NATIONAL BIOSOLIDS PARTNERSHIP
INTERIM AUDIT REPORT

Village Creek Water Reclamation Facility
Fort Worth, Texas

Audit conducted by

NSF-International Strategic Registrations

William R. Hancuff, Lead Auditor

References:
National Biosolids Partnership (NBP) – ***EMS Elements***
NBP – ***Third Party Verification Auditor Guidance – August 2011***
NBP – ***Code of Good Practice***
Village Creek Water Reclamation Facility
Environmental Management System for Biosolids Manual
(Latest Revisions – 28 September 2018)

Final Report – November 25, 2019

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 support credibility between re-verification audits. The goal of the third party interim audit is to verify continual improvement of the Village Creek Water Reclamation Facility (VCWRF) Environmental Management System (EMS) for Biosolids, and 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 VCWRF's EMS is functioning as intended, that practices and procedures are conducted as documented, and that the EMS as implemented conforms to the NBP's Code of Good Practice and BMP objectives.

RECOMMENDATION

The results of the Village Creek Water Reclamation Facility's interim audit are positive and it is the recommendation of NSF that the VCWRF's BMP maintain its Platinum Plus Level Recognition Certification status.

AUDIT SCOPE

The NSF-ISR conducted a third party interim audit of the VCWRF's EMS for Biosolids from October 16 through October 18, 2019. The on-site interim audit team consisted of Dr. William R. Hancuff, Lead Auditor.

The overarching scope included review of the following activities related to the identified core element requirements:

- The organization's progress toward goals and objectives (Element 5),
- BMS outcomes (environmental performance, regulatory compliance, interested party relations, and quality practices) (Element 5),
- Actions taken to correct minor non-conformances (Element 14),
- Management review process (Element 17), and
- Corrective and preventive action requests and responses (Element 14).

Because other system elements interact with the above specific requirements the interim audit also included partial auditing of activities found in elements 1, 2, 4, 6, 9, 15, and 16.

Since the NBP allows that any individual interim audit cover a portion of the BMP, but requires that over the course of the four interim audits conducted between verification and re-verification audits the entire BMP (i.e. all 17 elements) must be covered, the following elements were audited in their entirety as part of this third interim audit:

- Element 5 – Goals and Objectives
- Element 6 – Public Participation in Planning
- Element 9 – Communication
- Element 14 – Nonconformances: Preventive and Corrective Action
- Element 16 – Internal BMP Audit

Auditing these elements involved document review, interviews, and activity evaluations.

The scope of the Third Party interim 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 reviewed during the interim audit included the VCWRF administrative offices, overflow storage ponds, primary settling tanks, aeration tanks, secondary clarifiers, anaerobic digesters, new biosolids holding tanks, solids dewatering belt presses, cationic polymer feed system, lime silos, lime mixing augers, lime treated biosolids collection pads, truck scales, chlorine dioxide solids treatment, on-site biosolids storage area, biosolids truck loading, truck transportation route, staging at land application site, and biosolids land application site JCTA-1 (250-acres) in Johnson County.

The following individuals were part of the interim audit process:

Martin Philliips, Acting Assistant Water Director, and Engineering Manager, VCWRF
Steven Nutter – Biosolids Manager/EMS Manager, VCWRF
Karen Probert – Senior Environmental Specialist, VCWRF
Glory Walker - Senior Environmental Specialist, VCWRF
Russel Redder – Senior Professional Engineer, VCWRF
Migdedalia Jackson – Environmental Specialist, VCWRF
Maria Wang – Strategic Operations, VCWRF
Ginger Laird – Assistant Superintendent, VCWRF
Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor)
Ernesto Puente – Land Application Lead, REI (contractor)
Jorge Hernandez – Land Application Specialist, REI (contractor)
Oswaldo Ponce – Land Application Operator, REI (contractor)
Jorge Hernandez – Land Application Specialist, REI (contractor)
Estevon Marascal – Land Application Specialist, REI (contractor)
John – Farmer & Land owner of application site JCTA-1 (250-acres) in Johnson County.
Elizabeth Smith – Assistant Regional Director, TCEQ Region IV Office - Dallas/Ft. Worth

INTERIM AUDIT FINDINGS

The interim audit found no major non-conformances, 3 minor non-conformances, 7 opportunities for improvement and 5 positive commendations.

