



National Biosolids Partnership
Environmental Management System (EMS)
Internal Audit Report
City of Fort Worth Water Department
Village Creek Water Reclamation Facility
Fort Worth, Texas

Audit Performed By:
Steven L. Nutter
Audit Dates: August 26 – September 4, 2020
Report Date: October 6, 2020



References

City of Fort Worth EMS for Biosolids
NBP – 3rd Party Auditor Guidance (August 2011)
NBP – Guidance for Interim Audits (August 2004)

1.0 - INTRODUCTION

The Fort Worth Water Department, in conjunction with Synagro of Texas-CDR, Inc., has developed and implemented an environmental management system (EMS) for its Biosolids Program. The EMS helps the Village Creek Water Reclamation Facility to manage all aspects of its Biosolids Program including solids treatment, dewatering, transportation and beneficial land application. The EMS was first certified on July 20, 2005, by the National Biosolids Partnership (NBP). Fort Worth was one of the original programs to volunteer to become a NBP Demonstration Agency, becoming the seventh agency in the country and the first in Texas to receive EMS certification from NBP.

A properly implemented EMS assists the Biosolids Program with the following:

- Identifying the overall goals and objectives of the Biosolids Program.
- Creating a series of management practices to meet the goals and objectives.
- Managing biosolids and monitoring and measuring the effectiveness of the program.
- Taking corrective and preventative measures if the management practices are not operating correctly.
- Conducting audits of the Biosolids EMS Program.
- Requiring management involvement to make changes to the program as needed.

The City of Fort Worth conducts annual internal audits of its Biosolids EMS Program. The internal audits are structured to work in tandem with third-party interim and verification audits. The City believes that the internal audits provide opportunities to continually improve the EMS program and prepare staff for third-party audits.

In accordance with Element 16 of the Biosolids EMS Program, an internal audit was conducted on August 26 – September 4, 2020. The audit team consisted of the following individuals from the Fort Worth Water Department:

- Steven L. Nutter, REM, CEA (Lead Auditor) - Over 19 years of experience conducting environmental audits & inspections with the City of Fort Worth Water Department and the Texas Commission on Environmental Quality (TCEQ).

2.0 - SCOPE AND OBJECTIVES

EMS Element 16 details procedures for conducting internal audits of the Fort Worth Biosolids Program. There are two types of internal audits:

- Interim Audits – During any given reporting year if a third-party auditor is not utilized then the City shall conduct interim audits that cover the biosolids EMS management activities performed by the Biosolids Contractor and the City. Interim audits are similar in scope and procedure to the National Biosolids Partnership (NBP) interim third-party audits.
- Pre-Interim Audits - The City conducts pre-interim audits prior to third-party audits. Pre-interim audits are more general in nature and focus on items such as environmental performance and goals & objectives.

This year the internal audit scope was designed to follow the pre-interim audit procedures. This included the review of the following items:

- Overall Environmental Performance
- Compliance Status
- EMS Goals & Objectives
- EMS Management Review Meetings
- Annual EMS Performance Report
- Corrective Action Notices (CAN)

The objective of the audit was to determine whether or not the EMS is effective in helping the Water Department to manage its biosolids processes, as well as assisting the Biosolids Program in preparing for the third party verification audit.

3.0 - METHODOLOGY

The audit followed the guidelines provided in EMS Element 16 of the Fort Worth Biosolids Program. Each of the required components was reviewed to determine overall program effectiveness. Specifically, the program was evaluated using the following methods:

- Document Review
- Interviews with biosolids personnel

4.0 - OVERALL EVALUATION

At the start of the year the Fort Worth Biosolids Program entered a period of fundamental change in regards to how it produces and manages its biosolids. On December 30th, 2019 an operate-design-build-operate contract (ODBO) was awarded to Synagro of Texas-CDR, Inc. to manage Fort Worth's biosolids. The agreement with Synagro (Biosolids Contractor) requires them to design and construct a rotary drum dryer facility within 30 months of the contract award date. Furthermore, on April 1st, 2020 Synagro took over operation and maintenance of the existing belt-filter press / lime stabilization process to produce TCEQ Class AB biosolids. The belt-pressed biosolids will continue to be produced until such time as the new dryer facility is constructed and operational. By contract Synagro is also responsible for transporting and beneficially reusing Village Creek's biosolids, and for obtaining agreements with landowners for bulk land application activities.

