

Louisville Green Program Performance Report for 2015

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Introduction

Louisville Green's Management Team consists of Managers and Administrators throughout the Biosolids value chain from pretreatment to land application. This report summarizes performance and progress of the Louisville Green Management System in 2015.

Biosolids Summary Information and Marketer Performance

The Monthly Solids Summary spreadsheet is used to monitor the distribution of Louisville Green and the landfill of Dewatered Biosolids, and Landfilled Product.

The following table summarizes the yearly distribution of Louisville Green.

Year	Total Tons Distributed	Landfilled Tons	% of Material Beneficially Used	% of Marketable Material Distributed
2009	25,961	3,647	87.7	100
2010	28,211	62	99.8	100
2011	24,086	1,343	94.4	100
2012	24,731	302.3	98.8	100
2013	29,250	0	100	100
2014	20,119	1,174	77	81
2015	20,410	6,609	76	87

Table 1.0

The difference between material beneficially used and the marketable material distributed is product that did not meet internal specifications. It can also represent material which is cleaned out of the process but still meets Exceptional Quality standards.

Of the 20,410 tons distributed 47% was used for agriculture in Kentucky, 53% was used for agriculture in other states. As a result, \$379,380.40 was generated from Louisville Green sales in 2015.

24.4% of Louisville Green produced in 2015 was sent to the landfill. Beneficial Use of 86.5% saved MSD approximately \$578,840 in landfill fees. In addition, 907,130 cubic feet of landfill space was saved by beneficially using the wastewater solids and helping the environment.



Biogas from the anaerobic digestion process at Morris Forman is used as a fuel source for the rotary drum dryers. In 2015, an average of 82% of the heat demand for the drying process was fueled with biogas. An average of 18% of the heat demand was supplied by purchased natural gas. This resulted in approximately \$464,000 natural gas savings based on an average annual natural gas cost of \$4.50 per mmBtu.

Louisville Green Revenue

During 2015, MSD entered into the contract year two with the Marketer. An increase in price per ton in year two resulted in an increase in revenue for 2015.

