

November, 2014

Biosolids Resource Recovery Monthly Report

NUTRIENTS and CARBON RECYCLING

FARMING

Provides carbon and nutrients valued at \$300.00 per acre.

SILVICULTURE

Increases yield and improves sustainability.

RECLAMATION

Restoring meads 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

dcwater.com/biosolids

GREEN ENERGY BIORENEWABLES

POWER FROM THE PEOPLE

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.

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.

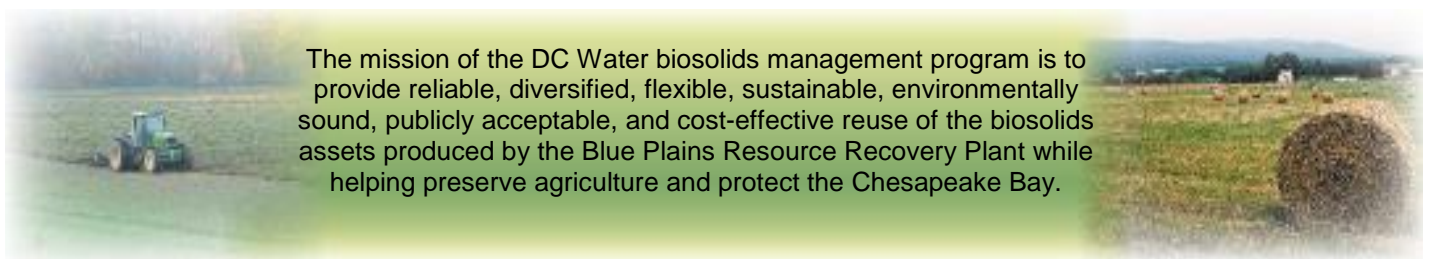
GREEN BENEFITS:

- 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 CO₂e 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.

DC Water

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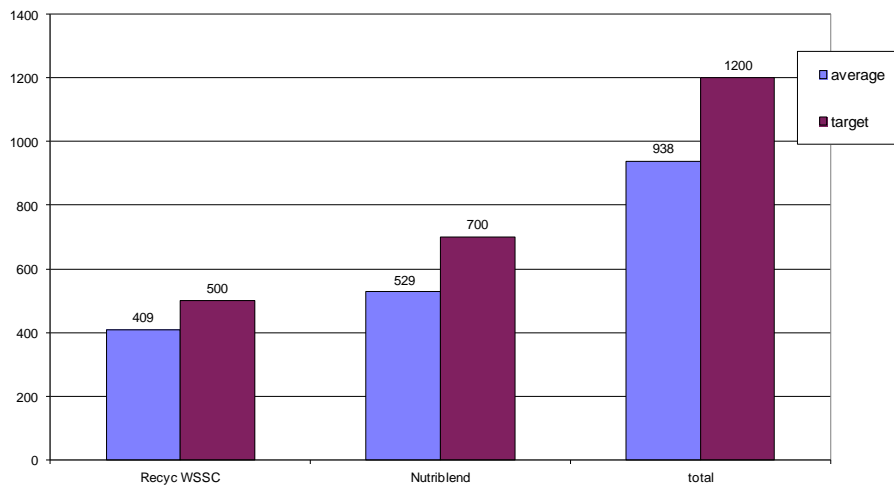
The mission of the DC Water biosolids management program is to provide reliable, diversified, flexible, sustainable, environmentally sound, publicly acceptable, and cost-effective reuse of the biosolids assets produced by the Blue Plains Resource Recovery Plant while helping preserve agriculture and protect the Chesapeake Bay.