The following is a review of the positive observations made during the interim audit followed by the minor non-conformances and opportunities for improvement. The later are listed below in accordance with the corresponding numbers associated with the minimum conformance requirments contained in the Third Party Verification Auditor Guidance document.

Positive Observations

- Renda Environmental worked with the US Environmental Protection Agency's Pathogen Equivalency Committee concerning testing requirements for vector attraction reduction (VAR) to obtain clarification on storage requirements related to alternative 6 alkali stabilization under EPA's CFR 240 part 503 regulations. As a result of this clarification Village Creek and specifically Renda is now able to move material immediately upon satisfaction of the testing requirement, as opposed to storing the solids an additional 24 hours, which had been demonstrated to be costly and problematic in the past.

- Village Creek WWTP has established a state of the art best management practice for odor monitoring and control of nuisance conditions. The plant has installed "ODOWATCH" which employs monitoring stations that have 16 metal oxidizers with sensitivity to ketones, mercaptans, methane, hydrogen sulfide, toluene, and volatile organic compounds, which are converted to odor numbers based on odor panel correlations. The program is used as an early warning system to alert the staff to implement odor control measures based on odor plume movement projections into neighborhoods.

- Renda Environmental employs an electronic document control procedure that ensures documents are available and readily located and kept up to date. All Standard Operating Procedures can be instantly accessed by any employee using a multitude of electronic devices such as laptops, iphones, ipads, ipods, etc.

- Renda Environmental employs a combined hardware and software program system provided by Trimble Asset Tracking, which uses GPS units placed in each tractor, loader, and spreader associated with land application of biosolids to track real time the location of equipment and movement patterns to assure efficient application of solids on farms, and provide verification of regulatory compliance with setback requirements.

- Village Creek WWTP has developed a model program for continuous improvement by using corrective actions identified during routine monitoring and

measurement to identify corrective action plans (CAP) that are "on deck" projects that do not yet meet SMART criteria, but for which the city is working towards a solution.

Minor Nonconformances

- Requirement 5.1 – The standard requires that program goals and objectives be developed using SMART criteria (Specific, Measurable, Achievable, Relevant and Time-bound.) The goal to reduce work orders associated with grit repair activities by 50% does not meet the "Specific" criteria in that the term "work orders" i.e. is not specifically defined (e.g. number of work orders, hours of work orders or total cost of work orders.) Additionally, the goal does not specifically identify that the reduction is based on an average annual total, and does not identify what the base year is for comparison.

- Requirement 11.2 – The standard requires the review and evaluation of the effectiveness of emergency preparedness and response procedures, including communications systems, with revisions as necessary, for example table top exercises plus spill drills. VCWWTP prepared Standard Operating Procedure PLNT 07.001 Liquid Sludge Spill Response, but has not conducted any table top exercises plus spill drills to evaluate the effectiveness of the procedures.

- Requirement 17.2(c) – The standard requires documentation of the management review findings, evaluations, and follow-up actions (meeting minutes). The 2019 management review did not have any meeting minutes containing the required information.

Opportunities for Improvement

- Requirement 5.1 – Clarify the specific measurability of the Goal to increase percent solid of biosolids (prior to lime addition) by 3%, to a fixed percent solids concentration (such as 17.25% during every shift), so that the average monthly percent solids concentration does not drop below 18%.

- Requirement 5.1 – The completion of a long standing EMS goal and objective, regarding public concerns related to biosolids, is being hampered by the lack of action by the communications department. The action item required to satisfactorily accomplish this goal is production of an educational video using an interview with a specific farmer on the benefits of biosolids for improved crop production. There have been multiple unexplained delays associated with this action item.

- Requirement 6.4 – Review the Biosolids EMS – Element 6.0 – Public Participation in Planning to ensure that all procedures identified are correct and currently employed.

