NATIONAL BIOSOLIDS PARTNERSHIP
REVERIFICATION AUDIT REPORT

Louisville and Jefferson County
Metropolitan Sewer District

Louisville Green Management System

Louisville, Kentucky

Audit conducted by

NSF-International Strategic Registrations

William R. Hancuff, Lead Auditor

References:
National Biosolids Partnership (NBP) BMP Elements
NBP Third Party Verification Auditor Guidance – November 2001
(Latest Revision August 2011)
NBP Code of Good Practice
Louisville Green Management System Manual
(2018 – Version 1, May 4, 2018)

FINAL REPORT – JULY 9, 2018
INTRODUCTION

The purpose of the Biosolids Management Program (BMP) re-verification audit is to verify through an independent third party that the Louisville Green Management System for Biosolids conforms to BMP requirements of the National Biosolids Partnership (NBP).

The re-verification audit reviews objective evidence to determine whether the Louisville and Jefferson County Metropolitan Sewer District (MSD) Louisville Green Management System (LGMS) is functioning as intended, that practices and procedures are conducted as documented, and that the BMP as implemented conforms to the NBP’s Code of Good Practice and the BMP requirements of the National Biosolids Partnership (NBP) program objectives.

The third party on-site audit provides an independent review and supports the credibility of the system. The audit collects and evaluates evidence related to all 17 elements of the BMP.

RECOMMENDATION

The results of the LGMS re-verification audit and review of corrective action plans are positive, and it is the recommendation of the audit team that the Louisville and Jefferson County Metropolitan Sewer District LGMS move to the Platinum Plus Level Recognition Certification status.

AUDIT SCOPE

The (NSF-ISR) conducted a third party interim audit of the MSD’s LGMS from June 11 through June 14, 2018. The on-site audit team consisted of Dr. William R. Hancuff, Lead Auditor.

The primary objective of the audit was to ensure the environmental management system health by reviewing:

- Progress toward goals and objectives,
- Corrective and preventive action requests and responses,
- Actions taken to correct minor non-conformances,
- Management review process, and
- EMS outcomes (environmental performance, regulatory compliance, interested party relations, and quality practices)

The first four items identified above involved reviewing procedures, activities, processes and products that have general requirements found in the NBP standard elements 5, 14, 15, 16 and 17. The fifth item, BMP outcomes, had the potential of involving other NBP standard elements, namely: 1, 2, 4, 6, 9, 10 and 13.
In addition to evaluation of the system as outlined above, the re-verification audit scope included the review and verification of the maintenance and implementation of all of the LGMS standard elements.

The physical biosolids facilities included in the audit and visited during the audit included the Morris Forman and Derek R. Guthrie Water Quality Treatment Centers (WQTC), the Louisville Green processing and transportation facilities, two product users on farm application sites both in Clark County Indiana. The physical biosolids facilities at the Morris Forman plant included in the audit and visited during the audit included the following biosolids value chain process area critical control points: preliminary/primary treatment, pure oxygen secondary treatment, digestion, digested solids dewatering, solids heat drying and solids conveyors and loading. Additionally all of the operations and critical control points at the Derek R. Guthrie WQTC were reviewed.

The following individuals were interviewed or otherwise participated in meetings as part of the audit process:

