

**NATIONAL BIOSOLIDS PARTNERSHIP
FIRST INTERIM AUDIT REPORT**

**RENEWABLE WATER RESOURCES
GREENVILLE, SC**

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 – November 2001*
(Latest Revision August 2011)
NBP *Code of Good Practice*
ReWa Biosolids
Environmental Management System Manual
*(Revised – September 9, 2011)***

Final Report – October 3, 2012

INTRODUCTION

The purpose of the Biosolids Management Program (BMP) interim audit is to verify through regular reviews the program's health and effectiveness between verification audits. The third party on-site interim audits provide independent reviews and supports credibility between verification and 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 Renewable Water Resources' (ReWa) 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 program objectives.

RECOMMENDATION

Based on the results of the ReWa first interim audit it is the recommendation of the audit team that ReWa's BMP maintain its "Certification" status.

AUDIT SCOPE

In general terms, the scope of the Third Party interim audit encompasses 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 Wastewater Treatment Plants' operations.

The NSF-International Strategic Registrations, Ltd. (NSF-ISR) conducted a third party interim audit of the Renewable Water Resources Wastewater Treatment Facilities BMP from September 10, 2012 through September 13, 2012. 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 3 – Critical Control Points
- Element 10 – Operational Control of Critical Control Points
- Element 12 – BMP Documentation and Document Control
- Element 13 – Monitoring and Measurement

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

The physical biosolids facilities included in the audit and visited during the evaluation included Mauldin Road Wastewater Treatment Plant (WWTP), Georges Creek WWTP, Grove Creek WWTP, New Piedmont Regional WWTP, Gilder Creek WWTP, Lower Reedy WWTP, and Pelham WWTP. The critical control points of the biosolids value chain at these various plants were: influent pump stations, solids screens, grit collection, primary treatment, secondary treatment, thickening, aerobic digestion, anaerobic digestion, dewatering, biosolids storage, cake transfer, truck biosolids loading facilities, truck cleaning, and land application. The following land application site was observed: Tim Elmore Farm in Spartanburg County – Site SC-SP-17 (10 fields of 110 acres containing fescue and Bermuda grass.

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

Ray Orvin	Executive Director
Charles Logue	Director Technical Services
Barbara Wilson	Director Human Resources
Joey Collins	Solids Manager
Larry Camp	Process Control (internal auditor)
Kyle Lindsay	Process Control Officer (internal auditor)
Randy Boyette	Process Control Manager
Bryan Kohart	Environmental Engineer
Jessica Brown	Customer Service (lead internal auditor)
Jolene Devaney	Administrative Assistant
Stacey Flax	PR/Customer Service/Contract Manager
Mike Montebello	Manager Domestic Wastewater Permit Section – Bureau of Water – SCDHEC
Brenda Green	Staff Engineer – SCDHEC
Shantell Sweeney	Laboratory Technician (internal Auditor)
Joel Jones	Industrial Pretreatment Program Manager
Carlos Diez	Senior Construction Inspector (internal auditor)
Ken Mattison	Industrial Pretreatment Inspector (internal auditor)
Russ Moore	Operations Foreman – Mauldin Road WWTP
Fred Nesbitt	Lead Operator – Mauldin Road WWTP
Teddy Parks	Operator II – Mauldin Road WWTP

Adam Harvey	Operator II – Mauldin Road WWTP
Ryan Heron	CHP Contractor
Grayson Odom	Land Application Coordinator
Gaston Creamer	Operator I – Gilder Creek WWTP
Pete Petoski	Operator II – Gilder Creek WWTP
Joe Ortiz	Operations Foreman – Pelham WWTP
James Galloway	Operator II – Grove Creek WWTP
Tim Camp	Operator I – Grove Creek WWTP
Rick Cheek	Operator II – Georges Creek WWTP
Dana Green	Operator II – Georges Creek WWTP
David Skyles	Operations Foreman – Lower Reedy WWTP
Toby Humphries	Collection Supervisor
Brandon McCameron	Senior Operations Manager - Synagro
Will Hodges	Tech Services Manager – Synagro
Jack Nevins	Field Crew – Synagro

INTERIM AUDIT FINDINGS

As was mentioned above the interim audit covered elements related to the overall health of the wastewater facilities' BMS and progress made towards continuous improvement. Additionally several other specific elements of the standard were audited, such that over the four year period between verification audits all individual elements of the standard will be audited.

The interim audit included review of the latest version of the ReWa BMS manual and element procedures and utilized the most recent version of the NBP Third Party Verification Auditor Guidance dated August 2011.

The interim audit found no major non-conformances, 5 minor non-conformances, 7 opportunities for improvement and 3 positive commendations. The following is a review of the positive observations made during the audit process. Minor non-conformances and opportunities for improvement follow and are listed by requirement number, which correspond to the Element minimum conformance requirement, in the sequence of the NBP standard elements.

Commendations

- System-wide – ReWa has one of the most conscientious and enthusiastic biosolids management system teams in the program. This dedication contributes to the significant accomplishments and continuous improvements of their BMS program.
- Training – With very few exceptions ReWa staff have developed and provided a highly effective and exemplary training program related to its biosolids management system (BMS) program.