- Elements 6 & 9 – Consider including electronic contact addresses, such as personal emails, in addition to telephone numbers on all flyers and information sheets made available to the public. (Also consider QR codes.)

- Requirement 10.1 – Consider tracking historical odor number values for downwind hydrogen sulfide results from plant odor surveys.

- Requirement 17.1 – Consider providing a management review presentation to Charly Angadicheril – Assistant Water Director, because he was unavailable at the time of the 2019 Management Review.

VILLAGE CREEK WATER RECLAMATION FACILITY COMMENTS

The NBP certified EMS program has been pivitol to the success of our biosolids program. The City of Fort Worth and its contractor, Renda Environmental Inc., have seen the benefits provided by the EMS and its continual improvement philosophy. As such we will continue to look for ways improve our program both now and in the future.

OUTCOMES MATTER

The Ft. Worth EMS Management Team continued to work on its goals and objectives program in 2019. The Biosolids Manager/EMS manager and the Management Team worked on 7 goals and objectives, which for the most part were developed using the Specific, Measurable, Achievable, Relevant, and Time Bound (SMART) criteria. Additionally, the EMS management team established biosolids goals for its BMP cognizant of each of the four outcome areas of the NBP program as identified below:

- Environmental Performance,
- Regulatory Compliance,
- Relations with Interested Parties, and
- Quality Biosolids Management Practices

The team continued to improve its use of SMART criteria in establishing goals and objectives, and in some cases considered identifying cost savings as an additional measure of improvement.

While it is not a requirement to attain all goals and objectives established, a critical part of the system is to make progress towards accomplishing the overall goals. Some goals were completed and others evolved into additional action items. The City of Fort

Worth's performance relative to each of its 2019 goals is addressed below and the outcome areas affected by the goal are addressed at the end of each discussion.

This goal is to improve sludge thickening to accomplish the objective of increasing the combined feed sludge to the blend tank from the gravity belt thickeners and rotary drum thickener to a monthly average of 5%.

This objective was established in late 2015 when a consultant was hired. The first step in the action plan was to evaluate new thickening technologies that would replace the dissolved air floatation thickening technology. A consultant was hired in June 2015 and after an unsuccessful pilot project was completed in December 2016 it was determined to improve the gravity belt thickeners and replace the gravity thickeners. By September 2017 the conceptual design was complete and the schedule established to finalize the design and begin construction by March 2019. Due to complications and delays in the conceptual design phase the consultant moved the delivery date of the preliminary engineering report to the end of June 2018 and then shift the beginning of construction to November 30, 2019. Additional adjustments resulted in the final design of an additional gravity belt thickener and a rotary belt thickener design that was 90 % complete by September 2019 with completion of construction schedule for December 2022 and one year evaluation period complete by December 2023.

Outcome Areas: Environmental Performance and Quality Biosolids Management Practices.

Increase Percent Solids Of Biosolids (Prior To Lime Addition) By 3%, such that the average monthly percent solids concentration does not drop below 18%.

Clarification of the measurability of this goal was developed in 2018. Consideration was given to establishing this goal of 18% as a monthly average, and a goal of not operating below 17.25% during any daily shift. The goal was originally established in April 2014, and the action plan to improve the concentration of biosolids prior to lime addition required the installation of a new belt press, resulting in a total of 6. In addition to the press a new chemical feed system was required to keep up with the polymer and lime demand at all times. The new belt press, polymer and lime systems were installed by September 2016 and in March 2017operational performance testing revealed new challenges such as the new belt press tracking and servo motors and drives, and the automated polymer feed system. Optimization of process operations have demonstrated that the percent solids should be able to consistently meet the goal of 18% and a daily shift goal of not less than 17.25%. Additional action plan activities related to rehabilitation of belt presses may be able to further improve this goal in the future. The refurbishment of the first two belt presses was scheduled for completion by October 2019 and rehabilitation of a second betl press is scheduled for May 2020.