Wayne Bingham                  MSD Chief of Operations
Daymond M. Talley              Assistant Director Treatment Facilities
Robert Bates                   Operations Special Treatment Facilities
Robin Burch                    Process Support Supervisor
John Kessel                    Treatment Manager
Kevin Thompson                 Process Supervisor, Derek R. Guthrie WQTC
Mike Scott                     Operator, Process Technician III, Derek R. Guthrie WQTC
William Summers                Operator, Process Technician III, Derek R. Guthrie WQTC
Matt Burns                     Laborer – forklift/scissor lift
Sheryl Lauder                  Communication Program Manager
Jennifer Waters                MSD Internal Auditor – staff auditor
Sandra Conner                  MSD Internal Auditor – staff auditor I
Kyle Sipes                     Intern – audit team
Rhonda Crotzer                 Performance Metrics Supervisor
John Baldridge                 Maintenance Planner
Terry Hammack                  Maintenance Planner
Adriane Ritman                 Regulatory Administrator – Pretreatment Manager
Al Adams                       Senior Health and Safety Administrator
Tony Glore                     Organizational Development and Training Manager
Ron Scherer                    Training Specialist – Treatment Operations
John Barkham                   Process Technician III (Dewatering)
Clarke Fenimore                A-J, Inc. Marketer (Biosolids purchaser/contractor)
Mike Hext                      Waste Management (landfill contractor)
Nate Van Weelden               B&H (hauling contractor)
Richard Graff                  Land owner & farmer – user of biosolids product
Mark Burgin                    Land owner & farmer – user of biosolids product
Rachel Hamilton (audit observer) Assistant Director Louisville Metro Air Pollution Control District
Robin Green                    Supervisor, Kentucky Department of Environmental Protection, Division of Waste Management, Solid Waste
RE-VERIFICATION AUDIT FINDINGS

The re-verification audit included review of the latest versions of relevant LGMS manual element procedures and employed the most recent version of the NBP Third Party Verification Auditor Guidance dated August 2011. The audit found 3 positive observations, no major non-conformances, 3 minor non-conformances and 13 opportunities for improvement.

The NBP Third Party Verification Auditor Guidance indicates that when the auditor has identified minor nonconformances during the on-site audit, the organization must resolve the nonconformances and provide documentation to the auditor within 30 days of the audit. NBP acknowledges that biosolids organizations may not be able to fully correct some minor nonconformances within 30 days, in which case NBP requires that the audited organization develop an action plan with time frames. The lead auditor must approve this plan and schedule for correcting minor nonconformances. Corrective action plans were prepared and submitted to the lead auditor, and the approach and time frame for implementation were approved. Field verification of the closure of all minor findings will be finalized during the next scheduled interim audit.

The following is a review of the positive observations made during the interim audit. The minor non-conformances and opportunities for improvement follow, and are listed by item number, which correspond to the element minimum conformance requirements found in the NBP Third Party Verification Auditor Guidance. These findings are presented in the sequence of the NBP standard elements.

Positive Observations

The MSD management and all plant personnel involved in the biosolids environmental management system development should be recognized for their outstanding achievements, and the exceptional features of their Louisville Green Management System. The following is a summary of those positive observations made during the audit.

Element 1 – Once again it was observed that the process support supervisor, Robin Burch, had developed exemplary support documentation for the Louisville Green Management System. Many of these documents should serve as a benchmark for other agencies to emulate.

Element 6 – LGMS has substantially improved it public participation program moving from a reactive method to a proactive approach employing tours and public events to educate the public on the beneficial uses of their biosolids product and employing social media to expand demographic coverage and improve two way communication.
Element 9 – Louisville installed flat screen TV monitors in various locations throughout the Morris Foreman Treatment Plant to keep employees aware of the most current activities and happenings related to the city wastewater and storm water.

Finally, the hard work and dedication of the Core BMP Team must be acknowledged. Attaining BMP Platinum Plus recognition is a major accomplishment that few other agencies have achieved. The hard work and dedication of Robin Burch, the leadership of Robert Bates and the direction of John Kessel to ensure continuous improvement must be recognized. Additionally, the support, encouragement and active participation of the Director of Operations, Alex Novak, and the Assistant Director of Treatment Facilities, Daymond M. Talley, have guaranteed the programs continued success.

Minor Nonconformances

Element 2 – LGMS is committed to following the Code of Good Practice for Biosolids developed by the National Biosolids Partnership. The first principle is compliance, which is a commitment to compliance with all applicable federal, state, and local requirements regarding production at the wastewater treatment facility, and management, transportation, storage, and use or disposal of biosolids away from the facility. The LGMS does not have in place a method of evaluating the land application of biosolids in Indiana and Kentucky to assure it is complying with the federal and state regulations.