- Operating Procedures – ReWa staff have comprehensively developed Standard Operating Procedures for the critical control points in the biosolids value chain.

Minor Nonconformities

- Requirement 5.5 – The standard requires establishment of goals and objectives using SMART criteria (i.e., be Specific, Measurable, Achievable, Relevant, and Time-bound. Not all of the goals and objectives adequately address measurability.
- Requirement 5.7 – The standard requires establishment of action plans with schedules, milestones, resources, and responsibilities for achieving biosolids program goals and objectives. Not all of the goals and objectives action plans have been fully implemented or are adequately tracked to demonstrate progress towards accomplishment.
- Requirement 8.1 – Operators at Grove Creek Wastewater treatment plant did not demonstrate adequate knowledge of how their roles and responsibilities relate to the entire biosolids value chain.
- Requirement 10.1 – No standard operating procedure (SOP) was developed for the collection of digester samples necessary to demonstrate compliance with regulatory requirements, prior to land application of the biosolids.
- Requirement 14.5 – Not all corrective action closures are verified in accordance with Element 14: Nonconformance – Preventive and Corrective Action procedure.

Opportunities for Improvement

- System-wide – There are several elements of the National Biosolids Partnership Biosolids Management System Standard that require specific actions by contractors, consider including the identification of each of the specific contractor element requirements in all future biosolids contract requests for proposals and/or requests for qualifications/quotes.
- Requirement 6.1 – Consider including County Commissioners, Elected Town officials and the press as part of the proactive public participation program identified as the annual “Farmers Dinner.”
- Requirement 8.3 – Element 8: Training identifies the job specific biosolids and EMS training requirements. Records of these training requirements are maintained in an “EMS Training Spreadsheet.” Consider including a narrative description of the purpose and content of this spreadsheet in the element 8 training procedure.

- Requirement 12.2 – the Document Control Procedure for the Emergency Preparedness and Response Plan is contained directly in that plan; however, there is no reference to that fact in Element 12: EMS Documentation and Document Control procedure.
- Requirement 14.6 – EMS Document 14.2: Nonconformance/Noncompliance Action Work Order Tracking Log has a column to track “Solution Due Date”. Review of the document indicated that not all due dates were entered into the tracking log.
- Requirement 15.1 – Consider including more details in the biosolids management program (BMP) performance report.
- Requirement 17.2 – Consider increasing the frequency of management review meetings to be more frequent than annual.

For the minor non-conformances, the ReWa BMS Team prepared Nonconformance/Non-compliance Action Work Orders and will implement corrective actions according to their BMS procedures to provide continual improvements to their biosolids management program. All proposed corrective action worksheets were found to be acceptable and final closure would be confirmed during the next third party external interim or re-verification audit. As a further measure to demonstrate continuous improvement the opportunities for improvement will be addressed to the maximum extent possible.

And finally, the hard work and dedication of the BMS Team must be acknowledged. While retaining the BMS certification status was obviously a team effort, the hard work and dedication of Joey Collins, Larry Camp and Jessica Brown, to maintain this accomplishment must be recognized. The encouragement and active participation of the Executive Director, Ray Orvin has ensured the continuous improvement of this program.

ReWa COMMENTS

ReWa recently completed the first third party interim audit following the verification audit. The Environmental Management System (EMS) continues to be a valuable tool in effective management of the biosolids program. We have seen significant improvement in our document control procedures as well as standardization in the solids management departmental operating procedures. In addition, there has been an increased collaboration between ReWa leadership and departmental staff and management. The ReWa EMS team was happy to see the return of Bill Hancuff, NSF auditor, for our interim audit. Having Dr. Hancuff return one year after our initial verification enabled us to reflect on our successes and identify areas where we can, as always, continue to improve. We are very proud of our progress and are eager to see our EMS program grow.

OUTCOMES MATTER

Renewable Water Resources Biosolids Management Program established several broad long-term goals for 2011. These goals included: identifying pollutants of concern; evaluating the feasibility of converting to Class A biosolids production at Mauldin Road WWTP; reducing hauling costs, educating state legislators about biosolids; improving relations with interested parties; aligning regulatory requirements related to borings with industry standards; and developing a biosolids fact sheet for ReWa's biosolids product and program. Note that the latter three goals were developed as part of the 2012 program. Substantial progress has been made on all these fronts and new goals and objectives for 2013 are scheduled for recommendation in October 2012. The goals and objectives were developed by the Biosolids EMS coordinator and the Biosolids Team considering public interest. The wastewater treatment plant biosolids goals for its EMS was established cognizant of each of the four outcome focal points of the NBP program as identified below:

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

While it is not a requirement to fully attain all objectives established, it is a critical component of the system to make progress towards accomplishing the overall goal. The early goals and objectives were revised to include identification of the Specific, Measurable, Achievable, Relevant, and Time Bound (SMART) criteria; however the measurability of several of the goals were not clearly identified.

