Biosolids EMS Verification

Audit Report

East Bay Municipal Utility District

Oakland, California

Audit Dates: September 19 to 23, 2011

Audit Conducted By:

DEKRA Certification, Inc. (Chalfont, PA)

Auditors: Mr. Jon Shaver, Biosolids EMS Lead Auditor

Report Written By: Jon Shaver, Biosolids EMS Lead Auditor

Report Date: October 29, 2011

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1.

1. EXECUTIVE SUMMARY

DEKRA Certification Inc. (DEKRA) conducted an independent Verification Audit of the management system being used by East Bay Municipal Utility District (EBMUD) in managing its biosolids program. The audit was performed at EBMUD's request as part of their participation in the National Biosolids Partnership (NBP) Biosolids Management Program. DEKRA conducted the audit in two phases, including a review of Environmental Management System (EMS) documentation and an onsite audit at EBMUD facilities and biosolids use sites.

The purposes of this Reverification Audit were to:

- Verify that the management system being used by EBMUD in managing its biosolids activities meets requirements of the NBP Biosolids Management Program, in particular the 17 EMS Elements (audit criteria).
- Confirm that EBMUD is managing their biosolids program effectively and in a manner that meets NBP expectations, with practices and procedures being performed as documented.
- Examine outcomes that EBMUD is achieving using a systematic approach to managing their biosolids program.

The scope of this audit included EBMUD's complete biosolids program, including activities within EBMUD's biosolids value chain. During the audit, DEKRA reviewed processes and activities used by EBMUD in managing its biosolids program and assessed the conformance of those processes with NBP expectations and requirements of applicable NBP EMS Elements.

Based on the results of this audit, DEKRA Certification, Inc. has independently verified that the management system being used by East Bay Municipal Utility District in managing its biosolids activities is functioning effectively, is consistent with NBP expectations and meets requirements of the NBP EMS Elements. We recommend re-certification of the EBMUD biosolids program within the NBP Biosolids EMS Program.

2. AUDIT DETAILS

2A. Agency Details and Biosolids Program

Agency Detail

Agency Name: East Bay Municipal Utility District, Oakland California (referred to as EBMUD in this report)

Number of Employees = 280

Biosolids Production Sites: Main Wastewater Treatment Plant, Wake Avenue, Oakland CA

Volume of Wastewater Treated = 120 MGD (permitted)

Biosolids Produced = 78,000 wet tons per year (Class B) – approximately 30% to land application, 70% to landfill ADC

EBMUD Biosolids Program

EBMUD's Biosolids Program includes defined processes for Pretreatment, Wastewater Treatment and Solids Generation, Solids Stabilization, Dewatering, Biosolids Storage and Transportation and Biosolids Disposition (2 use options). Contractors are employed for managing biosolids transportation and use options. Biosolids use includes agriculture land application (approximately 30% of total) and landfill alternative daily cover (70% of total).

EBMUD manages their biosolids program using a management system approach based on the NBP EMS Elements.

2B. Audit Purposes and Criteria

Purposes

This audit was a Reverification Audit, as defined in the NBP Biosolids EMS Program. Its purposes were to:

- Verify the EBMUD biosolids management system meets requirements of the NBP EMS Elements.
- Confirm EBMUD is managing its biosolids program in a manner that meets NBP expectations, with practices and procedures performed as documented.
- Examine outcomes EBMUD is achieving by using a systematic approach to managing its biosolids program.

Audit Criteria

Requirements of the NBP EMS Elements (May 2002) and EBMUD's Biosolids Management System (per EMS Manual).

2C. Audit Scope

Scope of Work

The scope of the audit included all parts of the EBMUD biosolids program, which includes pretreatment, wastewater treatment and solids generation, solids stabilization, dewatering, biosolids

transportation, biosolids use / disposition, with special attention to practices and management activities that directly support biosolids-related operations, processes and activities.

The audit included the following topics, consistent with NBP requirements and the Scope of Work agreed by EBMUD and DEKRA.