Requirement 7.1 – The Core LGMS Team plays a critical role in the Biosolids Management Program, however it’s roles and responsibilities are not addressed in the Element 7 procedure of the Louisville Green Management System Manual.

Requirement 16.1 – The standard requires the internal audit program cover all the organizations biosolids management program activities including those performed by contractors. The most recent internal audits have not included auditing the activities performed by contractors.

Opportunities for Improvement

Requirement 3.2 – Consider including in the Appendix 3A – List of Critical Control Points more details on specific potential environmental impacts associated with each critical control point, such as air pollution, surface water pollution, groundwater pollution, soil contamination, resource depletion, impact on human health, etc.

Requirement 4.2 – Consider including in Appendix 3A – List of Critical Control Points reference to IN and KY Land Application Permits in appropriate column or row locations associated with each critical control point.

Requirement 5.3 – Consider developing a goal and objective for odor measurement and control related to air quality as a result of input from interested parties developed through proactive public participation.
Requirement 5.6 – Consider having the public relations personnel develop a goal and objective that directly relates to the “relations with interested parties” outcome area.

Requirement 5.6 – Consider developing a goal and objective for the pretreatment program that directly relates to the “regulatory compliance” outcome area.

Requirement 5.6 – Consider developing a goal and objective for improving performance of maintenance management.

Requirement 8.1 – Consider developing a training effort for operations staff to facilitate the use of corrective action forms (including root cause analyses) for identification of operational upsets, unusual occurrences, or other improvement areas that are not necessarily associated with scheduled or unscheduled maintenance.

Requirement 11.1 – While Louisville conducts training and field exercises to evaluate the effectiveness of emergency preparedness and response procedures they do not prepare written post action reports addressing corrective actions required and preventive actions proposed to eliminate problem recurrences.

Requirement 11.3 – Currently the locations of emergency response equipment are not identified (e.g. a map).

Requirement 12.2(c) – The hard copy MSD Emergency Response Plan found in the files was the 2010 version, while the currently effective version was issued in 2014.

Requirement 15.1 – The Louisville Green Program Performance Reports did not contain sufficiently detailed results of the most recent independent third party interim audit.

Element 16 – Consider having a member(s) of the treatment plant operation staff participate as a member(s) of the internal audit team.

Requirement 16.3 – The standard requires the organization to maintain identification of the lead auditor qualifications. Element 16: Internal LGMS Audits does not identify the criteria for lead auditor qualifications.

For the minor non-conformances, MSD personnel prepared Corrective Action Plans, and will implement corrective actions according to their BMP procedures to provide continual improvements to their biosolids program. All proposed corrective action work plans were reviewed by the auditor and found to be acceptable and final closure will be verified during the next external third party audit. As a further measure to demonstrate continuous improvement the opportunities for improvement will be addressed to the maximum extent possible.
METROPOLITAN SEWER DISTRICT COMMENTS

The Louisville Green Staff at The Louisville and Jefferson County MSD is very happy to be re-certified at the Platinum Plus Level. The Audit performed by Dr. Bill Hancuff continues to be a value added experience to the Louisville Green Biosolids Management System. The minor nonconformance findings during the audit were fair and accurate. -- Robin Burch MSD Process Support Supervisor.

OUTCOMES MATTER

The Policy of the Louisville Green Management System of the Louisville and Jefferson County Metropolitan Sewer District (MSD) is simply summarized as “MSD will produce Exceptional Quality (EQ) biosolids and promote beneficial use.” The “EQ” rating has generated a highly marketable biosolids product.

MSD has recovered from the setback in the beneficial use of its biosolids product experienced in 2014 and 2015. The distribution by the Louisville Green, which had dropped from 98.8% in 2012 and 100% in 2013 to 81% in 2014 and 87% in 2015, rebounded to 96% in 2016 and 90% in 2017. A change in the biosolids purchaser and distributor is intended to ensure a more reliable beneficial use of product in the future.