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

Increase Biosolids Processing and Storage Capacity from 1.3 MG to 6.3 MG

This goal was established in May 2015 and consisted of design and construction of new dewatering system (centrifuges, belt presses, screw presses, or other dewatering processes) for the digested biosolids. In addition, one of the key components of this concept evolved into a new goal and objective of increasing the biosolids storage facilities by 100%, which was later redefined to increase the storage capacity from 1.3 MG (two tanks with 500,000 gallons and 800,000 gallons) to 6.3 MG by adding a new 5 MG storage tank. The design of this storage tank was completed and the project was awarded in September 2018. Construction of the tank was completed in October 2019 with electrical work, ferric chloride tanks, and yard piping planned for completion by March 2020. The measureable results of this goal will be an increase in reliability of the biosolids stabilization and distribution, which ultimately will reduce odors and consequential complaints.

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

Reduce the Amount of Lime (tons) used per month by 50% (note the base use established for comparison is 250 tons of lime per month).

Due to significant changes in the plant design and future operations this goal was eliminated.

This goal is to improve grit removal to attain an objective of reducing work orders associated with grit caused impacts by 50%.

The action to be taken to achieve this goal and objective is the design and construction of a new grit removal system that should remove 95% of the grit in the range of 105 microns and greater. This goal does not yet specifically identify how the work orders will be measured, i.e., annual number of work orders, labor hours of work orders, cost of work orders, etc. Also the baseline year has not yet been identified. Also, how work orders that are directly related or partially related to grit has not been clarified.

The design of this project is scheduled for completion by February 2020 and construction finished by December 2022.

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

Address Four Public Concerns Regarding Biosolids (evolved from previous goals of adding three new biosolids public outreach activities and subsequent goal of identifying four public concerns regarding biosolids.)

The earlier goal represented a major breakthrough in the requirement for proactive public participation. As a result of the effort four areas of concern were identified: 1) The

City of Fort Worth biosolids webpages are out of date; 2) the EPA and TCEQ standards are not strict enough; 3) too much about biosolids are unknown, and 4) are there pharmaceuticals and personal care products (PPCPs) in biosolids? These interests were addressed in multiple ways. A Frequently Asked Questions (FAQs) brochure was developed that addressed #1 and # 3. A presentation was developed to address #2, which can be used during tour presentations and #4 was addressed in a brochure printed in 2016.

The second action plan was to improve the ability to identify concerns via FAQs placed in information tubes and attached to the site notification signs located at land application site entrances. Information tubes began being placed in March 2016. Tracking of the number and percentage of FAQ sheets has taken place. By July 2016 approximately 34% of the info sheets were taken. Since March 2016 250 FAQs were placed at 19 land application sites and of those placed 66 (26%) were taken.

The third action plan was to improve ability to identify concerns using the Water Department's social media accounts. Considerable effort was required to accomplish this objective because the water department's social media is under the control of a different division and several restrictions have been placed on what is allowable. However the Water Department's Public Relations has extended a new level of cooperation with the wastewater treatment plant making several new public outreach initiatives possible.

The forth action plan was to improve the ability to address public concerns by updating the biosolids webpage. As was mentioned the Water Department's Public Relations has extended a new level of cooperation with the wastewater treatment plant, which includes updating information regarding biosolids.

The fifth action plan was to improve the ability to address or identify concerns via tour surveys. The results (six months of surveys from January to July 2016) were used to gauge how familiar people are with the term "biosolids,' what people's general attitude is towards biosolids, and if their general attitude changes after seeing a presentation on wastewater treatment and biosolids. Although the action plan has been completed, the collection of tour data continues to be successful in order to develop metrics and elicit possible comments regarding biosolids.

A sixth action plan was added in 2018 to develop two educational videos related to biosolids; one has been completed but the second (one that involves and interview with a specific farmer who will explain the benefits of using biosolids in crop production) has experience delays because of inaction on the part of the communications department.

However, as a result of this goal a comprehensive Biosolids Communication Plan was developed and issued in July 2018, that includes utilizing social media more extensively, such as Facebook, Twitter and Instagram. The communication program also ensures that critical messages and information are presented in Spanish as well as English. One of the purposes of utilizing these methods is to increase the feedback from interested persons.

Outcome Areas: Relations with Interested Parties.

