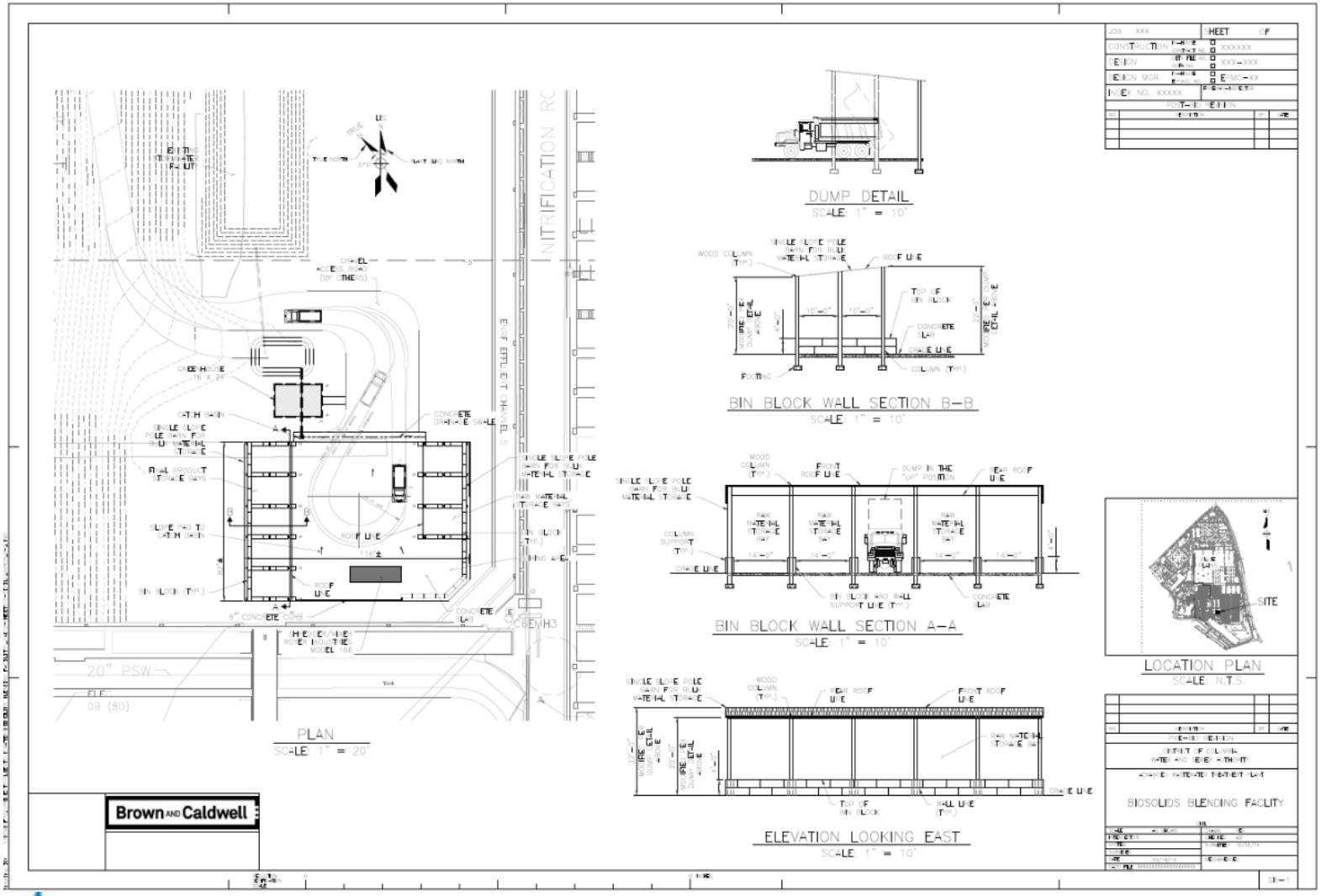
Blending of up to 12 feedstocks

dc water is life

Designing a small onsite mixing facility



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Implementation schedule

- Research contracts to develop product mixes (2014-15)
- Pilot digester for product testing (2013)
- Complete Class A/EQ certification, obtain VA distribution and marketing permit (2015)
- Pilot blending/marketing project (2015)
- Full scale,10 – 20% to blenders (2016)

dc water is life

NUTRIENTS and CARBON RECYCLING

FARMING

Provides carbon and nutrients valued at $300.00 per acre.

SILVICULTURE

Increases yield and improves understory.

RECLAMATION

Restoring mines to their natural state and providing wildlife habitats.

URBAN RESTORATION

Grow trees and reduce runoff.

dc water is life

BLUE PLAINS ADVANCED WASTEWATER TREATMENT PLANT: A RESOURCE RECOVERY FACILITY

water • nutrients • carbon • energy

BLUE PLAINS SERVICE AREA

DC Water receives and treats wastewater collected from the District of Columbia sewer system and from the Maryland and Virginia suburbs. On an average day, more than 330 million gallons of raw sewage flow into the Blue Plains Advanced Wastewater Treatment Plant from area jurisdictions.

dcwater.com/biosolids

GREEN ENERGY BIORENEWABLES

THERMAL HYDROLYSIS PROCESS (THP) AND DIGESTION FACILITY

DC Water will be the first in North America to use thermal hydrolysis for wastewater treatment. When completed, this facility will be the largest plant of its kind in the world.

