

**NATIONAL BIOSOLIDS PARTNERSHIP  
EIGHTH INTERIM AUDIT REPORT**

**City of Grand Rapids  
Environmental Services Department  
Grand Rapids, Michigan**

**Grand Rapids, Michigan**

**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  
City of Grand Rapids Environmental Services Department  
Biosolids Management Program Manual – July 2005  
(Latest Revisions Approved October 2014)**

**Final Report – December 15, 2014**

## **INTRODUCTION**

The purpose of the Biosolids Management Program (BMP) interim audits is to verify through regular reviews the system's health and effectiveness between verification audits. The third party on-site interim audits provide independent reviews and supports credibility between re-verification audits. The goal of the third party interim audit is to collect and evaluate objective evidence related to a portion of the BMP such that over the course of the four interim audits conducted between verification audits all 17 elements are covered. The audits determine whether the City of Grand Rapids BMP 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 BMP objectives.

## **RECOMMENDATION**

The results of the Grand Rapids eighth interim audit of their BMP and review of corrective actions are positive, and it is the recommendation of the audit team that the City of Grand Rapids Environmental Services Department BMP maintain its platinum level certification status.

## **AUDIT SCOPE**

The primary objective of the eighth interim audit was to ensure the BMP 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, EMS 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 minimum required elements specified above and those other elements that could be related to outcomes, the present interim audit scope included the review and verification of the maintenance and implementation of the Grand Rapids BMP relative to NBP Standard Elements 3, 8, 15, and 17.

The NSF - International Strategic Registrations, Ltd. (NSF-ISR) conducted the third party interim audit of the Grand Rapids Biosolids Management Program. The on-site audit team consisted of Dr. William R. Hancuff, Lead Auditor and was conducted from November 20 through and including November 21, 2014.

In general terms, the audit encompassed the entire biosolids value chain (pretreatment, collection and treatment, through final end use) with special attention on those practices and management activities that directly support biosolids-related operations, processes, and activities within the biosolids value chain. The physical biosolids facilities included in the interim audit and visited during the audit included the administration building, primary settling facilities, secondary treatment section, storage building, maintenance shop, service building, stock room, solids storage tanks, centrifuges, truck loading facilities, the Central Sanitary Landfill in Pierson, Michigan, which is scheduled to provide a power generation facility, which recovers and uses biosolids/landfill gas.

The following individuals were interviewed as part of the audit process:

Mike Lunn – Environmental Services Department (ESD) Manager  
William R. Kaiser – Wastewater Plant Superintendent  
David Harris – Operations and Maintenance Supervisor/BMP Coordinator  
Carrie Rivette – Acting Storm water/Wastewater Maintenance Superintendent  
Patricia Chapman – Environmental Assessment Supervisor  
Laron Morgan – Technical Control Supervisor  
Andrew Meyer – Wastewater Operation and Maintenance Supervisor  
William Smith – Utility Maintenance Supervisor  
Nick Klug – Operations Maintenance Grounds Supervisor  
Sherry L. Zomerhuis – Office Assistant IV  
Roger Rockburn – Operations Manager – Republic Central Sanitary Landfill, Pierson, MI  
Dave Schipper – Senior Environmental Quality Analyst, Grand Rapids District, Water Resources Division, Michigan Department of Environmental Quality  
Greg Schutter – Operator/Maintainer  
Ed Howland – Maintenance Mechanic II  
David Bowyer – Maintenance Mechanic I  
Eric Lapointe – Instrument Technician  
Peter Adamson – Instrument Technician  
Bernie Kline – Truck Driver – Cordes Trucking, Inc.

## **INTERIM AUDIT FINDINGS**

The interim audit identified 1 positive observation, no major non-conformance, 4 minor non-conformances and 8 opportunities for improvement.

The following is a review of the positive observation made during the interim audit. Minor non-conformances and opportunities for improvement follow and are listed in accordance with the numbers associated with the minimum conformance standards contained in the Third Party Verification Auditor Guidance document.

## **Positive Observations**

The Environmental Protection Services Department's Wastewater Treatment Plant personnel involved in biosolids management should be recognized for their outstanding achievements, and the exceptional features of their Biosolids Management Program. The following was found to be noteworthy during this audit.