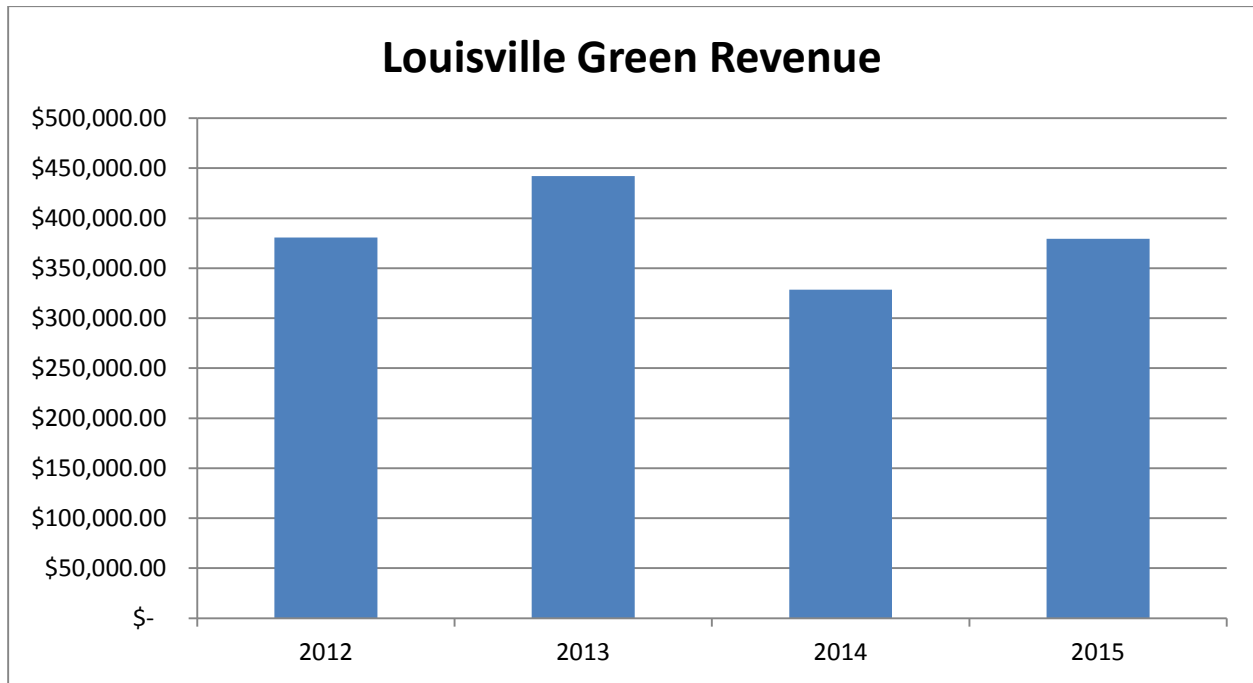


Figure 1.0

Hazardous Materials and Pretreatment Program

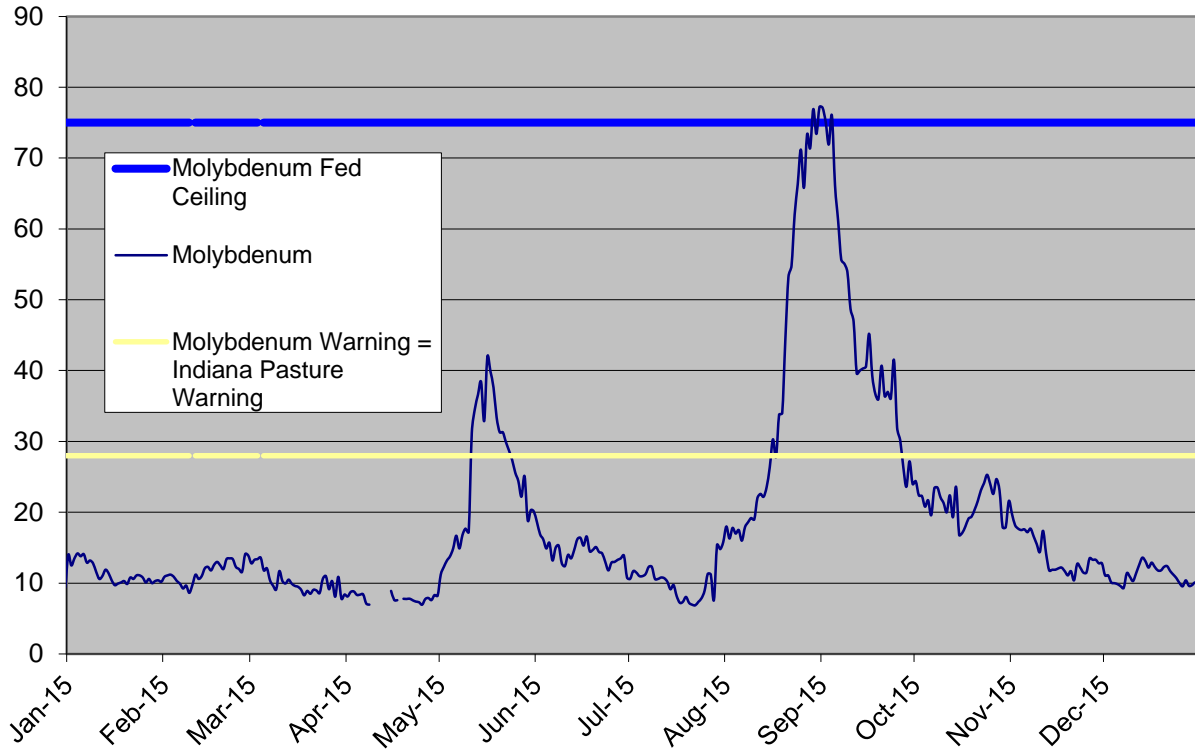
The pretreatment program issues an annual program performance report to state and federal authorities every year as part of their regulatory requirements. The report is due on March 1st of each year. Copies of the report will be available for 2015, and may be requested by contacting the Pretreatment Administrator.



Regulatory Compliance

All permit parameters for Louisville Green that was distributed were within State and Federal limits throughout 2015. However, Molybdenum exceeded the land application State limit for Indiana and the Federal Limit. None of this material was distributed for land application. The material was disposed of in the landfill.

Molybdenum



Morris Forman Laboratory

The Laboratory performs the analyses for Louisville Green and all regulatory required analytical services for the following programs: KPDES, Pretreatment and Compliance, and the MS4 Permit. In addition, the laboratory provides technical support and analyses for the Consent Decree Program.

In 2015 the Morris Forman laboratory was awarded full certification for wastewater analysis from the Commonwealth of Kentucky Energy and Environment Cabinet

Table 2 is the lab's performance for the State and Federal required Discharge Monitoring Requirements Quality Assurance Program (DMRQA).