It should be noted that the above-mentioned goals might fulfill the needs of different outcome areas. The system's performance relative to each of the four outcome areas is summarized below.

In the Environmental Performance outcome area, the goal is to reduce the transportation costs for biosolids. The approach used is to conduct a field study on the effects of liquid application of biosolids on grass and hay fields at varying percent total suspended solids concentrations. The objective was to determine the maximum concentration of land application without causing any adverse environmental impact. Transportation at the highest solids concentration minimizes fuel costs and energy consumption. The study was scheduled to be conducted at Durbin Creek WWTP and associated land application site field # 1, a Fescue/Bermuda grass mix. Four test plots were planned for the study: Plot #1: controlled area where no biosolids are to be applied; Plot # 2 apply approximately 5% total suspended solids concentration; Plot #3 apply approximately 6% total suspended solids concentration; and Plot #4 apply normal rates of 3.5% - 4%.

Two application were planned during the growing season at the recommended nitrogen application rate for fescue/Bermuda grass of 160 – 200 pounds per acre. The

first application was to be at half the loading rate early in the season and the second application was to be at the same rate after the first cutting of hay in the middle of the growing season. The plot size was to be one or two tanker loads and the parameters monitored were biosolids content (NH₃, NO₃, TKN, and PO₄), soil type, soil samples per and post application at 4-foot level, weather conditions, crop growth, grass density measurements, crop samples, pre and post application, and aesthetics. The preliminary results of this goal demonstrated that solids could be applied to fields up to 5% total suspended solids concentrations with no adverse environmental impacts. This represents a transportation cost savings of 20% to 25%. This project was completed in 2011 and although it was found to be technically feasible, aesthetic concerns with visual appearance of crusting during dry application periods, (and other factors) resulted in not implementing the approach at this time.

In the Regulatory Compliance outcome area, ReWa established two goals, one associated with the goal of identifying pollutants of concern, which had as its primary objective the conduct of a headworks analyses for each of the following plants: Mauldin Road WWTP, Lower Reedy WWTP, Georges Creek WWTP, Piedmont WWTP, and Grove WWTP. The second goal was to approach state regulators with a request to align its soil boring requirements with industry standards relative to land application sites.

The first goal relates to the need to ensure through regulation no micro constituents have had an adverse environmental impact in concentrations typically found in wastewater through headworks analyses.

The objective of the headworks analysis is to provide initial sampling of the WWTPs influent to determine what pollutants are present through sampling priority pollutants and heavy metals (Cd, Cr, Cu, As, Ag, Hg, CN, Pb, Ni, Zn). Additionally the sampling involves testing for any other pollutant reasonably expected to be discharged to WWTPs in quantities, which could pass through or interfere, contaminate solids, or jeopardize treatment plant worker health or safety.

Once the constituents have been determined a whole plant analysis including influent, primary effluent, secondary effluent/plant effluent and biosolids is conducted. The results of the sampling are used to obtain information on individual process removals, overall treatment plant removal, solids concentration, and perform a mass balance. Ultimately this information is used to develop headworks loadings and local limits to be used in the pretreatment program.

Pollutant by pollutant, treatment plant data are used to calculate removal efficiencies, before applying the most stringent criteria such as water quality, solids quality, NPDES permit limits, or pollutant inhibition levels to back calculate the maximum allowable headworks loadings. By subtracting out contributions from domestic sources, the available industrial loading is then either evenly distributed among the industrial users, or allocated on an as needed basis to those industrial users discharging the pollutant above background levels.

ReWa scheduled performance of the headworks analysis and determination of

headworks loading pending the re-issuance of the NPDES permits for each of the above referenced plants. The renewal of most of these permits was completed in 2012 so this goal was only carried forward for Georges Creek WWTP. Leadership change has occurred in the Pretreatment Department and on completion of this goal the headworks analyses will be carried forward as a routine requirement.

The second goal focuses on encouraging the South Carolina Department of Health and Environmental Control (DHEC) to review its regulatory requirement mandating frequent sample borings to a depth of 4 feet in biosolids land application fields in light of the data that indicates changes in the soil at that depth does not vary significantly. Although this has been a goal for two years, only limited progress has been made to date.

In the Relations with Interested Parties outcome area, ReWa established three goals: the first was to educate state legislators regarding the benefits of land application of biosolids to the states agri-business; the second was to improve relations with interested parties and the third was to increase public education and awareness of biosolids. The objective of the first goal was to contact county extension agents to learn about opportunities for effectively engaging the state legislature. Although the first goal has been an objective for two years, no progress has been made because a detailed plan of approach has not been developed.

The initial efforts to improve relations with interested parties morphed from contacting 2 interested parties to brainstorm into increasing public awareness through participation in three public relations events in 2012. This objective was attained through participation in project Rx, attendance at the Spice of Life Trade Show, and participation in Greenville Tech Earth Fest associated with Earth Day 2012. Ant the third goal of increasing public education and awareness related to biosolids was completed through developing a biosolids fact sheet for ReWa's biosolids product and program in 2011. The fact sheet was transformed into a brochure to be mailed to those who participate in the land application program and made available to the general public on request.