CONCLUSIONS AND RECOMMENDATIONS

The results of the interim audit were highly positive. It is therefore the recommendation of the audit team that the Village Creek Water Reclamation Facility's EMS for biosolids maintain its Platinum Plus Level Recognition Certification status.

Discussions between the VCWRF Biosolids EMS manager and the third party auditor resulted in agreement to the following proposed interim audit approach. Each interim audit will include a review of: the organization's progress toward goals and objectives; EMS outcomes (environmental performance; regulatory compliance; interested party relations; quality practices); actions taken to correct minor non-conformances; the management review process; corrective action requests and responses; and preventive actions. In addition to the above, the following elements will be audited according to the following tentative schedule:

Year 11 (completed) – Elements 3, 10, 12, 13

Year 12 (completed) – Elements 1, 8, 15, 17

Year 13 (completed) – Elements 5, 6, 9, 14, 16

Year 14 (third party) – Elements 2, 4, 7, 11

Year 15 (third party) Re-verification

The results of the current 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.

Attachment 1

Documents and Other Object Evidence Reviewed During the Interim Audit

Element 1. Documentation of EMS for Biosolids

- Biosolids Program Environmental Management System – City of Fort Worth, Water Department, Plant Operations Division – September 28, 2018.
- Biosolids EMS Manual Introduction – October 2, 2018.
- Biosolids EMS Manual Glossary – September 27, 2017.
- Biosolids EMS Manual Issue Log (Manual Revisions) – October 2, 2018.
- Biosolids EMS Manual Planning Schedule (By Calendar Year) – September 21, 2018.
- Biosolids EMS Manual Element 1.0 – Documentation of EMS for Biosolids – Rev 10 – September 21, 2018.
- Biosolids EMS Manual – Procedures for Elements 2, 3 (including Table 3.0), 10, 12 and 13.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor)

Element 2. Biosolids Management Policy

- Biosolids EMS Manual – Element 2.0 – Biosolids Policy – Rev 07 – September 21, 2018.
- Interview with Martin Phillips, Acting Assistant Water Director, and Engineering Manager, VCWRF.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor)
- Website - City of Fort Worth Wastewater Biosolids EMS (http://fortworthtexas.gov/water/biosolids/program/)

Element 3. Critical Control Points

- Biosolids EMS Manual – Element 3.0 – Critical Control Points – Rev 13 – September 27, 2018.
- Biosolids EMS Manual – Element 3.0 – Figure 3.2 VCWRF Biosolids Value Chain (Ft Worth Village Creek Wastewater Treatment Plant process flow diagram) – September 27, 2018.
- Biosolids EMS Manual Element 3.0 Table 3.1 – Critical Control Points-Master Table (Biosolids Value Chain, Critical Control Points, Roles and Responsibilities, Regulatory Documents, Standard Operating Procedures, Other Documents,

Location of SOPs, Key Operational Parameters, Monitoring Activity, Activity and Frequency and Environmental Impacts, – September 27, 2018.
- Interview with Martin Phillips, Acting Assistant Water Director, and Engineering Manager, VCWRF.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor).
- Interviews with Ernesto Puente – Land Application Lead, REI (contractor) and John – Farmer & Land owner of application site JCTA-1 (250-acres) in Johnson County.

Element 4. Legal and Other Requirements

- Biosolids EMS Manual – Element 4.0 – Legal and Other Requirements – Rev 13 – September 25, 2018.
- Interview with Martin Phillips, Acting Assistant Water Director, and Engineering Manager, VCWRF.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor)
- Interview with Elizabeth Smith – Assistant Regional Director, TCEQ Region IV Office - Dallas/Ft. Worth.
- Table 4.1 – Regulations Applicable to the VCWRF Biosolids Value Chain (Regulations, Description, Location, Governing agency, and areas of influence within biosolids value chain) – September 25, 2018.
- Reviewed REI electronic SOP for Land Application, including regulatory requirements.
- Reviewed REI electronic SOP for Lime Stabilization, including regulatory requirements.
- Reviewed EPA undated letter regarding interpretation of hold time for lime stabilized solids when meeting vector attraction reduction requirements.
- Reviewed TCEQ letter dated 12 September 2019 approving change in holding times for VAR alternative 6.