The District also recovered from its seasonal exceedence of Molybdenum that precluded it EQ rating for a period of time. The MSD industrial waste staff aggressively and successfully pursued a program to educate local industries about best management practices and distributed a brochure concerning the use of chemicals containing Molybdenum. This resulted in the elimination of the need to landfill final product instead of beneficially using it.

The LGMS completely revaluated its goals and objectives in 2013 and revamped their program through establishing one main goal with supporting objectives to attain that goal. The goal is to “continually enhance the biosolids process to improve communication, efficiency, quality and sustainability through 2018.”

Initially there were eight objectives focused on supporting and achieving this goal. Several of these objectives have been carried over through 2018 with those that have been accomplished retired. The objectives were developed by the LGMS Core Team considering public input, and improved over time to more directly meet Specific, Measurable, Achievable, Relevant, and Time-bound (SMART) criteria. Each of the objectives were reviewed to determine their relevance to one or more of the four NBP required outcome areas below:

1. Environmental Performance,
2. Regulatory Compliance,
3. Relations with Interested Parties, and
While it is not a requirement to fully attain all objectives, it is a critical component of the system to make progress towards accomplishing the overall goal. It should also be recalled that attainment of objectives is not the only measure of continual improvement, but corrective actions play a vital role in that measure as well.

The facility’s performance relate

Objective 1 (original): Implement an improved Preliminary Treatment System at the Morris Forman wastewater facility by December 31, 2016 to reduce the amount of debris sent to the anaerobic digesters by 10%.

Objective 1 (current): Implement an improved Preliminary Treatment System at the Morris Forman Water Quality Treatment Center by June 30, 2018 to reduce the amount of debris sent to the anaerobic digesters by 500 tons by increasing the amount of screen and grit captured by 500 tons with data collection completed by June 30, 2020.

The facility’s digesters accumulate inert and inorganic materials sufficient to reduce the effectiveness of the digestion process and require the digesters to be frequently cleaned at a substantial cost. Improving the preliminary treatment through installing new bar screens with reduced openings tive to each of the above listed outcome is identified parenthetically as a “relevant” criterion with each of the objectives addressed below. will remove considerably more materials than has historically been collected thus eliminating a portion of the inert materials that otherwise would pass through into the digesters and have deleterious effects on pumps and other processes downstream. Additionally redesigning the headworks grit removal system will have a measurable impact on the amount of inorganic material prevented from entering the digesters and reducing their effective treatment volume.

The amount of debris removed through the preliminary treatment processes has been historically measured by the amount of material collected in the waste lugers measured in number of loads and wet tons. The increase in the amount solids and grit removed through the new preliminary processes is estimated to be approximately 50%; and the reduction of material accumulated in the digester that will need to be removed is anticipated to be roughly 20%. The latter will be determined during the regularly scheduled routine cleaning of digesters.

Grit removed in the grit chambers and solids cleaned from the bar screens are combined into one luger, but the quantities of each can be estimated. Currently data on the total tons of combined grit and screenings are gathered on a daily basis and summarized monthly. An effort has been made to estimate the total tons of screening solids removed from the bar screens so that a removal baseline can be established for both the screens and grit chambers for future comparison.

The construction contract for the new headworks was initiated in the middle of 2015. Progress on construction has been delayed and completion originally scheduled for the
end of 2016 has been moved to late 2018. After installation and commencement of operations exact quantities of both screenings and grit will be able to be measured.

Outcome Areas: Environmental Performance and Quality Biosolids Management Practices.

Objective 2 (original): At the Morris Foreman Plant on no single day will the dissolved oxygen drop below 8.0 mg/l at the fourth stage of the oxygen batteries; which will be accomplished without taking remedial measures that require supplemental oxygen. SUCCESSFULLY COMPLETED.

Objective 2 (current): Remove the Biotowers from Service at the Morris Foreman Water Quality Treatment Center by December 31, 2018 without a drop in dissolved oxygen below 8.0 mg/l in the fourth stage of each battery.

Since the successful completion of the original objective it was determined to establish a new objective to (without loss of the accomplishments of the original objective) eliminate a treatment process that has a high energy demand and requires frequent expensive maintenance.

