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 2018.

Biosolids Summary Information and Marketer Performance

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

The following table summarizes the yearly distribution of Louisville Green.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Tons Distributed</th>
<th>Landfilled Tons</th>
<th>% of Marketable Material Distributed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>24,086</td>
<td>1,343</td>
<td>100</td>
</tr>
<tr>
<td>2012</td>
<td>24,731</td>
<td>302.3</td>
<td>100</td>
</tr>
<tr>
<td>2013</td>
<td>29,250</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>2014</td>
<td>20,119</td>
<td>1,174</td>
<td>81</td>
</tr>
<tr>
<td>2015</td>
<td>20,410</td>
<td>6,609</td>
<td>87</td>
</tr>
<tr>
<td>2016</td>
<td>19,820</td>
<td>4,190</td>
<td>96</td>
</tr>
<tr>
<td>2017</td>
<td>19,828</td>
<td>3,352</td>
<td>90</td>
</tr>
<tr>
<td>2018</td>
<td>13,350</td>
<td>1,276</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1.0

Of the 13,350 tons distributed, 44% was used for agriculture in Kentucky, 56% was used for agriculture in other states. As a result, $186,963.66 was generated from Louisville Green sales in 2018.

10% of Louisville Green produced in 2018 was sent to the landfill. This was recycle bin material cleaned out of the process. Beneficial Use of 100% saved MSD approximately $416,816 in landfill fees. In addition, 593,375 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 2018, an average of 38% of the heat demand for the drying process was fueled with biogas. An average of 62% of the heat demand was supplied by purchased natural gas. This resulted in approximately $214,575 natural gas savings based on an average annual natural gas cost of $3.046 per mmBtu. This is considerably lower than previous years. Directly related to the decreased production and inability to run Dryer Trains on Digester Gas.

**Louisville Green Revenue**

![Louisville Green Revenue Chart](image)

During 2018, MSD entered into a new marketing contract with the A-J, Inc. The marketing contract was for a lower price per ton than the previous marketing contract. Therefore, the revenue received will be lower due to the lower cost and the lower amount of production.

**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 2018, and may be requested by contacting the Pretreatment Administrator.

**Regulatory Compliance**

All permit parameters for Louisville Green that was land applied were within State and Federal limits throughout 2018. Molybdenum did exceed the pasture limit for the state of Indiana. During this timeframe, the marketer allowed distribution in Indiana other than for pasture.
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 2018 the Morris Forman laboratory maintained full certification for wastewater analysis from the Commonwealth of Kentucky Energy and Environment Cabinet.

Table 2 is the lab’s performance for the Wastewater Performance Results:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Acceptable Test Results</th>
<th>Number of Un-Acceptable Test Results</th>
<th>Percentage of Test Results Correctly Analyzed</th>
<th>Study Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>55</td>
<td>3</td>
<td>94.8%</td>
<td>#279-279</td>
</tr>
<tr>
<td>2017</td>
<td>74</td>
<td>3</td>
<td>95.9%</td>
<td>#266-268</td>
</tr>
<tr>
<td>2016</td>
<td>56</td>
<td>0</td>
<td>100%</td>
<td>#36</td>
</tr>
<tr>
<td>2015</td>
<td>41</td>
<td>0</td>
<td>100%</td>
<td>#35</td>
</tr>
<tr>
<td>2014</td>
<td>51</td>
<td>2</td>
<td>96.2%</td>
<td>#34</td>
</tr>
<tr>
<td>2013</td>
<td>44</td>
<td>0</td>
<td>100%</td>
<td>#33</td>
</tr>
<tr>
<td>2012</td>
<td>41</td>
<td>0</td>
<td>100%</td>
<td>#32</td>
</tr>
</tbody>
</table>

Table 2
Progress Towards Goals and Objectives

In 2018, regular meetings were held to discuss the year’s objectives. Below are the 2018 Goals and Objectives and a summary of the outcomes. Two of the objectives outlined below will be carried over into 2019.

Goal: Continually enhance the biosolids process to improve communication, efficiency, quality, and sustainability through 2022.