Year	Number of Acceptable Test Results	Number of Un-Acceptable Test Results	Percentage of Test Results Correctly Analyzed	DMR QA Study Number
2015	41	0	100%	#35
2014	51	2	96.2%	#34
2013	44	0	100%	#33
2012	41	0	100%	#32
2011	47	1	97.9%	#31
2010	38	4	90.5%	#30
2009	36	5	87.8%	#29

Table 2



Progress Towards Goals and Objectives

In 2015, regular meetings were held to discuss the year's objectives. Below are the 2015 Goals and Objectives and a summary of the outcomes. Of the eight objectives outlined below, five will be carried over into 2016.

Goal: Continually enhance the biosolids process to improve communication, efficiency, quality, and sustainability through 2018.

Objective 1: Implement an improved Preliminary Treatment System by December 31, 2016 to reduce the amount of debris sent to the anaerobic digesters by 10% by increasing the amount of screen and grit captured by 10% with data collection completed by December 31, 2018.

- Originating in 2013, this project continued in 2015. Design was completed and construction began in late 2015. The project will continue to be monitored and tracked in 2016 on the action sheet.

Objective 2: Replace the failing **High Purity Oxygen Generation System** to maintain Secondary treatment characteristics to not have plant effluent DO <2.0 ppm by June 30, 2016.

- Originating in 2013, the project will continue into 2016 and progress tracked on the action sheet.

Objective 3: Installation of Dewatered Biosolids Conveyance System to provide for 100% redundancy by June 30, 2015.

- In 2014 an Engineering Consulting Group began the design for the conveyance system. Design was completed in 2015. The project will continue in 2016 and progress will be tracked on the action sheet.

Objective 4: Update the Louisville Green Website, "Home and About Us" pages, to update information to all Interested Parties by December 31, 2015.

- This objective was not complete in 2015. MSD started a companywide "branding" process. Website redesign was part of the initiative. The Louisville Green Website is included.

Objective 5: Create a functioning Metro Treatment Facilities Safety Committee, to include Derek Guthrie, Floyds Fork, Cedar Creek and Hite Creek by June 30, 2015.

- This objective as not completed due to resource allocation. It was decided with the activities on going at Morris Forman, expanding the Safety Committee to another facility was not feasible at this time. In addition, MSD has hired new safety personnel and this has become a role they will pursue instead of the staff at Morris Forman.



Objective 6: Administer a training needs assessment and report for Operations Division by June 30, 2015.

- This objective was not completed in 2015. It will be carried over to 2016.

Objective 7: Meet the Regulatory Goals for Wastewater, Biosolids, Preventable Bypasses and Storm water Protection Plan, to include Morris Forman, Derek Guthrie, Floyds Fork, Cedar Creek and Hite Creek Water Quality Treatment Centers for the compliance period of July 1, 2014 through June 30, 2015.

- This objective was completed and it will also be carried over into 2016. There are a total of 3674 analytes for analysis for all treatment plants. During fiscal year 2015, 23 of these missed permit requirements, or a 99.4% passing rate.

Goals and Objectives for 2016 were developed in December 2015. Monthly action plan meetings will be held in 2016.

Actions Taken as a Result of Input from Interested Parties

Marketer, Farmers, Fertilizer Blenders, and the General Public

Product size distribution is an important criteria to the end user. In 2011 an enhanced capture test was initiated. The test uses 2.8mm, 2.36mm, 2.0mm, 1.7mm screens, and a pan to much more accurately determine the product size distribution. This test has continued throughout 2015 and data has been compiled. Table 3 below shows the average product size only varied by 0.05mm for the entire year.

Month	2012 Size in mm	2013 Size in mm	2014 Size in mm	2015 Size in mm
January	1.85	1.85	1.87	1.86
February	1.93	1.92	1.82	1.80
March	1.90	1.91	1.82	1.81
April	1.89	1.93	1.84	1.81
May	1.83	1.92	1.84	1.82
June	1.88	1.86	1.84	1.79
July	1.92	1.81	1.81	1.84
August	1.91	1.85	1.83	1.86
September	1.87	1.82	1.84	1.86
October	2.00	1.89	1.84	1.85
November	2.00	1.87	1.87	1.92
December	1.86	1.88	1.86	--
Ave	1.90	1.88	1.84	1.84

Table 3



Pellet sizing continues to be consistent. The enhanced capture test will continue to be compared to historical data and may be used as supporting evidence for further dryer rehabilitation.

MSD Board

In 2015 there were no actions taken by the MSD Board concerning Louisville Green.

Public Participation

Public participation continued at a modest level in 2015. This year public outreach was given to 8 groups. In 2015, it was noticed that more groups are looking at Biosolids as alternative fuels versus land application.