The Department demonstrated outstanding implementation of the training program and once again all personnel interviewed had an excellent knowledge and understanding of the biosolids management program.

Additionally, the hard work and dedication of the BMP management team must be acknowledged. While maintaining the BMP certification goal is obviously a team effort the leadership provided by the Environmental Services Department Manager assured maintenance of this common goal.

## **Minor Nonconformances**

Requirement 5.5 – The goal to determine construction material of 50% of the sanitary sewer pipelines with unknown composition does not appear to meet all of the SMART criteria. It is not clear how identification of the sewer construction material is “relevant” to the biosolids value chain or any the outcome areas.

Requirement 12.2(d) – The document control procedure SOP 1110 does not ensure that documents are properly marked with the version number in the header box.

Requirement 12.2 – Grand Rapids has not implemented the procedures described in SOP 1110 for BMP element procedures or for all the other SOPs.

Requirement 17.1 – Table 17.1 – Periodic Management Review of Performance Report for 2013 was not signed by the manager, and did not provided adequate details in each of the report content boxes; or completely address the follow-up actions to be taken by the management and the staff.

## **Opportunities for Improvement**

Requirement 1.2 – Consider having over the next year the newly hired Wastewater Plant Superintendent provide a comprehensive review and edit (as necessary) each of the BMP Element procedures such that he may officially approve the BMP manual.

Requirement 3.5 – Ensure that when the new waste activated sludge (WAS) low energy/low shear volute thickener becomes fully operational formal notification is provided to the third party auditor of this additional critical control point to the biosolids value chain. Also, ensure that the SOP for this process is prepared and approved in accordance with SOP 1110.

Requirement 5.6 – When reporting progress on the goal associated with cleaning all sanitary sewers twenty-four inches and smaller in diameter once every five years, consider including in each quarterly report a running cumulative total of the number of feet of sewer cleaned, as well as a percentage of the total number of feet cleaned established as the target for the year.

Requirement 5.6 – Consider developing an attachment or Appendix to Element 5 – Goals and Objectives procedure to track current and past goals and objectives to update the current progress or status, and/or record the history of past accomplishments.

Requirement 5.6 – Consider removing specific goals and objectives identified in 2014 from Table 5.1 if they are more appropriate to either be identified as a corrective action or are now adequately addressed to become a standard operating procedure.

Requirement 8.1 – Consider developing a tracking system, which will allow the identification of any employees and/or contractors who have not received the annual BMP awareness training.

Requirement 8.2 – Consider having the newly hired Wastewater Plant Superintendent attend a 36-hour ISO 14001 lead auditor training course.

Requirement 12.2(d) – Grand Rapids uses Share Point to track replaced or superseded versions of SOP; therefore consider removing the Revision Section from all Element procedures and other SOPs, and include the most recent date of revision in the procedure header box.

In order to address the above minor non-conformances, the City of Grand Rapids, Michigan Environmental Services Department has prepared a non-conformance investigation report and will implement corrective actions according to their procedures to provide continual improvement to their BMP.

## **CITY OF GRAND RAPIDS ENVIRONMENTAL SERVICES DEPARTMENT COMMENTS**

The City of Grand Rapids, Michigan Environmental Services Department (ESD) established our Biosolids Management Program (BMP) approximately 9 years ago. Since that time, our Biosolids Management Program has matured considerably. While we have had many people retire the last few years, most of the employees we have in our department have been with us for many years. These people are the backbone of our facility and have grown with the BMP. We feel it is critical to have all ESD employees involved and aware of the program, our goals and objectives, and how their jobs relate to the BMP. While there have not been very many new hires the last few years, ESD has made it a priority to assure the new people have a thorough understanding of the BMP. Our program has matured into a well-oiled machine. We are finding after each external audit that we have fewer nonconformances to fix and can focus on continual improvement by doing things more efficiently and effectively.

The last two years, we have received positive observations from our external audits with regards to ESD staff knowledge of our BMP program. The external audits of 2013 and 2014 have taught us that we need to improve in the areas of public outreach and goal setting.

In 2015, we plan to remove old goals and incorporate them into our BMP or make them standard operating procedures. We have some good new ideas for 2015 goals, which will help us optimize the critical control points on the Biosolids value chain. We look forward to receiving any suggestions from our interested parties. We will continue to strive for the highest quality Biosolids we can produce.