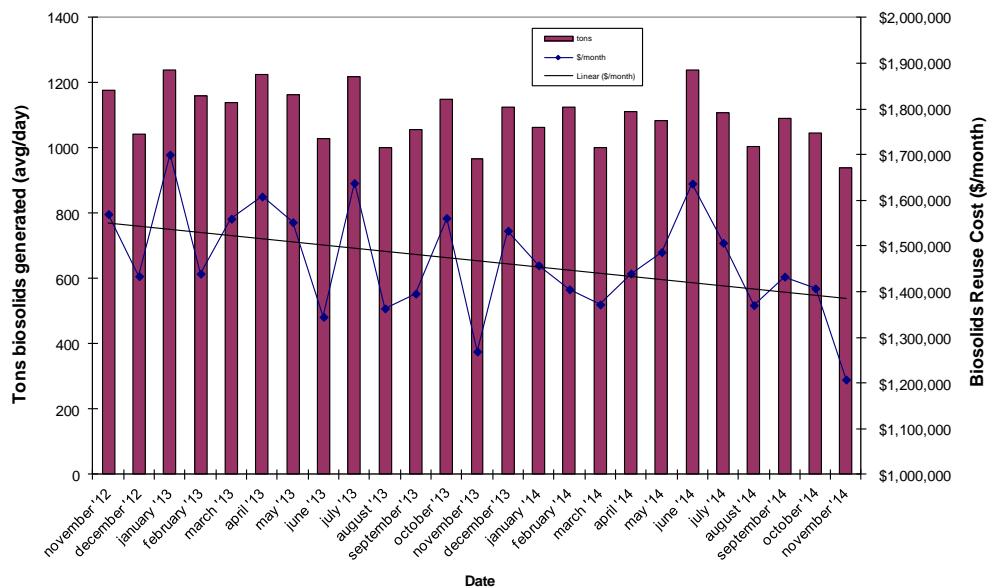
November 2014 Resource Recovery Report

In November, biosolids hauling averaged 938 wet tons per day. At the end of the month, we began producing digested biosolids. The last two days of the month, 4 loads of digested biosolids were hauled to a compost facility. Approximately 12 loads remained in the bunker at the end of the month. The graph below shows the hauling by contractor for the month of November. Average % solids for the unlimed cake was 27.5%. Average lime dose for the month was 23.5%. At the end of November the Cumberland County storage pad had approximately 6000 tons (~25,000 tons capacity), the Fauquier pad had 1303 wet tons (15,000 ton capacity), and the Cedarville lagoon had 3261 tons of Blue Plains biosolids (~30,000 tons capacity).

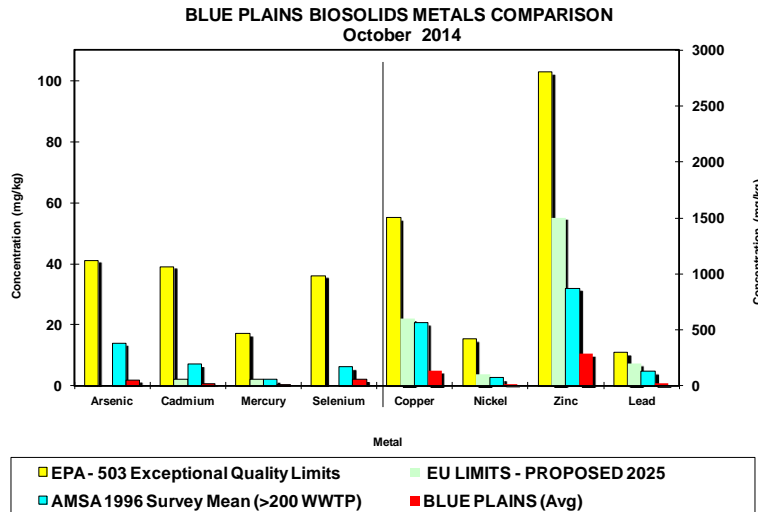
Average Daily Hauling by Contractor for November 2014



Average Daily Biosolids Production and Reuse Cost



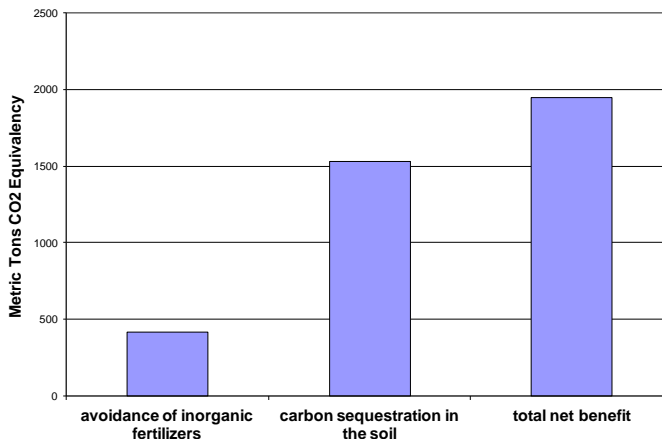
The graphs below show the EPA regulated heavy metals in the Blue Plains biosolids for the month of October 2014. As can be seen in the graphs, the Blue Plains levels are considerably below the regulated exceptional quality limits, the national average levels surveyed in 1996, and the European Union (EU) 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 October coming directly from the plant and from storage facilities equaled 33,498 tons. Taking into account the fuel required to transport biosolids to the field, the net benefit of the land applied material is 1948 metric tons CO₂ equivalent avoided emissions. This is equivalent to taking 3,967,419 car miles off the road in the month of October (assumes 20 mpg, 19.4 lb CO₂ equivalent emissions/gallon gas – EPA estimate). The cumulative total avoided carbon emission since January, 2006 is 136,374 metric tons CO₂ equivalent.