Additionally in 2011 ReWa initiated a significant effort in the relations with interested parties outcome area by forming a biosolids marketing feasibility group consisting of an agricultural economics professor from Clemson University, a Clemson Cooperative Extension horticultural agent, a Clemson Cooperative Extension livestock agent, a Gwinnett County Georgia Water Resource Center Superintendent and a professional engineer with Camp Dresser and McKee. The results of this effort resulted in a list of proposed ideas directed at the beneficial use of biosolids. This resulted in the establishment of a new goal in late 2011, namely development of a sustainable biosolids program with an objective of diversifying biosolids end uses and generating biosolids revenue; i.e. the development of a biosolids business plan. There has been no measureable progress on this goal and objective in a year, since September 2011.

In the Quality Biosolids Management Practices outcomes area, established an objective of evaluating the feasibility of converting to Class A biosolids production at Mauldin Road WWTP, including the development of options for meeting this objective. A consultant was retained to perform the required study. A report was prepared in March

2011 concluding that there were regulatory or public relations drivers to pursue Class A biosolids at this time. Subsequent to this conclusion an additional effort was established to seek input from interested parties to identify ideas for alternative approaches to beneficial biosolids use. This effort resulted in identification of numerous ideas for biosolids projects related to quality biosolids management practices, which will be used to formulate future goals and objectives for the biosolids management program.

An additional quality biosolids management practice that was established in 2010 and completed in 2011 was the installation of new magnetic flow meters at all biosolids truck loading stations to ensure accurate measurement of biosolids and that all tankers are loaded to the maximum extent legally permitted. This objective was originally identified as part of the goal to reduce hauling costs established as an environmental performance goal. Seven new meters were installed and this objective was accomplished. Although the primary objective was accomplished the calibration of the new flow meters was identified as an extension of this objective for 2012.

A new goal for 2012 was the development of a crop management plan that supports the application of biosolids to pasture/crops during their defined growing season when their use to nutrients is most efficient and their need for is at its highest. The objective is to help landowners maintain healthy and lush stands of pasture/crop based on the farmers needs while maximizing both the field and nutrient yield potential.

CONCLUSIONS AND RECOMMENDATIONS

The results of the first interim audit are positive. The review and approval of the corrective action plans for each of the minor non-conformances identified during this audit has been completed. The full implementation of the corrective actions for the minor findings will be accomplished according to the schedule proposed in the Nonconformance/Noncompliance Action Work Orders and it is the recommendation of the audit team that ReWa's Biosolids Management Program maintain its "Certification" status.

As was mentioned previously, a BMP is a continual improvement process. The results of this and future audits will provide value added to the program 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 program's improvement.

Discussions between the ReWa Biosolids 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 1 (third party) – Elements 3, 10, 12, 13 (Completed)

Year 2 (third party/internal) – Elements 1, 8, 15, 17

Year 3 (third party) – Elements 5, 6, 9, 14, 16

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

Year 5 (third party) Re-verification

Attachment 1

Documents and Other Objective Evidence Reviewed During the First Interim Audit

Element 1. BMP Manual

- Interviews with Ray Orvin, Executive Director; Joey Collins, Solids Manager; Larry Camp, Process Control; Bryan Kohart, Environmental Engineer; Jessica Brown, Customer Service.
- Element 1: Biosolids Management Documentation, Version EMS004, issued 06/13/12, revised 09/09/11.
- EMS Document 1.1 EMS for Biosolids Element Descriptions.
- Element 2 – Biosolids Management Policy, Version EMS002, dated 06/27/08, revised 09/09/11.
- Element 3: Critical Control Points, Version EMS003, issued 06/27/08, revised 09/09/2011.
- Element 4: Legal and Other Requirements, Version EMS006, issued 06/27/08, revised 09/28/11.
- Element 5: Goals and Objectives for Continual Improvement, Version EMS006, issued 06/27/08, revised 09/28/11.
- Element 6: Public Participation in Planning, Version EMS006, issued 06/27/08, revised 10/12/11.
- Element 7: Roles and Responsibilities, Version EMS006, issued 06/27/08, revised 09/28/11.
- Element 8: Training, Version EMS004, issued 06/27/08, revised 09/28/11.
- Element 9: Community and Public Outreach, Version EMS009, issued 06/27/08, revised 09/29/11.
- Element 10: Operational Control of Critical Control Points, Version EMS005, issued 06/27/08, revised 01/04/12.
- Element 11: Emergency Preparedness and Response, Version EMS003, issued 06/27/08, revised 09/09/11.
- Element 12: EMS Documentation and Document Control, Version EMS004, issued 06/27/08, revised 10/14/11.
- Element 13: Monitoring and Measurement, Version EMS002, issued 06/27/08, revised 09/09/11.
- Element 14: Nonconformance-Preventive and Corrective Action, Version EMS008, issued 06/27/08, revised 10/07/11.
- Element 15: Periodic Biosolids Program Performance Report, Version EMS003, issued 06/27/08, revised 09/09/11.
- Element 16: Internal EMS Audit, Version EMS007, issued 06/27/08, revised 06/21/12.
- Element 17: Periodic Management Review of Performance, Version EMS003, issued 06/27/08, revised 09/09/11.