1. Review of EBMUD's EMS Documentation describing the EBMUD biosolids management system and its use.
2. Review of significant changes affecting the EBMUD Biosolids Management System that have occurred since the previous DEKRA audit.
3. Process Audits (covering requirements of applicable EMS Elements, including review of process effectiveness):
   - Biosolids Goals and Objectives Process (including status of current and past objectives)
   - Biosolids Preparation (including Wastewater Treatment and Solids Generation, Solids Stabilization, Conditioning and Handling)
   - Biosolids Transportation
   - Biosolids Use – Agriculture (at one land application site)
   - Biosolids Use – Alternative Daily Cover (at one landfill site)
   - Communication Program
   - Competency, Training and Awareness
   - Compliance (with legal and other requirements)
   - Control of Contractors
   - Corrective and Preventive Action
   - Critical Control Points and Operational Controls
   - Document Control and Recordkeeping
   - Emergency Preparedness
   - EMS Planning
   - Engineering
   - Internal EMS Audits
   - Maintenance
   - Management involvement (including Policy, Management Review)
   - Pretreatment and Collection
4. Examination of outcomes being achieved in the areas of regulatory compliance, interested party relations, environmental performance and quality practices.
5. Interested party interviews

<u>Biosolids Use / Disposition Sites Audited</u>

Vasco Road Landfill, Livermore California (biosolids used as Alternative Daily Cover)
Robinson Farms – Merced County (biosolids used in land application – agricultural amendment)

<u>Contractors Participating in Audit</u>

SandS Trucking (biosolids transportation)
Terra Renewal (biosolids land application)
Vasco / Republic (alternative daily cover – landfill)

Interested Parties Interviewed

California Association of Sanitation Agencies
USEPA

EBMUD publicly advised all interested parties in advance that this audit would occur and gave them the opportunity to participate in or observe the audit.

2D. Auditing Methodology

DEKRA conducted this audit at EBMUD's Main Wastewater Treatment Plant and at one land application site and one landfill site where EBMUD biosolids are being used.

The audit was conducted by qualified auditors following guidelines stated in the NBP Auditor Guidance (August 2007). Using sampling techniques, auditors observed practices in place, interviewed key persons and reviewed pertinent documents and records to assess the systematic performance of the process being audited and the consistency of biosolids management practices with written procedures. Interested parties were interviewed and transaction tests were performed to verify the effectiveness of the management system. This audit was conducted as a systems audit and is not a verification of compliance with any legal requirements applicable to biosolids practices performed by the agency or its contractors.

2E. Audit Team

EBMUD authorized DEKRA Certification Inc. to conduct an independent Third Party Audit of their biosolids management system Mr. Jon Shaver led the audit on behalf of DEKRA. Mr. Shaver is certified as a Biosolids EMS Lead Auditor and Biosolids Auditor by the NBP. DEKRA asserts that both our firm and auditor each have an independent relationship with EBMUD that meets criteria established by NBP for Third Party Audit Companies and Auditors.

2F. Reference Materials

The following documents were used as references during this audit:

EBMUD EMS Manual (current version)
NBP EMS Elements (May 2002)
NBP Biosolids EMS Third Party Auditor Guidance (August 2007)
NBP Manual of Good Practice

2G. Definitions of Audit Findings and Required Corrective Action

Major Nonconformance – a serious omission from requirements and/or other departure that represents, or could cause, a systemic failure. Major nonconformances must be corrected within 90 days for DEKRA's verification to be issued.

Minor Nonconformance – an isolated departure from requirements that does not represent a systemic failure. Minor nonconformances require timely and effective correction. Verification of effective correction by a certified DEKRA auditor is necessary for DEKRA's Verification to continue.

Opportunity (for improvement) – possible improvement in the EMS based on auditor observations. There is no obligation for action in response to these observations.

2H. Appeals

The NBP provides an appeals process for biosolids organizations and interested parties that disagree with the findings of a third party EMS 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 approval date of this report. Information about the appeals process is available from the National Biosolids Partnership. Contact Mr. Jim Cox (703-684-2438, jcoxl@wef.org).

An appeal process is available to persons concerned about the methods and/or scope of this audit. Further information about this appeal process can be obtained from DEKRA (contact Pierre Salle, pierre.salle@dekra.com or Jon Shaver (jon.shaver@dekra.com) or from NBP (contact Jim Cox, jcox@wef.org).

2I. Additional Information

Further information about this audit can be obtained from EBMUD. Contact Mr. Vince De Lange (e-mail: vdelange@ebmud.com).