The Environmental Services Department is privileged to have good leaders, who are committed to giving our ratepayers value. ESD has found a way to stay competitive; even through the tough times of a sluggish economy. A good example of this was the merging of our Operations and Maintenance Departments. These two groups (once separate), became one work group in 2011. Since that time, the Operations and Maintenance Group has worked together harmoniously. There were some bumps at first, but we have turned the challenges into opportunity. This environment has allowed our staff to gain more knowledge in areas where they may have been weak in the past. Everyone has developed a greater respect and understanding of one another. Much cross training has occurred and every day is a new opportunity to learn. We have truly become and Operations and Maintenance Group.

We look forward to another successful year with our BMP in 2015 and beyond. The external audits provide us many ideas and opportunities to improve our program. ESD is grateful for the opportunity to have Dr. Hancuff perform our third party audit this year and are proud of our accomplishments and successes in our BMP.

## **OUTCOMES MATTER**

The City of Grand Rapids Environmental Services Department (ESD) has made several improvements in its goals and objectives over the past few years and has continued this evolution through 2014. The internal BMP team identifies new goals and objectives during the last quarter of the calendar year and then implements them during the first month of the year. Typically they close or remove those goals that have been accomplished or found to be infeasible at that same time. The next step in the evolution will be to consider the addition and/or removal of goals and objectives as needed on a quarterly basis.

The new goals and objectives were developed recognizing the need to optimize performance of solids processing and improve operation and maintenance to reduce the financial burden on taxpayers. Overall the goals and objectives will result in substantial gains in biosolids management and reduction in cost of operation.

The ESD Biosolids Management Program (BMP) established goals and objectives consistent with the required NBP outcome areas. The goals and objectives for 2013

represented a few carryover goals and objectives with some modifications made to the old goals, while new additions were made to the list in 2014, with some again being based on former goals and objectives. The goals were developed for the most part using Specific, Measurable, Achievable, Relevant, and Time-bound (SMART) criteria through input from the internal BMP Team and consideration of public concerns. The goals were established cognizant of each of the four outcome focal points of the NBP program as identified below:

1. Environmental Performance,
2. Regulatory Compliance,
3. Relations with Interested Parties, and
4. Quality Biosolids Management Practices.

While it is not a requirement to accomplish all objectives established, it is a critical part of the system to make progress towards the overall goals. The Department's performance relative to each of the above groups is addressed below and the outcome groups affected by the goal are addressed at the end of each discussion.

#### **CY 2011 – 2013 – Improve Maintenance Management Through Employment Of A New Computer Maintenance Management Program (CMMS) (Completed and moved to routine maintenance)**

An early objective that has evolved over the years included upgrading the Computer Maintenance Management Program to (CMMS) in 2011 and improving its utility throughout 2012 and 2013. The initial objective was to obtain reliable data on the variables through upgrading the computer software (upgrade to Maximo 7.1), which was accomplished. The next goal was to provide greater focused on costs, including equipment, material and labor. It was observed that the data was only 40% reliable and improvements were needed. The goal further evolved in 2013 to capture spare parts inventory to reduce repair times at critical control points. This goal was determined to have been accomplished and was moved from the goals and objectives to routine monitoring and measurement. This goal results in positive outcomes in environmental performance and quality biosolids management practices. This goal results in positive outcomes in environmental performance, relations with interested parties (cost savings) and quality biosolids management practices.

#### **CY 2010 – 2013 – Implement A Comprehensive Sanitary Sewer Cleaning Program (Completed and moved to routine maintenance)**

A long-term goal established in 2010 was to implement a comprehensive sanitary sewer-cleaning program; i.e. routine cleaning of all sewers 15-inches and smaller once every five years. Because of the success of this program it was expanded the following year to include all sewers 24-inches and smaller and the frequency reduced to once every four years. The program reduces both the accumulation of inorganic materials in the sewer lines as well as removing insoluble organic materials that cause fats, oils and grease blockages and eliminating foul materials from reaching the treatment facilities, where it

causes odors and reduction in biosolids quality. As a result of this program the number of citizens calling in complaints after normal business hours from sewer blockages has decreased from once a night to fewer than once per week. Additionally the sanitary sewer overflows (SSOs) have decreased in number by 90% and in volume by 80%. The cleaning program was found to be so successful that it was accomplished in record time and is being considered for inclusion as a routine procedure in the biosolids management program. This goal results in outcomes in all required areas; namely, environmental performance, regulatory compliance, relations with interested parties, and quality biosolids management practices.