Initial testing of the operation of the system without the biotowers in service from December 2017 through February 2018 was successful and it was established as a goal to completely eliminate the use for the balance of the year and monitor the impact on dissolved oxygen from the fourth stage of each battery.

The health of the secondary process, biosolids settleability and downstream processing is dependent upon the oxygen fed and the resulting dissolved oxygen in the process. Failure to feed the required amount of oxygen results in biological upset, which has a direct correlation to the quality of solids removed and the waste activated solids (WAS) used to produce the Louisville Green final product.

The fourth stage dissolved oxygen and the return activated solids volatile settleable solids are monitored on a daily basis. The dissolved oxygen of 10 ppm in the fourth stage has historically proven to be a desirable target. Concern develops if this value drops to below 8 ppm.

Outcome Areas: Environmental Performance, Quality Biosolids Management Practices and Regulatory Compliance.

Objective 3 (original): At the Morris Forman Water Quality Treatment Center increase the dewatered biosolids conveyance system capacity by 6 tons per hour to provide a total capability of conveying 12 tons per hour by December 31, 2016. SUCCESSFULLY COMPLETED

Related to the original objective, there were three sets of conveyors to transport biosolids cake to the truck loadout and cake hopper. The conveyors were old and had not
had any major rebuilding. They were in need of repair to maintain reliable functioning in the future. If the dryer trains failed and the conveyors failed the cake would not be able to be sent to the landfill. The conveyors were reaching the end of their useful life without major rehabilitation.

As of June 10, 2016 equipment had been installed and the operations were awaiting vendor availability for startup. Operation commenced by 2017 and the objective was determined successful and retired.

Outcome Areas: Environmental Performance and Quality Biosolids Management Practices

Objective 3 (current - originally Objective 4): At the Morris Forman Water Quality Treatment Center send 90% of the total tons processed between January 1, 2018 and December 31, 2018 to beneficial use.

The current objective 3 has been a long-term objective since at least 2016. However, because of variability in the historic performance record, directing 90% of the total tons processed to beneficial use between January 1, 2017 and December 31, 2017 was continued as a formal goal for that year. While the target was met in 2017 it was determined that maintaining the effort was needed in 2018 to assure this level of performance. Therefore the objective was carried over for the period between January 1, 2018 and December 31, 2018.

Outcome Areas: Environmental Performance and Quality Biosolids Management Practices

Objective 4 (original): To increase the resident electrical capacity of the Morris Forman Water Quality Treatment Center by 3,000 KW by December 31, 2016.
SUCCESSFULLY COMPLETED

This objective was previously objective 5 in 2016 and before that objective 8, but moved to objective 4 as a result of successfully completing other objectives. The action plan to accomplish this objective involved the installation of an emergency generator with 3,000 KW capacity at the final effluent pump station. The primary function is to ensure reliability of the plant pumping station during emergencies such as power outages and flooding. This additional capacity provides pumping capacity of 100 million gallons per day in the event of a plant power failure when the effluent gate is closed.

The full operational implementation of this objective was scheduled for the first quarter of 2018 and retired as an objective.

Outcome Areas: Environmental Performance, Regulatory Compliance, Relations with Interested Parties, and Quality Biosolids Management Practices.
Objective 4 (current): Implement a New Biosolids Process at the Morris Forman Water Quality Treatment Facility by December 31, 2020 to produce 70 tons per day of Class A biosolids.

The driver behind this objective is the aging infrastructure associated with the heat treatment process of stabilizing biosolids to meet Class A product. The energy cost and high operation and maintenance costs along side the inability to consistently maintain a quality product has led the district to evaluate alternative innovated yet demonstrated technologies for processing biosolids to reliably increase production from 1300 tons per month (44 tons per day) to 70 dry tons per day. A variety of alternatives are being evaluated and stabilization process changes will be made in order to effect the abandonment of the antiquated failing heat drying system. The first step in the action plan of identification of alternative options has been completed and the second step of selection in about to take place.