3. SUMMARY OF AUDIT RESULTS

3A. Verification Conclusion

Based on results of this audit, DEKRA issues the following Verification Statement concerning the EBMUD's biosolids management system.

The East Bay Municipal Utility District has been independently verified by DEKRA Certification, Inc. as having an effective biosolids environmental management system that supports continual improvement in environmental performance, meeting regulatory compliance obligations, utilizing good management practices and creating meaningful opportunities for public participation and is in conformance with requirements of the National Biosolids Partnership Biosolids EMS Program."

3B. Strengths Observed

During this audit, DEKRA noted the following strengths in the EBMUD biosolids management system.

- EBMUD is the first agency in the nation to receive Process to Significantly Reduce Pathogens (PSRP) equivalence approval from the EPA leading to significantly reduced environmental impacts and cost savings
- The Online O & M System (process descriptions, SOPs) is practical and easy to access
- Emergency Preparedness planning currently underway is thorough and well organized

3C. Examination of Outcomes

The EBMUD biosolids program is improving using a systematic approach to managing their biosolids program. The following improvement outcomes within the past two years were confirmed.

<u>Regulatory Compliance</u>

A capital project underway to improve anaerobic digestion to allow for Class A product. EBMUD continues to improve operation of its anaerobic digesters by upgrading to thermophilic digestion, adding mixing systems and replacing floating covers with fixed covers to reduce potential for odors.

Pretreatment programs such as thermometer take-back events have reduced metal concentrations (e.g. 65% reduction in mercury).

<u>Environmental Performance</u>

Construction of a 4.5 MW biogas turbine to use excess digester gas will result in EBMUD becoming net energy producer

Extended contracts for biosolids use through 2016 confirms continuing beneficial use through land application at non-food crop sites and landfill alternative daily cover.

<u>Quality</u>

Real time monitoring of digester solids residence times provides early warning of parameters approaching regulatory limits.

Addition of new centrifuges has increased average solids concentration from 21% to 25% solids and reducing biosolids volume by 15% leading to $400K/year savings.

Sludge blanket level detectors improve thickening and reduce excessive pumping of water, resulting in reduced energy use.

Routine cleaning of the digester feed line has improved process reliability.

Relations with Interested Parties

PSRP approval demonstrates strong regulatory support

EBMUD continues progress on odor control systems as continued responsiveness to community concerns.

EBMUD benefits from positive media coverage and local support for renewable energy initiatives

3D. Audit Findings – Nonconformances

During this audit, the following nonconformances with respect to requirements of the NBP EMS Elements were identified.

Minor Nonconformance JS/R/11-01 NBP EMS Element #2 requires the Biosolids Policy to be communicated to employees and incorporated into the biosolids program. Some key personnel (maintenance, laboratory) were not aware of the NBP Code of Good Practice or how their responsibilities affect commitments made in the EBMUD Biosolids Policy.

Minor Nonconformance JS/R/11-02 NBP EMS Element #3 requires the organization to identify and document critical control points for biosolids management activities throughout the biosolids value chain. EBMUD definition of critical control points includes control of environmental impacts, regulatory requirements, quality practices and interested party relations. EBMUD's identification of critical control points (process control points) and operational controls for biosolids operations does not readily link to requirements for quality and interested party relations.

Minor Nonconformance JS/R/11-03 Several NBP EMS Elements state requirements for contractors involved in biosolids activities. EBMUD inspections of biosolids use sites does not address some requirements stated in NBP EMS Elements (e.g. ensuring training, operational controls, public communications, emergency plans)

Minor Nonconformance JS/R/11-04 NBP EMS Element #14 requires that formal corrective action plans be established to address findings of internal EMS Audits. Results (findings) from internal audits do not always link to corrective action needed.

Minor Nonconformance JS/R/11-05 NBP EMS Element #16 requires the development of a schedule for internal audits. Planning of internal audits includes timing, but does not include the purpose or scope of the planned audits.

3E. Plans for Correction of Nonconformances

EBMUD will prepare Corrective Action Plans (with cause analysis) for each nonconformance found during this audit and will submit these plans to DEKRA's Lead Auditor for approval. EBMUD will then implement the plans. Verification of effective correction will occur during the next third party audit, which is currently scheduled to occur in September 2012.