**CY 2011 – 2014 – Monitor Biosolids for 503 Heavy Metals (Completed and moved to monitoring)**

A goal for 2011 that was carried over into 2012, 2013 and 2014 was to perform quarterly heavy metals analyses on the final biosolids product and comparing the results to the heavy metal concentration standards contained in the Section 503 regulations governing land application of biosolids, should that ever become one of the options implemented by the City. All analyses have demonstrated that most of the metals are routinely 90% to 95% below the exceptional quality (EQ) pollutant concentrations standards, with the exception of Zinc and Copper, which typically are 80% and 85% below the limits, respectively. This goal will be completed at the end of 2014 and moved to routine monitoring. The goal results in outcomes in environmental performance, regulatory compliance and quality biosolids management practices.

**CY 2013 – Change Monitor Method for Chloride (Completed and moved to routine monitoring and measurement)**

A new goal established for 2013 is to change to an alternative approved method for analyzing wastewater samples for chloride that does not generate any hazardous waste. This goal is substantially accomplished with the purchase of new testing equipment and development of standard operating laboratory procedures is all that remains for implementation of the change. This was completed in 2013. This goal results in outcomes in regulatory compliance and quality biosolids management practices.

**CY 2013 – Ensure 100% Compliance With Regulations Related To Amalgam Separators (Completed)**

This new goal was to ensure compliance with new regulations related to amalgam separator installation at dental offices. The goal was to have 100% compliance with this requirement and the action plan is to track all dental offices that require such installations to ensure the required separators are installed. As of the end of 2013 149 dental offices had been contacted; of those approximately 94 were required to have the amalgam separators and only 10 had not, but intended to install them. This was completed in 2013. This goal results in outcomes in regulatory compliance and quality biosolids management practices.

### **CY 2013 – Reduce Significant Noncompliance Incidents By 25% (Removed)**

Another new goal established for 2013 was the reduction of significant noncompliance incidents by 25% in 2013. The number of incidents maintained for EPA records are a rolling average and typically is in the range of 6. Based on the method of tracking this goal it is unclear if it has been or will be met. On further investigation of the measurability of this goal it was determined that the progress could not be effectively tracked in time to allow corrective actions if not attained. (Removed as a goal at the end of 2013) This goal results in outcomes in regulatory compliance.

### **CY 2010 – 2013 – Maintaining A 75% Satisfaction On Service Rating (Completed and moved to routine performance monitoring)**

The City established an objective in 2010 to provide commendable customer service by maintaining a 75% satisfaction rating among those citizens receiving service by the city sewer maintenance department associated with sanitary sewer “service requests.” This was expanded in 2011 to include those persons who have participated in the “footing drain disconnection program” and the “ sump pump” program in 2012 and it was carried over into 2013. The measurement employed for this goal was based on surveying a minimum of 10% of all reported “service requests.” For example, if there were 700 such services in a quarter, 10 percent, or 70, would be contacted by telephone and requested to participate in a satisfaction survey. The goal was to maintain greater than 75% satisfaction of those who responded to the survey. The results for the last three quarters of 2012 and the first three quarters of 2013 were: 100%, 94%, 94%, 93%, 95% and 100%. This feedback far exceeds the established goal and is considered a success. The goal was successfully completed in 2013, and the survey was adopted as a routine activity of the BMP. This goal results in outcomes in environmental performance, relations with interested parties, and quality biosolids management practices.

### **CY 2010 – 2013 – Produce One “Environmental Tip” Flyer On Biosolids (Completed)**

This goal originally established in 2011 was to produce one “Environmental Tip” flyer on biosolids in 2013, similar to four similar documents that had been published over the previous years. This is a quarter page handout that the City uses as an insert in all of the water/wastewater bills mailed. This goal was carried over into 2012 and 2013. The three new Tips published included: Environmental Protection Tip # 5 – Report it don’t ignore it (English & Spanish), Environmental Protection Tip # 6 – Did you know we never close (English & Spanish), and Environmental Protection Tip # 7 – Maintain the drain (English & Spanish). This goal results in outcomes in the relations with interested parties area.