Outcome Areas: Environmental Performance, Regulatory Compliance, Relations with Interested Parties, and Quality Biosolids Management Practices.

CONCLUSIONS AND RECOMMENDATIONS

The results of the third partyer-verification audit show the Louisville and Jefferson County Metropolitan Sewer District has a strong mature Environmental Management System. The NSF lead auditor reviewed and approved the corrective action plans for the minor nonconformances associated with the audit. Therefore, it is the recommendation of the audit team that the Louisville Green Environmental Management System of Louisville, KY be elevated to the platinum plus level recognition certification status.

As was mentioned previously, a BMP is a continuously improving process, and retention of certification status is not the end. The results of this and future audits will provide value added to the system and should be viewed as an overall opportunity to improve. Every audit is a snapshot in time, and does not, or cannot, identify each and every area for improvement. And yet, while no single audit identifies all of the areas for improvement the results of each audit provide an additional incremental step in the overall system’s improvement.

The scope of each interim audit must include a review of the organization’s progress toward goals and objectives; BMP outcomes (environmental performance, regulatory compliance, interested party relations, and quality practices); actions taken to correct minor nonconformances; the management review process; and corrective and preventive action requests and responses. This review generally includes requirements found in elements 1, 2, 5, 6, 9, 14, 15, 16 and 17.

In order to address each element of the NBP standard over the four years of interim audits the following elements are scheduled over the period between verification audits:

Year 11 (third party) – Elements 2, 5, 6, and 9.
Year 12 (internal) – Elements 1, 4, and 8.

Year 13 (internal) – Elements 3, 10, and 13.

Year 14 (internal) – Elements 7, 11, and 12.

Year 15 (third party) – Re-Verification audit
Attachment 1

Documents and Other Objective Evidence
Reviewed During the Re-verification Audit

Element 1. BMP Manual

- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.

Element 2. Biosolids Management Policy

- Interviewed Wayne Bingham, MSD Chief of Operations.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.

Element 3. Critical Control Points

- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.
- Interviews with Kevin Thompson, Process Supervisor, Derek R. Guthrie Water Quality Treatment Center; Mike Scott, Operator, Process Technician III, Derek R. Guthrie Water Quality Treatment Center; William Summers, Operator, Process Technician III, Derek R. Guthrie Water Quality Treatment Center; John Barkham, Process Technician III (Dewatering), and Matt Burns, Laborer – forklift/scissor lift.
- Interview with product distributor - Clarke Fenimore of A-J, Inc. Marketer (Biosolids purchaser/contractor)
- Reviewed Morris Forman Water Quality Treatment Center Plant Flow Diagram and aerial view.
- Reviewed Derek R. Guthrie Water Quality Treatment Center Plant Flow Diagram and aerial view.

Element 4. Legal and Other Requirements

- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.
- Interview with product distributor - Clarke Fenimore of A-J, Inc. Marketer (Biosolids purchaser/contractor).
- Interview with Mike Hext, Waste Management (landfill contractor).
- Interview with Adriane Ritman, Regulatory Administrator – Pretreatment Manager.
- Interview with regulators – Robin Green, Supervisor, Kentucky Department of Environmental Protection, Division of Waste Management, Solid Waste, and Rachel Hamilton, Assistant Director Louisville Metro Air Pollution Control District.
- Interview with product distributor - Clarke Fenimore of A-J, Inc. Marketer (Biosolids purchaser/contractor)
- Interview with Mike Hext, Waste Management (landfill contractor).
- Reviewed 2017 State Wastewater Treatment Plant Inspection Reports for Cedar Creek, Hite Creek, Floyds Fork, and West County.
- Reviewed Correspondence between Kentucky and MSD regarding permitting of Special Wastes beginning 2012.
- Reviewed Kentucky Permit for the Morris Foreman WWTP for its sludge treatment & storage (Solids Waste Permit # SW05600236).
- Reviewed Indiana Permit for marketing and distribution of biosolids, expires April 30, 2019.