Objective 1: 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 complete by June 30, 2020.
   - Originating in 2013, this project finished major construction in 2018, with just a few follow-up items to be completed in 2019. The goal now shifts to the data collection portion which will be tracked on the Goals and Objectives spreadsheet.

Objective 2: Remove the Biotowers from service at Morris Forman Water Quality Treatment Center by December 31, 2018, with an evaluation period from December 1, 2017 to February 28, 2018. During this timeframe, Secondary Effluent and Plant Effluent will be monitored for Dissolved Oxygen with a target of 8 ppm or greater.
   - This goal was completed in 2018. The biotowers were removed from service with no detrimental effects to the Plant or Secondary Effluent. Goal is complete.

Objective 3: 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.
   - This objective was complete in 2018. 90.4% of the total tons processed were sent to beneficial use. Goal is complete.

Objective 4: Implement a new Biosolids Process, at the Morris Forman Water Quality Treatment Facility, by December 21, 2020 to produce 70 dry tons per day of biosolids.
   - Project design for the Request for Proposal and funding was completed in 2018. Progress will continue to be tracked in 2019 on the Goals and Objectives spreadsheet.

Goals and Objectives for 2019 were developed in December 2018. Monthly action plan meetings will be held in 2019.
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 2018 and data has been compiled in Table 3.

<table>
<thead>
<tr>
<th>Month</th>
<th>2015 Size in mm</th>
<th>2016 Size in mm</th>
<th>2017 Size in mm</th>
<th>2018 Size in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>1.86</td>
<td>1.99</td>
<td>1.75</td>
<td>1.85</td>
</tr>
<tr>
<td>February</td>
<td>1.80</td>
<td>1.86</td>
<td>1.67</td>
<td>1.84</td>
</tr>
<tr>
<td>March</td>
<td>1.81</td>
<td>1.86</td>
<td>1.72</td>
<td>1.85</td>
</tr>
<tr>
<td>April</td>
<td>1.81</td>
<td>1.83</td>
<td>1.72</td>
<td>1.84</td>
</tr>
<tr>
<td>May</td>
<td>1.82</td>
<td>1.85</td>
<td>1.71</td>
<td>1.89</td>
</tr>
<tr>
<td>June</td>
<td>1.79</td>
<td>1.82</td>
<td>1.70</td>
<td>1.85</td>
</tr>
<tr>
<td>July</td>
<td>1.84</td>
<td>1.79</td>
<td>1.69</td>
<td>1.85</td>
</tr>
<tr>
<td>August</td>
<td>1.86</td>
<td>1.78</td>
<td>1.79</td>
<td>1.86</td>
</tr>
<tr>
<td>September</td>
<td>1.86</td>
<td>1.79</td>
<td>1.78</td>
<td>1.83</td>
</tr>
<tr>
<td>October</td>
<td>1.85</td>
<td>1.72</td>
<td>1.81</td>
<td>1.82</td>
</tr>
<tr>
<td>November</td>
<td>1.92</td>
<td>1.76</td>
<td>1.82</td>
<td>1.83</td>
</tr>
<tr>
<td>December</td>
<td>Not Available</td>
<td>1.77</td>
<td>1.78</td>
<td>1.83</td>
</tr>
<tr>
<td>Ave</td>
<td>1.84</td>
<td>1.82</td>
<td>1.75</td>
<td>1.85</td>
</tr>
</tbody>
</table>

Table 3

In 2018 the average pellet remained fairly consistent. Train 1 continues to be the train in service the majority of the time producing a consistent size pellet.

MSD Board

There were no MSD Board related activities for Louisville Green in 2018.

Public Participation

Public participation continued at a modest level in 2018. This year public outreach was given to 10 groups. 99% of the public outreach was performed by Robert Bates in 2018. Mr. Bates retired in 2018 and there is a concern MSD’s public outreach may decrease. The public relations department confirms public outreach will be maintained at historic levels.
Training Program

During 2018, the MSD Training Department provided the training sessions in Table 4 to employees whose work is related to MSD wastewater operations.