### **CY 2013 – 2014 – Create A New Labor Category And Hire Three Employees To Fill This New Position in 2013 And Three More In 2014 (Completed)**

The City established a new goals and objectives in 2013 to create a new labor category and hire three employees to fill this new position. The new position title

combines operations responsibilities with maintenance responsibilities and is entitled operator/maintainer. This new position will require personnel to have both operational expertise as well as maintainer experience, which will improve the efficiency of the operations and maintenance at the critical control points. All of the steps to creating this new position have been accomplished and approved by the human resources office of the City. The three new positions were filled by April 6, 2014 and the goal was expanded in 2014 to hire a total of six utility operator/maintainers. All six were hired by April 20, 2014 and the goal was completed. This goal results in outcomes in environmental performance and quality biosolids management practices.

### **CY 2010 – 2013 – Improve BOD Removal, Nitrification/Denitrification And Phosphorus Removal (Completed and evolved into new goals and objectives)**

A goal established in 2010 and carried forward through 2013 because of the long-term nature of construction is to improve BOD removal, nitrification/denitrification and phosphorus removal as a result of the North Plant Modification Project. Improvements in biological removal of nutrients should result in eliminating the addition of ferrous chloride for that purpose. This will not only eliminate the iron contamination of the solids and biosolids but also completely eliminate the variety of heavy metals that accompany the treatment chemicals. This process change will substantially reduce chemical and energy costs and improve the biosolids quality. Although construction completion was scheduled for October 2012 it was completed a year late. Beginning in November 2013 biological phosphorus commenced in earnest. This goal results in positive outcomes in environmental performance and quality biosolids management practices. This goal results in positive outcomes in environmental performance, relations with interested parties (cost savings) and quality biosolids management practices.

### **CY 2014 – Reduce Chemical Additions To The Waste Treatment Process (In progress)**

This goal is a follow-on goal to the long-term goal from 2010 – 2013 of improving wastewater processes resulting from the North Plant Modification Project. The objective of this goal is to reduce the quantity of ferrous chemical added for phosphate removal by 25% on a quarter-by-quarter basis, while maintaining the effluent quality below the 1 ppm discharge limit. The first quarter of 2013 used 64,281 gallons of ferrous to achieve an effluent phosphorus concentration of 0.65 mg/l. The first quarter of 2014 used 99,251 gallons of ferrous to achieve an effluent phosphorus concentration of 0.42 mg/l; an increase of slightly over 50%. The second quarter year over year had a decrease of approximately 1%. The third quarter of 2013 used 127,633 gallons of ferrous to achieve an effluent phosphorus concentration of 0.60 mg/l. While the third quarter of 2014 used 114,641 gallons of ferrous to achieve an effluent phosphorus concentration of 0.75, representing a decrease of slightly over 10%. Note: shut down of pH control at the end of June caused operational challenges. Continuous improvements are projected as operational controls are improved. This goal results in positive outcomes in environmental performance, regulatory compliance, relations with interested parties (cost savings) and quality biosolids management practices.

### **CY 2014 – Increase GRVBA Centrate Quality by 10% (In progress)**

This goal is to increase the centrate quality by 10% as measured by the reduction of total suspended solids (TSS) concentration in the recycle stream of the centrifuge. The first quarter of 2014 averaged 1,621 mg/l TSS in the recycle flow, which represented a reduction of 8% based on the annual average of 2013 but an increase of 13.7% over the first quarter of 2013. The second quarter of 2014 averaged 2,897 mg/l, which represented a 65% increase over the 2013 average. (Note: the operations of the GVRBA equipment were severely affected by multiple large-scale issues, including broken welds on the feed tubes into the centrifuges.) This impact carried over into the third quarter when the average TSS was 3,383. However, after repair of the equipment the concentration dropped to 1,572 mg/l. If this level is able to be consistently maintained next year's annual average TSS in the centrate will be greater than an 8% reduction. This goal results in positive outcomes in environmental performance, relations with interested parties (cost savings) and quality biosolids management practices.