Element 5. Goals and Objectives

- Interviewed Wayne Bingham, MSD Chief of Operations.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.
- Reviewed progress on each goal and objective over the past five years.

Element 6. Public Participation in Planning

- Interviewed Wayne Bingham, MSD Chief of Operations.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager and Sheryl Lauder, Communications Program Manager.
- Interview with product distributor - Clarke Fenimore of A-J, Inc. Marketer (Biosolids purchaser/contractor)
- Interviews with Rachel Hamilton, Assistant Director Louisville Metro Air Pollution Control District and Robin Green, Supervisor, Kentucky Department of Environmental Protection, Division of Waste Management, Solid Waste.
- Interview with product distributor - Clarke Fenimore of A-J, Inc. Marketer (Biosolids purchaser/contractor)
- Multi-color single sheet presentation of MSD Policy and Code of Good Practice.
- Multi-color 4-fold MSD pamphlet – “Keeping Biosolids Safe”- Preventing Molybdenum Pollution.
- Multi-color 3-fold MSD pamphlet – “Earth-Friendly Soil-Enhancing 5-3-0 Fertilizer – Louisville Green.”
- Half sheet card stock – Bells Lane Wet Weather Treatment Facility Modification Project.
- Full size multi-color 3-fold MSD brochure “River to River – Louisville’s Water Cycle.”
- Safety Data Sheet for Louisville Green.

Element 7. Roles and Responsibilities

- Reviewed Louisville and Jefferson County Metropolitan Sewer District Organization Chart effective April 9, 2018.
- Memorandum dated June 5, 2017 from Treatment Facilities Director assigning responsibility for the implementation and maintenance of the Louisville Green Management System.
- Feni’s Organic Transportation Packet (Contractor’s EMS manual responsibilities) defining overall roles and responsibilities.
- Interviewed Wayne Bingham, MSD Chief of Operations.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.
- Interviews with Kevin Thompson, Process Supervisor, Derek R. Guthrie Water Quality Treatment Center; Mike Scott, Operator, Process Technician III, Derek R. Guthrie Water Quality Treatment Center; William Summers, Operator, Process Technician III, Derek R. Guthrie Water Quality Treatment Center; John Barkham, Process Technician III (Dewatering), and Matt Burns, Laborer – forklift/scissor lift.
- Interview with product distributer - Clarke Fenimore of A-J, Inc. Marketer (Biosolids purchaser/contractor)
- Interview with Mike Hext, Waste Management (landfill contractor).

Element 8. Training

- Interviews with Tony Glore, Organizational Development and Training Manager and Ron Scherer, Training Specialist – Treatment Operations.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.
Element 9. Communications

- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.
- Feni’s Organic Transportation Packet (Contractor’s EMS manual responsibilities) defining communication.
- Interview with product distributor - Clarke Fenimore of A-J, Inc. Marketer (Biosolids purchaser/contractor).
- Interview with Mike Hext, Waste Management (landfill contractor).
- Multi-color 4-fold MSD pamphlet – “Keeping Biosolids Safe” - Preventing Molybdenum Pollution.
- Multi-color 3-fold MSD pamphlet – “Earth-Friendly Soil-Enhancing 5-3-0 Fertiilizer – Louisville Green.”
- Half sheet card stock – Bells Lane Wet Weather Treatment Facility Modification Project.
- Full size multi-color 3-fold MSD brochure “River to River – Louisville’s Water Cycle.”
Element 10. Operational Control of Critical Control Points