Training Program

During 2015, the MSD Training Department provided the training sessions in Table 4 to employees whose work is related to MSD wastewater operations.

Course	Number of Sessions
Sewer Overflow Response Protocol (SORP) Related	80
Hazardous Materials Communications	12
Biomonitoring	1
CPR & First Aid	12
EMS Fundamentals	5
Forklift and other equipment	8
Bloodborne Pathogens	3.5
Field Lab Certification Prep. Training	4
Odor Control	1
Wastewater Math	3
Dealing With Grease	3
Electrical NEC Training	1
Fire Prevention and Control	1

Table 4

Several of these courses are accepted by the Kentucky Division of Water as credit hours for maintaining wastewater licenses in the state of Kentucky. All training is tracked in the Employee Training Records Database. The Operation’s trainer tracks the progress of each operator at Morris Forman towards being qualified in particular areas of the plant and being certified as a wastewater operator.

During 2015, overall MSD employee training attendance was 5187, in approximately 882 training sessions for a total of 2152 hours of training. See Figure 2 below.



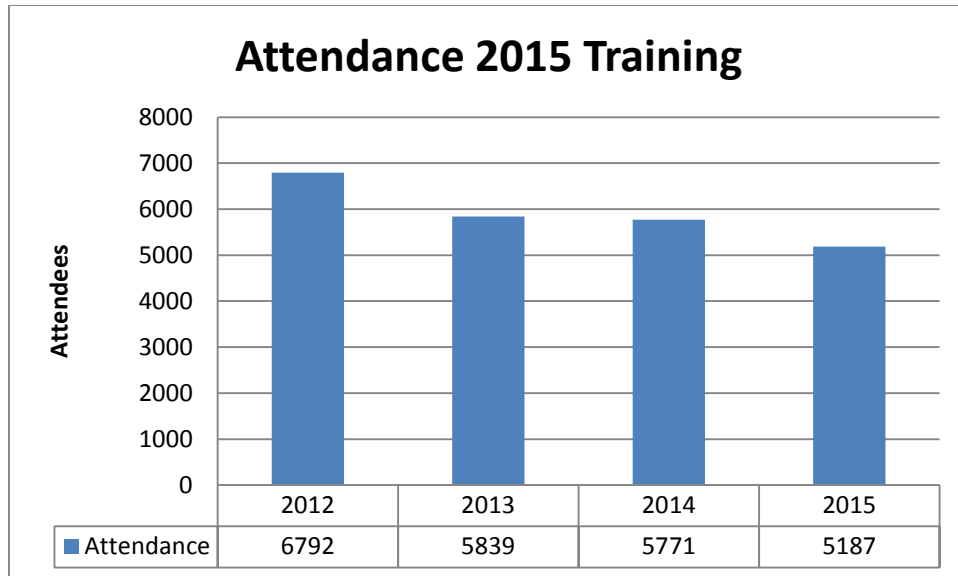


Figure 2

Accomplishments from the Training Department included:

- Continued implementation of a comprehensive management and leadership development program
- Continued implementation of the Effective Utility Management (EUM) process to use benchmarking and trending data to improve overall utility performance
- Adopted electronic training log sign in for most training sessions
- Continued meetings with LWC training staff to seek opportunities for collaboration

Community Outreach Participation included:

- Ohio River Sweep
- Kentucky Construction Career Day
- Toys for Tots collection drive
- Participated in Jefferson County Public Schools 5-Star Externship Program for Teachers
- Conducted public tours of MSD facilities
- Recruitment at Fairdale High School's Heavy Equipment program

Management Review

The Management Review of the Louisville Green Management System for 2014 was conducted in March of 2015. Reviewers continue to be pleased with the Louisville Green Management System.



Internal and 3rd Party Audit Results

In December 2015, the Louisville Green Management System had an audit by MSD's Internal Audit staff. This audit identified no nonconformances.

The party performing the next audit in the cycle will be the NBP Third Party Auditor. The audit is scheduled for June 2016.

Nonconformances and Corrective Actions

Nonconformances from Internal and External Audits

All corrective actions from Internal and External Audits have been completed. The Corrective Actions pertaining to the 2014 External Audit will be closed at the next audit scheduled in June 2016.

The Corrective Action from the 2014 Internal Audit was closed out during the 2015 Internal Audit.

Corrective Actions from Routine Monitoring and Measurement

Corrective actions are initiated from routine monitoring and measurement whenever there is a significant interruption in the process, a process change has occurred or an update in documentation is required. Several corrective actions were initiated in 2015, most due to the plant flood due to a power failure.