<table>
<thead>
<tr>
<th>Course</th>
<th>Number of Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confined Space Entry</td>
<td>8</td>
</tr>
<tr>
<td>CPR &amp; First Aid</td>
<td>2</td>
</tr>
<tr>
<td>Electrical NEC Training</td>
<td>2</td>
</tr>
<tr>
<td>Fire Extinguisher Training</td>
<td>2</td>
</tr>
<tr>
<td>EMS Fundamentals</td>
<td>0</td>
</tr>
<tr>
<td>Field Lab Certification Prep. Training</td>
<td>0</td>
</tr>
<tr>
<td>Forklift and other equipment</td>
<td>14</td>
</tr>
<tr>
<td>Hazardous Materials Communications</td>
<td>8</td>
</tr>
<tr>
<td>Basic Crane Training</td>
<td>0</td>
</tr>
<tr>
<td>Plant SOP/Process Training</td>
<td>0</td>
</tr>
<tr>
<td>Process Equipment Training (wet cake pump, grit conveyor, etc.)</td>
<td>0</td>
</tr>
<tr>
<td>Sewer Overflow Response Protocol (SORP) Related</td>
<td>22</td>
</tr>
<tr>
<td>Storm Water Permit Training</td>
<td>10</td>
</tr>
</tbody>
</table>

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.

In addition to training related specifically to wastewater treatment, managers and supervisors also participated in leadership development training, communications and project management training.

During 2018, overall MSD employee training attendance was 555, in approximately 687 training sessions for a total of 1773 hours of training.

Accomplishments from the Training Department included:

- Expanded utilization of eLearning training modules
- Continued implementation of the Effective Utility Management (EUM) process to use benchmarking and trending data to improve overall utility performance
- Continued utilization of Strategic Planning Process for Training Department
- MSD Management Academy
- MSD JumpStart Workshop
- Developed Annual Safety Awareness Training
- Established Quarterly Management Meetings
- Aspire Program
Community Outreach Participation included:

- Ohio River Sweep
- Kentucky Construction Career Day
- Toys for Tots collection drive
- Conducted public tours of MSD facilities
- Recruitment at Fairdale High School’s Heavy Equipment program
- Red Cross Drives
- Building our Blocks

Management Review

The Management Review of the Louisville Green Management System for 2017 was conducted in April of 2018. Reviewers continue to be pleased with the Louisville Green Management System.

Internal and 3\textsuperscript{rd} Party Audit Results

During 2018, the Louisville Green Management System was re-certified as Platinum status with NBP by undergoing an external reverification audit June 14, 2018 by NSF.

The audit identified zero major nonconformances, three minor nonconformances and thirteen Opportunities for Improvement. The minor nonconformances were addressed within 30 days of the audit.

MSD Internal Audit department also conducted an audit in December 2018. The audit identified zero major nonconformances, two minor nonconformances and one opportunities for Improvement.

The next audit in the cycle will an internal audit by MSD IA Dept.

Nonconformances and Corrective Actions

Nonconformances from Internal and External Audits

Below are a summary of the findings:

External Audit June 2018

Element 2.0 – Minor Nonconformance  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.

Corrective Action 77 was developed to respond to the nonconformance. Louisville Green Staff has had a method in place for evaluating land application of biosolids in Indiana and Kentucky. In previous years, staff has made site visits to land applications sites for evaluation. In 2013 staff inspected Richard Graff in Indiana and Penn Run Golf Course in Kentucky. In 2014 and 2016, staff inspected Security Seed in Kentucky.
The Root Cause as to the reason this evaluation has lapsed are directly related to staff resource allocation. As a result of the plant flood in April 2015, the Capital Project for Replacing the OGA Plants, High Yard, MF Headworks and addition of the Bells Lane Facility the resources of the plant staff have been stretched very thin and priority has not been given to site inspections. The Louisville Green Staff is committed to ensure the end users are adhering to federal and state regulations for land application. The Core Team has committed to visiting one application site in Kentucky and Indiana each year.

**Element 7.1 – Minor Nonconformance** 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.

Corrective Action 78 was developed to respond to this nonconformance. Upon review of Historical Versions of the LGMS Manual, the Core Team was identified until Version 11 of the manual.