- Louisville Green Transportation Packet for haulers of Louisville Green.
- Review of the water quality discharge monitoring results from the Derek R. Guthrie Water Quality Treatment Center for May 2017.
- Site visit to farm application sites Richard Graff - Land owner & farmer and Mark Burgin - Land owner & farmer, both users of biosolids product in Clark County.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.
- Interviews with operations and maintenance personnel: Kevin Thompson, Process Supervisor, Derek R. Guthrie Water Quality Treatment Center; Mike Scott, Operator, Process Technician III, Derek R. Guthrie Water Quality Treatment Center; William Summers, Operator, Process Technician III, Derek R. Guthrie Water Quality Treatment Center; John Barkham, Process Technician III (Dewatering), and Matt Burns, Laborer – forklift/scissor lift.
- Interviews with Rhonda Crotzer, Performance Metrics Supervisor; John Baldridge, Maintenance Planner and Terry Hammack, Maintenance Planner.
- Feni’s Organic Transportation Packet (Contractor’s EMS manual responsibilities) containing SOPs for operations.
- Interview with Nate Van Weelden, B&H (hauling contractor)
- Interview with Mike Hext, Waste Management (landfill contractor).

Element 11. Emergency Preparedness and Response

- Interview with Al Adams, Senior Health and Safety Administrator.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.
- Feni’s Organic Transportation Packet (Contractor’s EMS manual responsibilities) containing spill control and clean up procedures.
- Interview with Nate Van Weelden, B&H (hauling contractor)
- Reviewed routine work orders for bi-weekly inspection of spill kits.
Element 12. BMP Documentation and Document Control

- Feni’s Organic Transportation Packet (Contractor’s EMS manual responsibilities) containing contractors documented procedures.
- Interview with Nate Van Weelden, B&H (hauling contractor)
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.

Element 13. Monitoring and Measurement

- Reviewed maintenance work order status reports (number and time open of work orders).
- Reviewed Louisville Green Team Meeting Agenda and Minutes for May 8, 2018.
- Site visit to farm application sites Richard Graff - Land owner & farmer and Mark Burgin - Land owner & farmer, both users of biosolids product in Clark County.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.
- Interviews with operations and maintenance personnel: Kevin Thompson, Process Supervisor, Derek R. Guthrie Water Quality Treatment Center; Mike Scott, Operator, Process Technician III, Derek R. Guthrie Water Quality Treatment Center; William Summers, Operator, Process Technician III, Derek R. Guthrie Water Quality Treatment Center; John Barkham, Process Technician III (Dewatering), and Matt Burns, Laborer – forklift/scissor lift.
- Interviews with Rhonda Crotzer, Performance Metrics Supervisor; John Baldridge, Maintenance Planner and Terry Hammack, Maintenance Planner.
- Feni’s Organic Transportation Packet (Contractor’s EMS manual responsibilities) defining contractors monitoring and measurement requirements.
- Interview with product distributor - Clarke Fenimore of A-J, Inc. Marketer (Biosolids purchaser/contractor)
- Interview with Nate Van Weelden, B&H (hauling contractor).
- Interview with Mike Hext, Waste Management (landfill contractor).

Element 14. Nonconformances: Preventive and Corrective Action

- Reviewed each Appendix 14B Action Plan and Tracking forms for minor nonconformities identified during the third party external interim audit of June 2016.
- Reviewed Nonconformance/Improvement Action/Feedback form for receiving input from operation or maintenance functions.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.

Element 15. Biosolids Management Program Report

- Interviewed Wayne Bingham, MSD Chief of Operations.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.

Element 16. Internal BMP Audit

- Reviewed completed checklist contained in Appendix 16B for 2017 internal audit.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.
- Louisville Green Management System Internal Audit #9 – December 2017 – Audit Scope

Element 17. Management Review

- Reviewed Minutes of Management Review Team Meeting held April 26, 2018.
- Reviewed Louisville Green Management Review Scope (agenda) held May 1, 2017 for calendar year 2016.
- Reviewed Minutes of Management Review Team Meeting held May 1, 2017.
- Reviewed Louisville Green Management Review Scope (agenda) held April 11, 2016 for calendar year 2015.
- Reviewed Minutes of Management Review Team Meeting held April 11, 2016.
- Interviewed Wayne Bingham, MSD Chief of Operations.
- Interviews with Daymond M. Talley, Assistant Director Treatment Facilities; Robert Bates, Operations Special Treatment Facilities; Robin Burch, Process Support Supervisor, and John Kessel, Treatment Manager.