GREEN BENEFITS:

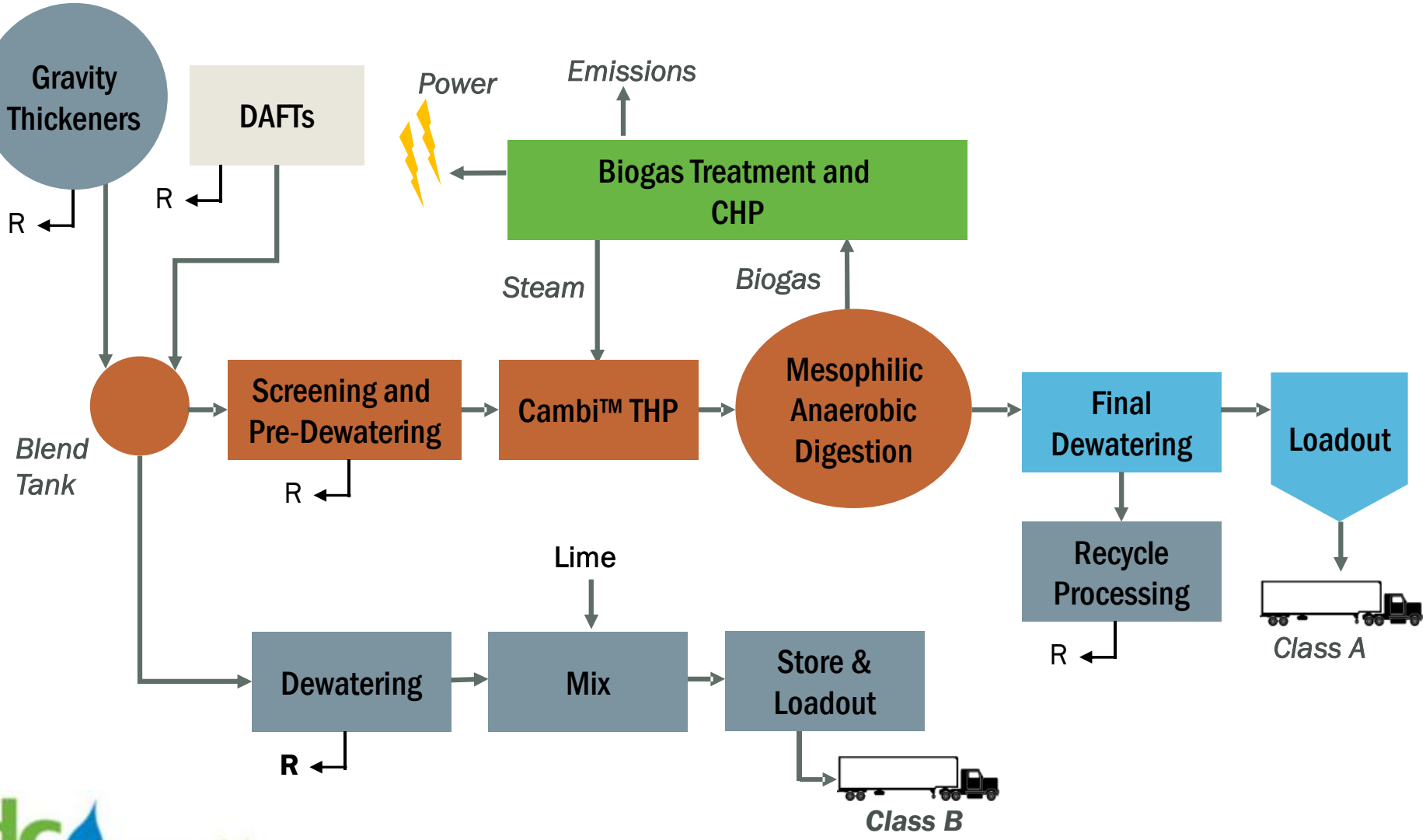
- Produce combined heat and power, generating 13 MW of electricity
- Save DC Water $10 million annually cutting grid demand by a third (DC Water is the largest consumer of electricity in the District)
- Reduce carbon emissions by approximately 50,000 metric tons of CO_2e per year.
- Reduce trucking by 1.7 million miles per year.
- Save $10 million in biosolids trucking costs
- Produce Class A biosolids to grow trees, sequester carbon and reduce runoff.

24

There is no such thing as waste, only wasted resources.

Chris Peot
cpeot@dcwater.com

Process Schematic of DC Water's New Biosolids Program



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Program Benefits

Resource Recovery

Reduce biosolids quantities by more than 50%

Improve product quality (Class A and more)

Generate 10 MW of clean, renewable power

Cut GHG emissions dramatically

Save millions of dollars annually when the facility begins operating in 2014

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