- Western Carolina Regional Sewer Authority Request of Competitive Sealed Technical Proposals for Biosolids and Wastewater Residuals Management Services, August 2007.
- Biosolids and Wastewater Residuals Management Services Agreement, 5 August 2008.
- First Amendment to Biosolids and Wastewater Residuals Management Services Agreement, 5 August 2011.

Element 2. Biosolids Management Policy

- Interviews with Ray Orvin, Executive Director; Joey Collins, Solids Manager; Larry Camp, Process Control; Bryan Kohart, Environmental Engineer; and Jessica Brown, Customer Service.
- Interview with Barbara Wilson, Director Human Resources regarding training program.
- Element 2: Biosolids Management Policy (referencing Code of Good Practice), Version EMS002, dated 06/27/08, revised 09/09/11.
- Policy available on ReWa Environmental Management System web page (<http://www.rewaonline.org/environmental-management-system.php>)
- Laminated 8 ½ x 11 card containing Biosolids Management Policy and Biosolids Mission Statement and Code of Good Practice – posted at various locations throughout the plant.
- Verified employees and contractors received awareness training through interviews.
- Checked employees' biosolids policy on personal laminated cards.
- Policy displayed throughout wastewater treatment plant on laminated posters.

Element 3. Critical Control Points

- Interviews with BMP team: Joey Collins, Solids Manager; Larry Camp, Process Control; Bryan Kohart, Environmental Engineer; and Jessica Brown, Customer Service.
- Interviews with critical control point personnel: Bryan Kohart, Environmental Engineer; Randy Boyette, Process Control Manager; Kyle Lindsay, Process Control Officer; Joel Jones, Industrial Pretreatment Program Manager; Ken Mattison, Industrial Pretreatment Inspector; Russ Moore, Operations Foreman – Mauldin Road WWTP; Fred Nesbitt, Lead Operator – Mauldin Road WWTP; Teddy Parks, Operator II – Mauldin Road WWTP; Adam Harvey, Operator II – Mauldin Road WWTP; Gaston Creamer, Operator I – Gilder Creek WWTP; Pete Petoski, Operator II – Gilder Creek WWTP; Joe Ortiz, Operations Foreman – Pelham WWTP; James Galloway, Operator II – Grove Creek WWTP; Tim Camp, Operator I – Grove Creek WWTP; Rick Cheek, Operator II – Georges Creek WWTP; Dana Green Operator II – Georges Creek WWTP; David Skyles, Operations Foreman – Lower Reedy WWTP; Toby Humphries, Collection Supervisor; Grayson Odom, Land Application Coordinator; Brandon McCameron,

Senior Operations Manager – Synagro; Will Hodges, Tech Services Manager – Synagro; and Jack Nevins, Field Crew – Synagro.

- Element 3: Critical Control Points, Version EMS003, issued 06/27/08, revised 09/09/2011.
- Table 3.01- Critical Control Points – Overall Critical Control Points – Revision date 09/02/11 (including critical control point operational areas, key processes, operational control, responsibilities, potential operational and environmental impacts.)
- Table 3.03 – Critical Control Points – Durbin Creek WWTP – revised 09/02/11 (including critical control point operational areas, key processes, operational controls, monitoring and measurement, and responsibilities.)
- Table 3.04 – Critical Control Points – Georges Creek WWTP – revised 09/02/11 (including critical control point operational areas, key processes, operational controls, monitoring and measurement, and responsibilities.)
- Table 3.05 – Critical Control Points – Gilder Creek WWTP – revised 09/02/11 (including critical control point operational areas, key processes, operational controls, monitoring and measurement, and responsibilities.)
- Table 3.06 – Critical Control Points – Grove Creek WWTP – revised 09/02/11 (including critical control point operational areas, key processes, operational controls, monitoring and measurement, and responsibilities.)
- Table 3.07 – Critical Control Points – Lower Reedy WWTP – revised 09/02/11 (including critical control point operational areas, key processes, operational controls, monitoring and measurement, and responsibilities.)
- Table 3.09 – Critical Control Points – Mauldin Road WWTP – revised 09/02/11 (including critical control point operational areas, key processes, operational controls, monitoring and measurement, and responsibilities.)
- Table 3.10 – Critical Control Points – Pelham WWTP – revised 09/02/11 (including critical control point operational areas, key processes, operational controls, monitoring and measurement, and responsibilities.)
- Spot-checked operational SOPs with critical control points.
- Field review of biosolids value chain critical control points at various plants.
- Viewed land application site at Tim Elmore Farm in Spartanburg County – Site SC-SP-17 (10 fields of 110 acres containing fescue and Bermuda grass.)