Element 5. Goals and Objectives for Continual Improvement

- Biosolids EMS Manual – Element 5.0 – Biosolids Goals and Objectives – Rev 16 – October 14, 2019.
- Biosolids EMS Public Outreach Evaluation Form.
- Interview with Martin Phillips, Acting Assistant Water Director, and Engineering Manager, VCWRF.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor)
- Interviews with Migdedalia Jackson – Environmental Specialist, Maria Wang – Strategic Operations, and Ginger Laird – Assistant Superintendent, VCWRF

- Appendix 5a: Biosolids Goals and Objectives – EMS Element 5.0 (Currently active) – September 24, 2019.
- Detailed review of each currently active Goal and Objective in 2019.
- Ft. Worth Water Department Website (http://fortworthtexas.gov/water/biosolids/program/)
- Biosolids Management Program & Environmental Management System (EMS) Annual Performance Report – 2018 - 2019.

Element 6. Public Participation in Planning

- Biosolids EMS Manual – Element 6.0 – Public Participation in Planning – Rev 11 – September 26, 2018.
- Biosolids EMS Manual – Element 9.0 – Communication and Public Outreach – Rev 13 – September 26, 2018.
- Biosolids Communication Plan – July 2018.
- Ft. Worth Water Department Website (http://fortworthtexas.gov/water/biosolids/program/)
- Interview with Martin Philliips, Acting Assistant Water Director, and Engineering Manager, VCWRF.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor).
- Interviews with Glory Walker - Senior Environmental Specialist and Migdedalia Jackson – Environmental Specialist, VCWRF.
- Ft. Worth SOP for Audit Notification of Interested Parties, Rev 00, 7/13/16.
- Biosolids Public Outreach Feedback Evaluation Form – undated.
- Biosolids Public Outreach Event Log – undated.
- Notification of Land Application to Local Officials form – undated.
- Biosolids Post Analysis for Facebook and Twitter including reach and views associated with various postings (English and Spanish).
- Single sheet double sided Frequently Asked Questions (FAQ) on biosolids. Undated
- Biosolids FAQ – trifold handout created by RENDA Environmental.
- Invitation to interested parties to observe NBP third party audit of Village Creek EMS for biosolids program on October 16 – 18, 2019.

Element 7. Roles and Responsibilities

- Biosolids EMS Manual – Element 7.0 – Roles and Responsibilities – Rev 12 – September 27, 2018.
- Biosolids EMS Manual – Element 7.0 – Table 7.1: Roles and Responsibilities (Department, Roles, Responsible Person, and Responsibilities) – September 27, 2018.
- Biosolids EMS Manual – Element 7.0 – Figure 7.1 – Water Department Organizational Chart, September 27, 2018.

- Biosolids EMS Manual – Element 7.0 – Figure 7.2 – Plant Operations Organizational Chart, September 27, 2018.
- Interview with Martin Phillips, Acting Assistant Water Director, and Engineering Manager, VCWRF.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor).
- Interviews with Ernesto Puente – Land Application Lead; Jorge Hernandez – Land Application Specialist; Oswaldo Ponce – Land Application Operator; Jorge Hernandez – Land Application Specialist; Estevon Marascal – Land Application Specialist, all with REI (contractor);

Element 8. Training

- Biosolids EMS Manual – Element 8.0 – Training – Rev 11 – September 21, 2018.
- Reivew Biosoldis and EMS training slides – February 2019 and October 2019.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor)
- Interviews with Ernesto Puente – Land Application Lead; Jorge Hernandez – Land Application Specialist; Oswaldo Ponce – Land Application Operator; Jorge Hernandez – Land Application Specialist; Estevon Marascal – Land Application Specialist, all with REI (contractor);