### **CY 2014 – Issue Discharge Permits to Significant Industrial Users On Time (Removed)**

This goal was removed since it was considered to be part of ESDs normal operations.

### **CY 2014 – Determine Sanitary Sewer Construction Material (To be removed)**

The City established a new goal in 2014 to determine the construction material of 50% of the sanitary sewer pipelines with unknown composition. The purpose of this goal is to be able to better maintain the sanitary sewer system. There are currently 3,817 pipeline segments of unknown material and as of the end of the third quarter of 2014 only 16 had been the material identified. The relevance of this goal was not clearly established and it is being considered for removal from the goals and objectives list.

As was noted the City continued efforts all of the major outcome areas by shifting their goals and objectives for 2014. And it is anticipated that new SMART goals will be again developed in 2015.

## **CONCLUSIONS AND RECOMMENDATIONS**

The results of the eighth interim audit are positive. The review and approval of the corrective action plans for each of the non-conformances identified during the interim audit has been completed. The full implementation of the corrective actions for the minor non-conformances must be completed in accordance with their proposed schedules and closure will be verified during the next third party external audit.

As was mentioned previously, a BMP is a continuous improvement process. 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.

Discussions between the Department's BMP Coordinator and the third party auditor resulted in the following tentative agreement regarding the interim audit schedule:

Year 6 (internal) – Elements 5, 6, 9, 14, 16 (completed)

Year 7 (third party) – Elements 1, 10, 12, 13 (completed)

Year 8 (third party) – Elements 3, 8, 15, 17 (completed)

Year 9 (internal/third party) – Elements 2, 4, 7, 11

Year 10 – Re-verification Audit (third party)

## **Attachment 1**

### **Documents and Other Object Evidence Reviewed During The Interim Audit**

#### Element 1. BMP Manual

- City of Grand Rapids, Michigan Environmental Services Department Biosolids Management Program Manual – Updated October 2014.
- Interviews with David Harris and William R. Kaiser
- Document Management System – Policy Number: 1110, Effective 4/25/14.
- Appendix B: Tables, Figures, Forms.
- Biosolids Introduction and Process Description.
- Element 1 – Documentation of Biosolids Management Plan.
- Element 2 – Biosolids Management Policy.
- Element 3 – Critical Control Points.
- Element 4 – Legal and Other Requirements.
- Element 5 – Goals and Objectives (Version 10) -10/30/13.
- Element 6 – Public Participation in Planning.
- Element 7 – Roles and Responsibilities.
- Element 8 – Training.
- Element 9 – Communication and Public Outreach.
- Element 10 – Operational Controls of Critical Control Points.
- Element 11 – Emergency Preparedness and Response.
- Element 12 – BMP Documentation and Document Control.
- Element 13 – Monitoring and Measurement.
- Element 14 – Nonconformance's: Preventive and Corrective Action.
- Element 15 – Periodic Biosolids Program Performance Report.
- Element 16 – Internal BMP Audit.
- Element 17 – Periodic Management Review of Performance.
- EMS Element 2 – Biosolids Management Policy containing Biosolids Mission Statement and Code of Good Practice.

#### Element 2. Biosolids Management Policy

- Element 2 – Biosolids Management Policy, containing Biosolids Mission Statement and Code of Good Practice.
- Interviews with Mike Lunn, David Harris, and William R. Kaiser.

#### Element 3. Critical Control Points

- Element 3 – Critical Control Points.

- Appendix C – Information Sheets on Critical Control Points (Why it matters and what you can do to help.)
- Table 3.1 Biosolids Critical Control Points – lists operational controls (SOPs), environmental impacts, and monitoring and measurements related to each critical control point.
- Interviews with William R. Kaiser, David Harris, Carrie Rivette, Patricia Chapman, Laron Morgan, Andrew Meyer, William Smith, Nick Klug, Roger Rockburn, Greg Schutter, Ed Howland, David Bowyer, Eric Lapointe, Peter Adamson, Bernie Kline.
- Field review of various critical control points, including primary settling facilities, secondary treatment section, solids storage tanks, centrifuges, truck loading facilities and the Central Sanitary Landfill in Pierson, Michigan.
- Spot check operations controls and monitoring and measurement in SOPs.