Element 4. Legal and Other Requirements

- Interviews with Joey Collins, Solids Manager; Larry Camp, Process Control; and Jessica Brown, Customer Service.
- Interviews with pretreatment personnel: Joel Jones, Industrial Pretreatment Program Manager and Ken Mattison, Industrial Pretreatment Inspector.
- Interview with state regulators: Mike Montebello, Manager Domestic Wastewater Permit Section – Bureau of Water –SCDHEC and Brenda Green, Staff Engineer – SCDHEC.
- Element 4: Legal and Other Requirements, Version EMS006, issued 06/27/08, revised 09/28/11.
- Synagro land application site books with plans.

Element 5. Goals and Objectives

- Interviews with top management: Ray Orvin, Executive Director.
- Interviews with BMP team: Joey Collins, Solids Manager; Larry Camp, Process Control; Bryan Kohart, Environmental Engineer; and Jessica Brown, Customer Service.
- Element 5: Goals and Objectives for Continual Improvement, Version EMS006, issued 06/27/08, revised 09/28/11.
- EMS Document 5.1: Biosolids Management Program Goals and Objectives Version 2, Issue date 9/6/11, revised 09/23/11. (Form)
- EMS Document 5.2: Action Plan for Goals
- Evaluated 2011 and 2012 Goals and Objectives for use of SMART criteria.
- ReWa EMS Team Meeting Agenda 01/25/12.
- ReWa EMS Biosolids Team Meeting Minutes, 10/24/11.
- Biosolids Marketing Feasibility Group Workshop Report, June 27, 2011.
- EMS for Biosolids – Meeting Notes of the Annual Management Review – Monday April 4th, 2011.

Element 6. Public Participation in Planning

- Interviews with Jessica Brown, Customer Service and Stacey Flax, PR/Customer Service/Contract Manager.
- Interview with state regulators: Mike Montebello, Manager Domestic Wastewater Permit Section – Bureau of Water –SCDHEC and Brenda Green, Staff Engineer – SCDHEC.
- Element 6: Public Participation in Planning, Version EMS006, issued 06/27/08, revised 10/12/11.
- ReWa Biosolids brochure.
- Reviewed ReWa Environmental Management System web page (<http://www.rewaonline.org/environmental-management-system.php>)
- List of interested parties (73)
- Invitation letter to interested parties for opportunity to observe interim audit to be conducted September 10 through 13, 2012, dated August 2, 2012.

Element 7. Roles and Responsibilities

- Not Audited.

Element 8. Training

- Interview with Barbara Wilson, Director Human Resources.
- Interviews with BMP team: Joey Collins, Solids Manager; Larry Camp, Process Control; Bryan Kohart, Environmental Engineer; and Jessica Brown, Customer Service.

- Interviews with contractor staff (Synagro): Brandon McCameron, Senior Operations Manager; Will Hodges, Tech Services Manager; Jack Nevins, Field Crew.
- Element 8: Training, Version EMS004, issued 06/27/08, revised 09/28/11.
- ReWa New Employee Orientation/Training Guideline Part “A” Process.
- EMS Document 8.1: Training Requirements by Job Title.

Element 9. Communications

- Interviews with public relations personnel: Jessica Brown, Customer Service and Stacey Flax, PR/Customer Service/Contract Manager.
- Element 9: Community and Public Outreach, Version EMS009, issued 06/27/08, revised 09/29/11.
- ReWa Biosolids brochure.
- ReWa Environmental Management System web page (<http://www.rewaonline.org/environmental-management-system.php>)
- Viewed Biosolids Performance Reports on website.
- Reviewed Biosolids EMS web page and links.

Element 10. Operational Control of Critical Control Points

- Interviews with BMP team: Joey Collins, Solids Manager; Larry Camp, Process Control; Bryan Kohart, Environmental Engineer; and Jessica Brown, Customer Service.
- Interviews with critical control point personnel: Bryan Kohart, Environmental Engineer; Randy Boyette, Process Control Manager; Kyle Lindsay, Process Control Officer; Joel Jones, Industrial Pretreatment Program Manager; Ken Mattison, Industrial Pretreatment Inspector; Russ Moore, Operations Foreman – Mauldin Road WWTP; Fred Nesbitt, Lead Operator – Mauldin Road WWTP; Teddy Parks, Operator II – Mauldin Road WWTP; Adam Harvey, Operator II – Mauldin Road WWTP; Gaston Creamer, Operator I – Gilder Creek WWTP; Pete Petoski, Operator II – Gilder Creek WWTP; Joe Ortiz, Operations Foreman – Pelham WWTP; James Galloway, Operator II – Grove Creek WWTP; Tim Camp, Operator I – Grove Creek WWTP; Rick Cheek, Operator II – Georges Creek WWTP; Dana Green Operator II – Georges Creek WWTP; David Skyles, Operations Foreman – Lower Reedy WWTP; Toby Humphries, Collection Supervisor; Grayson Odom, Land Application Coordinator.
- Interviews with contractor staff (Synagro): Brandon McCameron, Senior Operations Manager – Synagro; Will Hodges, Tech Services Manager – Synagro; and Jack Nevins, Field Crew – Synagro.
- Western Carolina Regional Sewer Authority Request of Competitive Sealed Technical Proposals for Biosolids and Wastewater Residuals Management Services, August 2007.
- Biosolids and Wastewater Residuals Management Services Agreement, 5 August 2008.