Element 9. Communications

- Biosolids EMS Manual – Element 9.0 – Communication and Public Outreach – Rev 13 – September 26, 2018.
- Biosolids EMS Manual – Element 6.0 – Public Participation in Planning – Rev 11 – September 26, 2018.
- Biosolids Communication Plan – July 2018.
- Ft. Worth Water Department Website (http://fortworthtexas.gov/water/biosolids/program/)
- Biosolids Complaint Form.
- Biosolids Complaint Log Listing form.
- Field Observation Report
- Close-out Site Visit Form
- RENDA – Biosolids Complaint Form
- RENDA - Web-Based Biosolids Complaint log
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor)
- Interview with Ernesto Puente – Land Application Lead (REI) (contractor).
- Biosolids Management Program & Environmental Management System (EMS) Annual Performance Report – 2018 - 2019.
- Biosolids Public Outreach Feedback Evaluation Form – undated.

- Biosolids Public Outreach Event Log – undated.
- Notification of Land Application to Local Officials form – undated.
- Biosolids Post Analysis for Facebook and Twitter including reach and views associated with various postings (English and Spanish).
- Single sheet double sided Frequently Asked Questions (FAQ) on biosolids. Undated
- Biosolids FAQ – trifold handout created by RENDA Environmental.
- The Biosolids Digest – December 2018 – Volume 1 Issue 2 and May 2019 – Volume II Issue 2.

Element 10. Operational Control of Critical Control Points

- Biosolids EMS Manual – Element 10.0 – Operational Control of Critical Control Points – Rev 11 – September 21, 2018.
- Biosolids EMS Manual – Element 13.0 – Monitoring and Measurement – Rev 12 – September 21, 2018.
- Reviewed VCWRF plant SOP for Digester Operation.
- Reviewed operational September – October 2019 data for primary sludge thickeners, gravity belt thickeners and waste activated sludge DAFT solids.
- Interview with Martin Phillips, Acting Assistant Water Director, and Engineering Manager, VCWRF.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor)
- Interviews with Ernesto Puente – Land Application Lead; Jorge Hernandez – Land Application Specialist; Oswaldo Ponce – Land Application Operator; Jorge Hernandez – Land Application Specialist; Estevon Marascal – Land Application Specialist, all with REI (contractor); and John – Farmer & Land owner of application site JCTA-1 (250-acres) in Johnson County.
- Field visit to land application site JCTA-1 (250-acres) in Johnson County with boundaries and buffers.
- SOP binders for wastewater treatment plant.
- Reviewed Binder on Digestion SOPs – various revisions and effective dates
- RENDA SOP electronic binder – Land Application EMS SOPs.

Element 11. Emergency Preparedness and Response

- Biosolids EMS Manual – Element 11.0 – Emergency Preparedness and Response – Rev 10 – September 21, 2018.
- Standard Operating Procedure (SOP) PLNT 07.001 Revision 00, 28 August 2017 – Liquid Sludge Spill Response.
- Standard Operating Procedure (SOP) PLNT 07.002 Revision 00, 28 August 2017 – Liquid Sludge Spill Reporting.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor).

Element 12. EMS Documentation and Document Control

- Biosolids EMS Manual – Element 12.0 – EMS Documentation & Document Control – Rev 11 – September 26, 2018.
- Biosolids EMS Manual – Element 12.0/Table 12.1 – TPDES Permit Required Report Summary.
- Biosolids EMS Manual – Element 12.0/Table 12.2 – Level 4 Documentation Master List – September 26, 2018.
- Biosolids EMS Manual – Element 12.0/Figure 12.1 – Pretreatment Data Management System – September 26, 2018.
- Biosolids EMS Manual Issue Log – September 27, 2017. (Element Procedures change history.)
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor).
- Biosolids EMS Manual – Element Procedures change history logs for each.