#### Element 4. Legal and Other Requirements

- Element 4 – Legal and Other Requirements.
- Table 4.1 Legal and Other Requirements, including applicable requirements, document location, governing agency and areas of influence within biosolids value chain.
- EPA Guide to Part 503 Rule – Pollutant Limits for Metals, 2014.
- Interview with regulatory staff – Patricia Chapman – Environmental Assessment Supervisor.
- Interview with State regulator - Dave Schipper – Senior Environmental Quality Analyst, Grand Rapids District, Water Resources Division, Michigan Department of Environmental Quality.
- Figure 4.1 – Annual Legal and Other Requirements Document Review form.

#### Element 5. Goals and Objectives

- Element 5: Goals and Objectives.
- Interviews with Mike Lunn, William R. Kaiser, David Harris, Carrie Rivette, and Patricia Chapman.
- Table 5.1 – Biosolids Goals and Objectives (dynamic template completed for 2014).
- Figure 5.1 – Action Plan Status Worksheets (form for Goals and Objectives).
- Figure 5.1 – Action Plan Status Worksheets (completed for 2013 and ¾ of 2014)
- Form 5.1 – Goals and Objectives Annual Review (form)
- Form 5.2 Public Participation – Annual Goals and Objectives Selection (form).
- Form 5.3 SMART Goals Assessment Worksheet (form).
- Reviewed quarterly progress reports for each goal and objective action plan for part of 2013 and 2014.
- Assessment of outcomes in the four critical areas.
- Access and evaluation of website.

## Element 6. Public Participation in Planning

- Element 6: Public Participation in Planning.
- Interviews with David Harris and William R. Kaiser
- Interview with Dave Schipper – Senior Environmental Quality Analyst, Grand Rapids District, Water Resources Division, Michigan Department of Environmental Quality
- Table 6.2 Interested Parties Contact Information (contact data spreadsheet).
- Table 6.3 – Public participation in planning worksheet (form)
- 2012 Periodic Biosolids Program Performance Report. Issued March 2013.
- 2013 Periodic Biosolids Program Performance Report. Issued February 2014.

## Element 7. Roles and Responsibilities

- Element 7: Roles and Responsibilities.
- Table 7.1 – Roles and Responsibilities – Internal BMP Team.
- Table 7.2 – Roles and Responsibilities grouped by Biosolids Value Chain Component.
- Table 7.3 – Internal BMP Team – Name and Contact Information.
- Figure 7.2 – Schedule of Annual Biosolids Activities.
- Environmental Services Organization Chart – August 2014.
- Interviews with Mike Lunn, William R. Kaiser, David Harris, Carrie Rivette, Patricia Chapman, Laron Morgan, Andrew Meyer, William Smith, Nick Klug, Roger Rockburn, Greg Schutter, Ed Howland, David Bowyer, Eric Lapointe, Peter Adamson, Bernie Kline.

## Element 8. Training

- Element 8: Training.
- Figure 8.1 – Employee General Awareness Training (29 PowerPoint slides)
- Figure 8.2 – Employee General Awareness Training Attendance Sheet (form)
- Reviewed all BMP awareness training records.
- Interviews with William R. Kaiser, David Harris, Carrie Rivette, Patricia Chapman, Laron Morgan, Andrew Meyer, William Smith, Nick Klug, Roger Rockburn, Greg Schutter, Ed Howland, David Bowyer, Eric Lapointe, Peter Adamson, Bernie Kline.

## Element 9. Communications

- Element 9: Communication and Public Outreach.
- Figure 9.1 Public Request for Information Form.
- Interviews with David Harris and William R. Kaiser
- Interview with Dave Schipper – Senior Environmental Quality Analyst, Grand Rapids District, Water Resources Division, Michigan Department of Environmental Quality
- Table 6.2 Interested Parties Contact Information (contact data spreadsheet).

- 2012 Periodic Biosolids Program Performance Report. Issued March 2013.
- 2013 Periodic Biosolids Program Performance Report. Issued February 2014.