- First Amendment to Biosolids and Wastewater Residuals Management Services Agreement, 5 August 2011.
- Element 10: Operational Control of Critical Control Points, Version EMS005, issued 06/27/08, revised 01/04/12.
- EMS Document 10.1: Operational Control Review/Change form, Version 004, issue date 04/02/09, revised 01/04/12.
- ReWa – Soil Monitoring.
- Grove Creek WWTP – operator search for various standard operating procedures.
- Grove Creek WWTP – Aerobic Digesters 1 & 2 standard operating procedure # SOP001, issued 02/19/09.
- Gilder Creek WWTP – Anaerobic Digestion standard operating procedure Version SOP003, issued 02/10/09, revised 09/27/11.
- Lower Reedy WWTP – Biosolids Thickening standard operating procedure Version SOP003, issued 12/10/08, revised 09/27/11.
- Lower Reedy WWTP – Biosolids Dewatering standard operating procedure Version SOP003, issued 12/10/08, revised 09/27/11.

Element 11. Emergency Preparedness and Response

- ReWa Spill Procedure, Version SOP004, issued 05/01/06, revised 08/10/12.

Element 12. BMP Documentation and Document Control

- Element 12: EMS Documentation and Document Control, Version EMS004, issued 06/27/08, revised 10/14/11.
- Document Control Log (for tracking all BMP procedure document changes.)
- Interviews with: Joey Collins, Solids Manager; Larry Camp, Process Control; and Jessica Brown, Customer Service.

Element 13. Monitoring and Measurement

- Interviews with BMP team: Joey Collins, Solids Manager; Larry Camp, Process Control; Bryan Kohart, Environmental Engineer; and Jessica Brown, Customer Service.
- Interviews with critical control point personnel: Bryan Kohart, Environmental Engineer; Randy Boyette, Process Control Manager; Kyle Lindsay, Process Control Officer; Joel Jones, Industrial Pretreatment Program Manager; Ken Mattison, Industrial Pretreatment Inspector; Russ Moore, Operations Foreman – Mauldin Road WWTP; Fred Nesbitt, Lead Operator – Mauldin Road WWTP; Teddy Parks, Operator II – Mauldin Road WWTP; Adam Harvey, Operator II – Mauldin Road WWTP; Gaston Creamer, Operator I – Gilder Creek WWTP; Pete Petoski, Operator II – Gilder Creek WWTP; Joe Ortiz, Operations Foreman – Pelham WWTP; James Galloway, Operator II – Grove Creek WWTP; Tim Camp, Operator I – Grove Creek WWTP; Rick Cheek, Operator II – Georges Creek WWTP; Dana Green Operator II – Georges Creek WWTP; David Skyles,

Operations Foreman – Lower Reedy WWTP; Toby Humphries, Collection Supervisor; Grayson Odom, Land Application Coordinator.

- Interviews with contractor staff (Synagro): Brandon McCameron, Senior Operations Manager – Synagro; Will Hodges, Tech Services Manager – Synagro; and Jack Nevins, Field Crew – Synagro.
- Element 13: Monitoring and Measurement, Version EMS002, issued 06/27/08, revised 09/09/11.
- ReWa – Soil Monitoring.
- Grove Creek WWTP – Aerobic Digesters 1 & 2 standard operating procedure # SOP001, issued 02/19/09.
- Gilder Creek WWTP – Anaerobic Digestion standard operating procedure Version SOP003, issued 02/10/09, revised 09/27/11.
- Lower Reedy WWTP – Biosolids Thickening standard operating procedure Version SOP003, issued 12/10/08, revised 09/27/11.
- Lower Reedy WWTP – Biosolids Dewatering standard operating procedure Version SOP003, issued 12/10/08, revised 09/27/11.
- Land application record sheet form.
- Sampling results for first quarter 2011: metals, pathogens, vector attraction.
- Annual Report for 2010 – Soil Analysis Reports (multiple fields) – organic P, K, Mg, Ca, Na, pH, Acidity, cation exchange capacity, & percent saturation. Additionally, Hg, metals, semi-volatiles, herbicides, PCBs, pesticides, volatiles, and TCLP.
- ReWa Scorecard – Measures, Reporting Frequency, and Key Tracker – 2011.
- Checked periodic progress reviews on goals and objectives.
- Synagro Monthly Report on land application operations in Greenville and Laurens Counties, January 2012.