**DCWater Biosolids Recycling Program
Greenhouse Gas Balance Benefits
October 2014 Totals**



November Highlights

National Biosolids Partnership Environmental Management System Audit

In early November, staff spent a week with a third-party auditor (DEKRA) for our annual National Biosolids Partnership (NBP) Environmental Management System (EMS) audit. This audit is conducted annually to ensure that the biosolids reuse program is in compliance with the NBP standards and is on the path toward continual improvement. Based on results of this audit, DEKRA has determined that DC Water's Biosolids Management Program is functioning effectively and meets NBP expectations and requirements of the BMP Elements, with minor exceptions. DEKRA determined that the DC Water requires improvement in a few areas in order to ensure compliance with the NBP EMS standards. Staff prepared a corrective action plan to correct the non-conformances designed to track progress and ensure changes are made.

DEKRA Verification and our recommendation regarding NBP certification will be issued following review and approval of Corrective Action Plans (CAP) for the Nonconformances. The auditor also identified opportunities and strengths for the DC Water biosolids reuse program.

DEKRA identified 4 non-conformances. They are described as follows:

1 - NBP BMP Element 12 requires the organization to control its BMP documents. The BMP procedure for controlling documents states that controlling documents requires "periodic review" and approval by an "authorized person". There is no statement of what periodic review means for documents (e.g. SOP's) or who is authorized to approve specific documents.

Staff notes in the CAP that we will make a change to the manual to reflect a schedule for review and identification of the authorized person.

2 - NBP BMP Element 14 requires the organization to develop and implement a procedure to investigate any noncompliance with applicable regulatory requirements. A noncompliance in land application observed in 2012 (unpermitted field site) was not addressed using a BMP Corrective and Preventive Action procedure.

Staff notes in the CAP that although the issue was addressed in the monthly Biosolids Workgroup Meetings and recorded in the meeting notes,

3 - NBP BMP Element 14 requires the organization to track progress in completing corrective actions for findings from third party audits. There is no evidence that planned corrective actions for minor nonconformance JS/13-02/16 (from the previous audit) have been completed.

Staff notes that the non-conformance was addressed, but the results were not recorded. Staff will provide the results to the auditor with the CAP.

4 - NBP BMP Element 16 requires the organization to establish and maintain an internal audit program to periodically analyze its BMP and to have its audit schedule approved by the third-party auditor. An internal audit has not been conducted since October 2012 and an internal audit plan has not been established. The internal audit process is not being used effectively to analyze the BMP and the third party auditor has not been involved in the internal audit schedule.

Staff has, as a result of this nonconformance, established an internal audit schedule and a means of recording the findings. Staff will begin this audit schedule immediately, with EMS elements broken up into four groups, which will be audited once per year or one group per quarter.

Program Strengths

- Continued excellent cooperation between DC Water and contractors for biosolids program planning, particularly in Workgroup meetings
- Management understands the benefits of using a management system approach for continual improvement

Program Opportunities

- Op1 The purpose of individual SOPs (Standard Operating Procedures) could describe the purpose of the operation rather than state only that the purpose is “to define operational procedures”.
- Op2 Determine purpose of identifying critical control points & operational controls and prepare that identification consistent with those purposes.
- Op3 Written SOPs could include, or reference, quality, environmental, regulatory and interested party risks as part of the BMP.
- Op 4 More direct one-on-one discussions between the Resource Recovery Director and the General Manager could help in continually improving the management system.

Mid-Atlantic Biosolids Association Seminar

Staff presented at the Mid-Atlantic Biosolids Association (MABA) Seminar on High Quality Biosolids. DC Water’s experience in the early to mid 2000s with addressing odor issues of our lime-stabilized biosolids was presented. Highlighted were efforts to research the root cause of odors—primarily insufficient mixing of lime and stratifying emulsion polymer. The audience was particularly interested in our use of MES as independent inspectors. Al Razik from MES helped field several questions. The seminar was followed by a discussion of the traits utilities and contractors should track to ensure a high quality product.

Map of Blue Plains Biosolids Applications and Agricultural \$'s for October 2014