Core Team
Responsible for the Louisville Green management system (LGMS) in its entirety. The team consists of the following:

- Director of Operations (MFWQTC)
- Wastewater Process Manager (Solids, MFWQTC)
- EMS Coordinator
- Wastewater Process Manager (Liquid, MFWQTC)
- Maintenance Manager
- Senior Technical Services Engineer
- Process Supervisor
- Process Support Technician

In Version 12, the reference to the core team was removed as some of the individuals were removed from their responsibility. The updated version of the LGMS Manual has been updated to reflect the current Core Team Responsibilities.

**Element 16.1 – Minor Nonconformance** 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.

Corrective Action 79 was developed to respond to this nonconformance. During the 2017 Internal Audit, the audit staff did reach out to one Contractor for their Safety documents. Historically, a member of the Internal Audit team has not been on a site visit nor have any contractors has specific interviews. Internal Audit will add to future audits to perform or assign any items pertaining to interviewing the contractor for elements that require an interview and a member of the Internal Audit staff will accompany MSD staff on their site visits.
Opportunity 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.

Corrective Action 80 was developed to respond to this Opportunity for Improvement. The Environmental Impact column for Appendix 3A has specific process impacts related to the LGMS. The more generic, Air pollution, surface water pollution, groundwater pollution, soil contamination, resource depletion, impact on health impacts were paired with the specific process impacts and added to the column.

Opportunity for Improvement 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.

Corrective Action 81 was developed to respond to this Opportunity for Improvement. MSD has a Permit by Rule Storage and Treatment of Processed Special Waste from the State of KY, SW05600236. It was added as a Legal and Other Requirement for the following Operational Control: RP SOP, Process Testing Results (WAS), Process Testing Results Review (Solids Receiving Tank), Standard Operating Procedures, Process Testing Results Review (Digestion), Drum Outlet Temperature, Standard Operating Procedures, Process Testing Results Review (Distribution). MSD has a Biosolids Marketing and Distribution Permit from the State of IN, LA00710. It has been added as a Legal and Other Requirement for the following Operational Control: RP SOP, Process Testing Results (WAS), Process Testing Results Review (Solids Receiving Tank), Standard Operating Procedures, Process Testing Results Review (Digestion), Drum Outlet Temperature, Standard Operating Procedures, Process Testing Results Review (Distribution).

Opportunity for Improvement 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.

Corrective Action 82 was developed to address this Opportunity for Improvement. The Core Team agrees for the need to have a G&O directly related to air quality. In February 2018 MSD subscribed to an online –real-time odor management software called Envirosuite. This program uses meteorological data, along with optional sensors, to project odor plumes and trend historical odor plumes. Until August 2018 the program worked well and MSD was considering purchasing Hydrogen Sulfide sensors to increase the performance of the software. However, Envirosuite lost the ability to use public meteorological data and now requires the purchase of an on-site weather station in order for the software to trend odors in real-time. As a result, MSD has put this goal and objective on hold until a decision can be made concerning a weather station and if Envirosuite is the software program to use.
Opportunity for Improvement 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.

Corrective Action 83 was developed to address this Opportunity for Improvement. The Core Team agrees for the need to have a G&O related to public relations. A member of the Core Team reached out to the public relations department to discuss the potential need with the departure of Robert Bates. MSD Public Relations states there will not be any decrease in the amount of public education and a goal would not need to be created.

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

Corrective Action 84 was developed to address this Opportunity for Improvement. The Core Team agrees regulatory compliance is an important core function, however, the Industrial Waste Dept has a good structure in place and are in compliance with all of their regulatory requirements. Therefore, a Goal and Objective will not be created.

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

Corrective Action 85 was developed to address this Opportunity for Improvement. The Core Team agrees for the need to have a G&O for the preventative maintenance program. The maintenance group has just converted to Hansen for all work order entry and tracking. Hansen is capable of providing more reports than we previously had in SAP. It was decided to use 2019 to capture the work order completion data and use this information to create a goal for 2020.