Element 14. Nonconformances: Preventive and Corrective Action

- Interview with internal audit team members: Jessica Brown, Customer Service (lead internal auditor); Larry Camp, Process Control; Kyle Lindsay, Process Control Officer; Shantell Sweeney, Laboratory Technician; Carlos Diez, Senior Construction Inspector, and Ken Mattison, Industrial Pretreatment Inspector.
- Element 14: Nonconformance-Preventive and Corrective Action, Version EMS008, issued 06/27/08, revised 10/07/11.
- EMS Document 14.1: Nonconformance/Non-Compliance Action Work Order Form, Version 005, issued 04/01/09, revised 09/23/11.
- Reviewed examples of completed form Document 14.1.
- EMS Document 14.2: Nonconformance/Noncompliance Action Work Order Tracking Log, Version 003, issued 04/01/09, revised 09/23/11.
- Reviewed electronic folder containing open Action Work Orders.
- Reviewed all corrective action work orders and correction status for findings identified in internal audit and external verification audit.

Element 15. Biosolids Management Program Report

- Interviews with: Joey Collins, Solids Manager; Larry Camp, Process Control; and Jessica Brown, Customer Service.
- Element 15: Periodic Biosolids Program Performance Report, Version EMS003, issued 06/27/08, revised 09/09/11.
- Reviewed 2010 Biosolids Performance Report.
- Reviewed 2011 Biosolids Performance Report.
- Reviewed 2012 Biosolids Performance Report.
- Viewed Biosolids Performance Reports on website.

Element 16. Internal BMP Audit

- Interviews with: Joey Collins, Solids Manager; Larry Camp, Process Control; and Jessica Brown, Customer Service.
- Interview with internal audit team members: Jessica Brown, Customer Service (lead internal auditor); Larry Camp, Process Control; Kyle Lindsay, Process Control Officer; Shantell Sweeney, Laboratory Technician; Carlos Diez, Senior Construction Inspector, and Ken Mattison, Industrial Pretreatment Inspector.
- Element 16: Internal EMS Audit, Version EMS007, issued 06/27/08, revised 06/21/12.
- NBP Biosolids Internal Audit Materials list.
- Biosolids EMS Internal Audit Plan, June 2012 (audit dates June 18 – June 25, 2012)
- Executive Summary of 2012 EMS Internal Audit Findings.
- EMS Biosolids Internal Audit Scope, Work Plan and Procedures for first internal audit.
- Internal auditor training PowerPoint slides.
- Reviewed hand written ReWa Biosolids EMS Internal Audit field notes.

Element 17. Management Review

- Interviews with top management: Ray Orvin, Executive Director.
- Interviews with: Joey Collins, Solids Manager; Larry Camp, Process Control; Bryan Kohart, Environmental Engineer; and Jessica Brown, Customer Service.
- Element 17: Periodic Management Review of Performance, Version EMS003, issued 06/27/08, revised 09/09/11.
- EMS for Biosolids – Meeting Notes of the Annual Management Review – Monday April 4th, 2011.
- EMS Schedule of EMS Activities throughout the year.

Attachment 2

National Biosolids Partnership Appeals Process

Biosolids organizations that participate in the National Biosolids Partnership (NBP) Biosolids Management Program (BMP) are required to undergo a BMP verification audit by an independent, third party auditor assigned by the NBP and yearly interim audits. The purpose of the BMP audit is to determine whether or not the organization's BMP conforms with -- that is, meets the minimum requirements of -- the NBP program, as defined in the BMP Elements¹. The spirit of these requirements includes a well-documented program and meaningful opportunities for interested party involvement.

The NBP provides an appeals process for biosolids organizations and interested parties that disagree with the findings of a third party BMP audit. The verification appeals process involves an Appeals Board; representing a balance of biosolids management interested parties, including an environmental advocacy group, and wastewater industry professionals. An appeal must be submitted within 30 days of the audit company's official verification decision or interim audit decision.

To submit an appeal before the Appeals Board, the petitioner must set forth the specific BMP element(s) and requirements that are believed to have not been evaluated and/or implemented consistent with NBP requirements as reflected in the BMP Elements, along with the objective evidence to support that claim. For example, a petitioner may believe that a major nonconformance exists but was not found by the auditor. In this case, the petitioner would need to identify in the petition the specific BMP element believed to be out of conformance and why.

To submit an appeal, petitioners must fill out and submit the standardized appeals petition form that is available on the NBP website at <http://www.biosolids.org>. A formal appeal must be submitted within 30 days of the verification decision or interim audit decision by the audit company.

The Board's Administrative Officer receives all appeals petitions on behalf of the Board and conducts a basic completeness check. Upon completion of this check, the petition is either forwarded to Appeals Board members or back to the petitioner with incomplete areas documented. Petitions should be sent via certified, return receipt requested mail to:

The NBP BMP Appeals Board, Attention: Board Administrative Officer, c/o Water Environment Federation, 601 Wythe Street, Alexandria, VA 22314

The Appeals Board will examine the facts, interview parties involved, deliberate the case, and then make a determination as to whether a major nonconformance does or does not exist. Appeals cases vary in complexity. As a result, the time required for the Board to evaluate a case and make a decision might vary. However, the overall Board target for processing an appeal is approximately four months.

¹ The *EMS Elements* and other program materials are available on the NBP website at <http://www.biosolids.org>.