The Biosolids Contractor has worked diligently during the transition period to hire new employees and develop new standard operating procedures (SOPs) for its contractually obligated activities. This includes operation and maintenance of the Dewatering Facility as well as transportation and beneficial reuse of biosolids. While SOPs have been developed for the current biosolids dewatering operations (lime stabilized biosolids), additional SOPs will be developed within the next two years for the rotary drum dryer facility that is under construction.

In addition to the changes described above new critical control points have been added to the biosolids program. The first is a new 5 million gallon storage tank for anaerobically digested solids pumped from Village Creek. Under normal flows the new 5 MG tank will provide 5-6 days' worth of storage capacity. The digested solids can be stored in the tank during periods of extended wet weather events or during facility shutdowns due to emergencies or prolonged maintenance activities. Another critical control point is the new Landia Airjets which have been installed on the storage tanks at the Dewatering Facility. These airjets have the ability to not only provide mixing but also aerate the digested solids, which in turn should result in improved odor performance at the land application sites. A new ferric chloride feed station is being installed next to the Biosolids Dewatering Facility. The new ferric station will assist with dewatering and odor performance while helping to prevent struvite buildup on the dewatering equipment. New critical control points have also been created for the onsite storage pads, the return flow pump station, the existing steel storage tanks, and reclaim water service.

Taken together these changes have presented new opportunities and new challenges for the Fort Worth Biosolids Program. This is reflected in the findings of this report. The Biosolids EMS continues to be an important tool for identifying and addressing program deficiencies. The continual improvement philosophy of the NBP is seen throughout the biosolids program. However, there are opportunities for improvement that both the City and the Biosolids Contractor are committed to addressing. This is further testimony to the continual improvement philosophy of Fort Worth's Biosolids EMS Program.

5.0 - AUDIT PARTICIPANTS

The following City employees and Biosolids Contractor personnel were contacted during the course of the audit:

Karen Probert, Sr. Environmental Specialist: (817) 392-4979
Glory Walker, Sr. Environmental Specialist: (817) 392-4936
Eduardo Prospero, Program Manager (Biosolids Contractor)

6.0 - PRE-INTERIM AUDIT FINDINGS

The following summary addresses positive observations, nonconformances and recommendations noted by the auditor during the pre-interim audit.

6.1 - Positive Observations:

The following observations were noted:

- Synagro took over biosolids operations on April 1st, 2020. The Biosolids Contractor has worked aggressively to develop and implement standard operating procedures that cover all of its contractually obligated responsibilities.
- Biosolids Contractor staff are well trained and understand their roles and responsibilities.
- Contractor has been very diligent in regards to odor management strategies at the land application sites
- The continual improvement philosophy is evident throughout the Biosolids Program.

6.2 - Program Nonconformances

Requirement 12.2 (c and e): Establish and maintain document control procedures and practices to ensure that its biosolids management program documentation and documents are kept up to date through periodic reviews and revisions; and are approved by authorized personnel.

Finding: Several of the standard operating procedures associated with critical control points at the Village Creek Water Reclamation Facility have approval signatures from personnel who have either retired or are no longer working at Village Creek. Furthermore many of Village Creek's SOPs were last reviewed in August 2017 and have reached or exceeded the maximum 3 year period for mandatory review (see PLNT 01.001).

Requirement 14.5: Establish formal corrective action plans to address findings of internal EMS audits and audits conducted by third parties. Document corrective action plans and describe what actions will be taken to address the audit findings, the individuals responsible, the estimated completion date, and required resources to develop and implement corrective and preventive action. Fort Worth's EMS requires quarterly updates to all open corrective actions.

Finding: The external audit conducted on October 16-18, 2019, included a minor nonconformance for emergency preparedness and response procedures. The City created a corrective action notice (CAN 2019-04) on November 14, 2019, to address the audit finding. While some progress has been made on this issue, to date the City has not documented what has been achieved nor what remains to be completed.

Requirement 5.6: Update goals and objectives on a regular basis.

Finding: Fort Worth's EMS requires that all goals & objectives be updated on a quarterly basis. During the EMS internal audit it was noted that the quarterly update for June 2020 did not document the status of the goals and objectives associated with public outreach activities.

6.3 - Recommendations

1. The Biosolids Program currently has a goal & objective for improving the percent solids from dewatering activities. Specifically, the existing goal is associated with improvements obtained from the belt-filter press refurbishment work on the four original presses. It is recommended that this goal be updated to include Synagro's efforts to evaluate the effectiveness of mobile centrifuges for dewatering. This goal should also be updated to include the ongoing polymer trials at the Biosolids Dewatering Facility.
2. The recently executed contract with Synagro requires that a computerized maintenance management system (Maximo) be implemented and utilized for all biosolids related infrastructure (existing & future). It is recommended that a goal & objective be created for planning purposes to help with the scheduling and implementation of the asset management system (Maximo) at the Biosolids Dewatering Facility.