Element 13. Monitoring and Measurement

- Biosolids EMS Manual – Element 13.0 – Monitoring and Measurement – Rev 12 – September 21, 2018.
- Biosolids EMS Manual – Element 13.0 – Appendix 13.1: Biosolids Forms (Field Observation Report, Close-Out Site Visit Form, Odor Monitoring – Field Data Sheet, Biosolids Percent Solids Data Sheet, Sludge Only Landfill (SOL) Daily Odor Monitoring Form, Biosolids Application at the SOL Checklist, and Land Application of Biosolids at the SOL – Monitoring Form) – September 21, 2018.
- Biosolids EMS Manual – Element 10.0 – Operational Control of Critical Control Points – Rev 11 – September 21, 2018.
- Discussed Trimble Asset Tracking Hardware and Software Georgraphic Informantion System (GIS) and GPS for real time tracking of asset (tractors, loaders, and spreaders) location and movement; also used to prepare reports using GPS coordinates to be used on overlays on aerial maps to verify areas that have had biosolids applied. Also, used for training for spreading patterns and buffer avoidance.
- Reviewed “Odowatch” program for monitoring and controlling odors on and off the plant property.
- Reviewed Odowatch data for 2019.
- Land application site map for JCTA-1 (250-acres) in Johnson County with boundaries and buffers.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor).
- Interview with Migdedalia Jackson – Environmental Specialist, VCWRF on Odowatch implementation.

- Interviews with Ernesto Puente – Land Application Lead; Jorge Hernandez – Land Application Specialist; Oswaldo Ponce – Land Application Operator; Jorge Hernandez – Land Application Specialist; Estevon Marascal – Land Application Specialist, all with REI (contractor); and John – Farmer & Land owner of application site JCTA-1 (250-acres) in Johnson County.

Element 14. Nonconformances: Preventive and Corrective Action

- Biosolids EMS Manual – Element 14.0 – Nonconformance: Preventive & Corrective Action – Rev 11 – September 21, 2018.
- Biosolids EMS Manual – Element 14.0: Corrective Action Notice (CAN) form – September 21, 2018.
- Corrective Action Notice Review form – September 21, 2018.
- Biosolids EMS Manual – Element 16.0 – Internal EMS Audit – Rev 14 – September 21, 2018.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor).
- National Biosolids Partnership EMS Internal Audit Report – Audit Dates August 28 – 29, 2019; Report Date: October 10, 2019.
- Corrective Action Notice (CAN) – Master List for non-conformance issues identified in 2018 and 2019.
- Spot checked CANs prepared for non-conformance issues identified in 2018 and 2019.
- Reviewed corrective actions from 2018 external third party BMP audit.
- Summary table of Corrective Action Plans developed from monitoring and measurement observations: project description, objective, key outcomes, target completion date, responsibility for tracking, completed actions, corrective action/current status, future actions to be completed, and completion date.
- Review of new Corrective Action Plans used to hold future Goals and Objectives

Element 15. Periodic Biosolids Program and EMS Performance Report

- Biosolids EMS Manual – Element 15.0 – Biosolids Program & EMS Performance Report – Rev 09 – September 21, 2018.
- Interview with Martin Phillips, Acting Assistant Water Director, and Engineering Manager, VCWRF.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor).
- Biosolids Management Program & Environmental Management System (EMS) Annual Performance Report – 2018 - 2019.

Element 16. Internal EMS Audit

- Biosolids EMS Manual – Element 16.0 – Internal EMS Audit – Rev 14 – September 21, 2018.
- Biosolids EMS Manual – Element 14.0 – Nonconformance: Preventive & Corrective Action – Rev 11 – September 21, 2018.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor).
- National Biosolids Partnership EMS Internal Audit Report – Audit Dates August 28 – 29, 2019; Report Date: October 10, 2019.

Element 17. Periodic Management Review of Performance

- Biosolids EMS Manual – Element 17.0 – Periodic Management Review of Performance – Rev 09 – September 21, 2018.
- Agenda for Management Review Meeting held 10/11/19.
- Discussed Biosolids Annual Management Review - October 11, 2019, 3:00 PM.
- Review of PowerPoint slide presentation for Management Meeting.
- Biosolids Management Program & Environmental Management System (EMS) Annual Performance Report – 2018 - 2019.
- Interview with Martin Phillips, Acting Assistant Water Director, and Engineering Manager, VCWRF.
- Interviews with Steven Nutter – Biosolids Manager/EMS Manager, VCWRF, Karen Probert – Senior Environmental Specialist, VCWRF, and Ben Davis – Biosolids Manager, Renda Environmental, Inc. (REI) (contractor).