#### Element 10. Operational Control of Critical Control Points

- Element 10: Operational Control of Critical Control Points.
- Form 10.1 – Annual Operational Controls Review.
- Form 10.2 – Contractor Compliance Inspection.
- Interviews with William R. Kaiser, David Harris, Carrie Rivette, Patricia Chapman, Laron Morgan, Andrew Meyer, William Smith, Nick Klug, Roger Rockburn, Greg Schutter, Ed Howland, David Bowyer, Eric Lapointe, Peter Adamson, Bernie Kline.
- Interview with regulatory staff - Patricia Chapman.
- Table 3.1 Biosolids Critical Control Points – lists operational controls related to each critical control point.

#### Element 11. Emergency Preparedness and Response

- Element 11 – Emergency Preparedness and Response.
- Reviewed organization chart for emergency response.
- Interviews with David Harris and William R. Kaiser
- Interview with Bernie Kline – Truck Driver – Cordes Trucking, Inc.

#### Element 12. BMP Documentation and Document Control

- Document Management System – Policy Number: 1110, Effective 4/25/14.
- Element 12 – BMP Documentation and Document Control.
- Table 12.1 – Record Documentation System, which identifies SharePoint, report files, CMMS – Maximo, CMMS – Cityworks, employee training files, and safety equipment inspection files.
- Table 12.2 – BMP Related Documentation Retention
- Interviews with David Harris and William R. Kaiser
- Review EMS Manual revisions and change logs.
- Review SharePoint document management system.
- Reviewed random Operations SOPs, Maintenance SOPs, Laboratory SOPs and contractor SOPs.

#### Element 13. Monitoring and Measurement

- Element 13: Monitoring and Measurement.
- Table 13.1 – Action Plan – Quarterly Progress Report (form).
- Table 13.2 – Action Plan (form for planning goals and objectives)
- Reviewed Table 13.1 – Action Plan – Quarterly Reports completed for parts of 2013 and 2014.
- Figure 5.1 – Action Plan Status Worksheets (completed for 2013 and ¾ of 2014)

- Interviews with William R. Kaiser, David Harris, Carrie Rivette, Patricia Chapman, Laron Morgan, Andrew Meyer, William Smith, Nick Klug, Roger Rockburn, Greg Schutter, Ed Howland, David Bowyer, Eric Lapointe, Peter Adamson, Bernie Kline.
- Interview with regulatory staff - Patricia Chapman.
- Reviewed randomly selected monitoring and measurement requirements in SOPs for plant operations.
- Reviewed quarterly progress reports used for tracking goals and objectives.

#### Element 14. Nonconformances: Preventive and Corrective Action

- Element 14: Nonconformances: Preventive and Corrective Action.
- Table 14.1 – Nonconformance Summary and Response Time (real time continuously updated form)
- Table 14.2 Nonconformance Investigation Worksheet.
- Figure 14.1 – Corrective Action Plan (form).
- Table 16.1 – Internal Auditor’s Worksheet (including internal auditor’s minimum question checklist.)
- Interviews with David Harris and William R. Kaiser
- Reviewed Table 14.2 – Nonconformance Investigation Worksheets for nonconformances for 2014 internal audit.
- Reviewed Table 14.2 – Nonconformance Investigation Worksheets for the status of all nonconformances identified in 2013 (including external third party audit.)

#### Element 15. Biosolids Management Program Report

- Element 15: Periodic Biosolids Program Performance Report.
- Interviews with David Harris and William R. Kaiser
- 2013 Periodic Biosolids Program Performance Report. Issued February 2014

#### Element 16. Internal BMP Audit

- Element 16: Internal BMP Audit.
- Table 14.1 – Nonconformance Summary and Response Time (real time continuously updated form)
- Figure 14.1 – Corrective Action Plan (form)
- Table 16.1 – Internal Auditor’s Worksheet (including internal auditor’s minimum question checklist.)
- Interviews with David Harris and William R. Kaiser
- 2013 Internal Audit Report – issued April 1, 2013.

#### Element 17. Management Review

- Element 17: Periodic Management Review of Performance.
- Table 17.1 – Periodic Management Review of Performance Report
- Interviews with Mike Lunn, David Harris and William R. Kaiser

- 2013 Periodic Biosolids Program Performance Report. Issued February 2014.
- Table 17.1 – Periodic Management Review of Performance Report performed on 3/28/2014.