7.0 – PRE-INTERIM AUDIT REQUIRED ELEMENTS

7.1 - Environmental Performance

Required TPDES Monitoring. During the 2019-2020 reporting period the Fort Worth Biosolids Program was compliant with the following TPDES monitoring requirements:

- Helminth Ova
- Enteric Virus*
- Fecal Coliform
- Metals
- Toxicity Characteristic Leaching Procedure (TCLP)
- Polychlorinated Biphenyl (PCB)

*An enteric virus sample collected on May 20th, 2020 was not compliant with permit standards. However, the City believes this issue was caused by analytical errors at the third party laboratory that performed the testing. This same lab was used a few years ago for enteric virus analysis and was shown to have problems with its QA/QC techniques. In response to this issue the new Biosolids Contractor switched to a different third party laboratory (BCS Laboratories in Florida) for enteric virus analysis. BCS Labs has a proven track record of superior analytical service, including those associated with QA/QC. TCEQ was notified of the enteric virus issue and a Corrective Action Notice (CAN 2020-05) was utilized to help address the situation.

Odor Complaints. When the biosolids are adequately dosed with ferric chloride and chlorine dioxide the land application odor performance is usually quite good, provided the biosolids are not stockpiled for extended periods due to wet weather events. The Biosolids Contractor has been diligent in implementing odor management strategies as part of its routine daily operations. During the 2019-2020 reporting period there were a total of 11 odor complaints, which is down significantly from the previous year (64).

Other Complaints. During the 2019-2020 reporting period the City received complaints associated with the following program areas:

- One complaint (November 2019) for tracking of materials on roadways. Roadway was cleaned later in the day and verified by City inspector.
- One complaint (January 2020) associated with required land application signage. City inspector verified the sign was present at land application site that same day.
- Once complaint (February 2020) associated with stormwater runoff from fields. City inspectors did not find any problems associated with runoff related issues.

City inspections are performed at land application sites to verify complaint information and to help the Biosolids Contractor make informed decisions on how to deal with any issues or problems.

7.2 – Compliance Status

Setback Criteria. On September 30, 2019 the previous Biosolids Contractor accidentally land applied biosolids within the 750 foot buffer zone associated with an occupied structure. TCEQ was notified of the problem and a corrective Action Notice (CAN 2019-01) was issued. On December 19, 2019 the previous Biosolids Contractor accidentally land applied

biosolids within the 50 foot public right-of-way near a county road. TCEQ was notified of the problem and a corrective Action Notice (CAN 2019-06) was issued.

Odor Issues. During the 2019-2020 reporting period there were no alleged violations associated with odors from land application activities. However, on April 15, 2019, the City and its previous Biosolids Contractor received three notice of enforcement letters from TCEQ. These enforcement actions referenced “nuisance odor conditions” at land application sites in Johnson and Hood counties during the winter and spring of 2018-2019. At the time of this review, the City is still in negotiations with TCEQ in regards to the terms and conditions of the pending enforcement action.

7.3 – EMS Goals & Objectives

For the most part the EMS Goals & Objectives have been developed and updated as required by Element 5. However, please note the findings and recommendations listed in Section 6.2 and 6.3 of this report.

7.4 – EMS Management Review Meeting

The Annual EMS Management Review Meeting was held on October 11th, 2019. The meeting minutes were documented and it followed the criteria outlined in Element 17.

1. Accomplishments since last review;
2. Changes to policy;
3. Goals & Objectives - Advancements towards existing goals and objectives and identifying “New” goals and objectives.
4. Internal EMS audit results;
5. External third-party Interim & verification EMS audits;
6. Legal and self-imposed regulation compliance;
7. Reports on emergencies, spills or other incidents
8. Corrective Action Notices;
9. Update to Critical Control Points;
10. External communication and public participation;
11. Other biosolids performance measures;
12. Future plans and projects;
13. Follow-Up Actions

7.5 – Annual EMS Performance Report

The Annual EMS Performance Report for the 2018-2019 reporting period was issued on September 30th, 2019. The EMS Performance Report included all the required elements.

7.6 – Status of Corrective Action Notices (CANs)

At the end of the 2018-2019 reporting period there was only one open CAN. This is for emergency preparedness and response (CAN 2019-04). Please see Section 6.2 of this report for more information on the status of this CAN.