Opportunity for Improvement 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.

Corrective Action 86 was developed to address this Opportunity for Improvement. A Corrective Action form was created to allow Operators the opportunity to document any issues, suggestions, comments for the Louisville Green Team. Operators were initially made aware of the form however, no forms have been submitted. As a result of this Opportunity for Improvement, the training staff has been asked to take the first few minutes of a training session at Morris Forman to remind the Operators about the nature and use of the form.

Opportunity for Improvement 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.

Corrective Action 87 was developed to address this Opportunity for Improvement. A member of the Core Team discussed this Opportunity with a member of the Safety Team directly related to the Hazmat training. It was stated the communication for the after action reports for the Hazmat training was adequate and no other information would be provided.
Opportunity for Improvement Requirement 11.3 – Currently the locations of emergency response equipment are not identified (e.g. a map).

Corrective Action 88 was developed to address this Opportunity for Improvement. The Safety Department was asked to update the existing exit maps to include locations of the emergency response equipment. This Opportunity has not yet been completed.

Opportunity for Improvement 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.

Corrective Action 89 was developed to address this Opportunity for Improvement. The MSD Emergency Response Plan is a red binder that is distributed throughout key areas in the plant. An electronic version also resides in the EMS folder that all personnel have access. During the audit, the auditor inspected a red binder that had an outdated Emergency Response Plan. A list of all Red Binder locations has been created and will be referenced when an updated version of the Emergency Response Plan is available.

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

Corrective Action 90 was developed to address this Opportunity for Improvement. The nonconformance section of the Program Performance Report historically has contained a summary of the nonconformances during the past year. The Opportunity presented by the Third Party Auditor is to list all nonconformances and their findings in the Program Performance Report. This has been implemented in the 2018 Program Performance Report.

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

Corrective Action 91 has been developed to address this Opportunity for Improvement. The Core Team agrees a member of the Operational Staff should be included on the Internal Audit team and has been the case until recent retirements. William Summers has been chosen by the Core Team to participate in Louisville Green functions.

Opportunity for Improvement 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.

Corrective Action 91 was developed to address this Opportunity for Improvement. Historically, older versions of the LGMS Manual specified a Certified Internal Auditor as the Lead Auditor. MSD has staff turnover and the new Internal Auditor was not certified, so the requirement was removed, not realizing it was a standard requirement. The Louisville Green Manual, Element 16, Procedure 2 has been changed to include the “Certified” Lead Internal Auditor.
Internal Audit December 2018

Minor Nonconformance 1 - Element 6 addresses the public participation requirements of the NBP BMP, including specific areas that must be included in the public participation approach, such as the commitment to the ten principles in the Code of Good Practice, as well as specific requirements for when public participation ought to happen, such as during development of BMP goals and objectives. The Process Support Supervisor did not send notice of the #13 Internal Audit to interested parties as outlined in Appendix 6B, point 2.

Corrective Action 94 was developed to address this Minor Nonconformance. A checklist has been created for preparation for future audits to prevent the re-occurrence of not sending notifications to interested parties.

Minor Nonconformance 2 - Element 8 describes training requirements to ensure that biosolids management activities are being performed by competent and qualified employees and contractors. A list was created to identify the internal parties who need to receive annual training. Online training was created and was sent to all parties identified as needing training. Of the 182 people who needed training, 16 did not complete the training. Eight were MSD Board members, four were MSD Executive staff, and the remaining four were employees on leave.

Corrective Action 95 was developed to address this Minor Nonconformance. An internal meeting was held on 1-22-19 to discuss the need for the MSD Board to have Louisville Green Training. No member of the Core Team was able to attend this meeting. Decision is still pending.

Opportunity for Improvement - Consider having a member of the treatment plant operation staff participated as a member of the internal audit team.

Corrective Action 93 was developed to address this Opportunity for Improvement. Historically a member of the plant operation staff has been involved in the third party audits. Recent retirements have left this position vacant. Management staff agrees an operator should be involved and Williams Summers has been chosen to participate.

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. All corrective actions from routine monitoring and measurement for 2018 have been finalized.