3F. Review of Open Nonconformances (from previous audits)

During this audit, DEKRA reviewed corrective action taken in response to nonconformances found during the previous third party audit. That review confirmed that the corrective actions have been effectively implemented and have eliminated each nonconformance, as outlined below. All nonconformances from previous audits have now been closed.

Minor Nonconformance JS/09-02/Element 12 EMS Element 12 requires that biosolids program documents be controlled. Several "draft" SOPs (e.g. pump station startup, digester operation) are in use and some have no approval.

> Corrective Action – EBMUD determined that this nonconformance was caused by incomplete approval of SOPs and lack of removal of obsolete versions. In response, EBMUD reviewed and approved SOPs and issued instructions to remove obsolete versions from use. This nonconformance is now closed.

Minor Nonconformance JS/10-01/Element 16 EMS Element 16 requires the organization's internal audit program to periodically analyze whether it is effectively meeting its biosolids management policy commitments. The EBMUD Biosolids Policy was modified in April 2010, however assessment of conformance with new commitments in the policy (e.g. sustainability) has not yet been done

> Corrective Action – EBMUD determined that this nonconformance was caused by lack of internal audit coverage of Policy commitments. In response, EBMUD conducted an internal audit that addressed and confirmed consistency with Biosolids Policy commitments, including the Code of Good Practice. This nonconformance is now closed.

3G. Opportunities for Improvement

The following opportunities for improvement in the EBMUD biosolids program were noted during the audit.

<u>Management Involvement</u>

- The purpose, goals and direction for the biosolids program could be clearly stated (e.g. mission, policy) so personnel know how they can contribute.
- The effectiveness of key management system processes (e.g. Communications) could be measured to identify improvement opportunities.

<u>Communications</u>

- Communicating key performance indicators (KPI) data internally (e.g. posting, website) could help in getting employees more involved, particularly for improvement suggestions.

Critical Control Points and Operational Controls

- Critical Control Points (i.e. process control points) and required operational controls could be prioritized based on risk assessment (environmental impacts, quality, interested party relations, regulatory compliance, possibly health and safety). Use a simple, repeatable procedure to identify high, medium, low risks and how/where these are best controlled.

Internal Audits

- Internal audits could be performed to assess and improve the effectiveness of key processes such as management of changes.

Corrective and Preventive Action

- The Corrective and Preventive Action (CAPA) process could include a step for verifying the effectiveness of action taken.
- "Lessons Learned" following capital project construction could be evaluated using the CAPA process.

Compliance

- Requirements for odor management and the Resource Recovery (R2) Program could be considered as "other requirements"

Competency, Awareness and Training

- Procedures for establishing and providing training in EMS and biosolids roles and responsibilities could be clearer.

3H. Agreements

EBMUD and DEKRA will develop an Interim Audits Program to cover audits of the EBMUD Biosolids Management System during the four years between Verification and Reverification Audits. These interim audits will be conducted to verify that EBMUD's biosolids management system is functioning effectively and continues to conform to NBP expectations and requirements. Interim Audit #2-1 in 2012 will be a third party audit.

4. AUDIT OBSERVATIONS AND DETAILED RESULTS

The following describes the results of DEKRA's audit of each management system process included in the Scope of Work for this audit and the level of conformance of the process with applicable requirements of the NBP EMS Elements.

4A EMS Documentation Review

EBMUD's Biosolids EMS Manual and supporting documents describe the management system being used in managing their biosolids activities. The manual is organized to correspond to the NBP EMS Elements and is available on the EBMUD website. DEKRA reviewed this documentation (EMS Manual dated 8/23/11) for conformance with NBP requirements and reported results to EBMUD on September 7, 2011. Based on that report, EBMUD made some modifications for clarity prior to the onsite audit.

Audit Results
Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

In addition, the following opportunities for improving this process were noted:

- The purpose, goals and direction for the biosolids program could be clearly stated (e.g. mission, policy) so personnel know how they can contribute.

4B Significant Changes

No significant changes have occurred in the past year affecting the EBMUD biosolids program or the critical control points, but EBMUD has made the following improvements in the past year affecting their biosolids program:

- Added ferric chloride to primary influent to reduce hydrogen sulfide in sludge going to the digesters (odor control).
- Increased power generation capabilities by adding a 4.5 megawatt turbine (energy sustainability).
- Use of activated carbon filters on digester gas going to the turbine to remove siloxane.
- Extended biosolids handling contracts with current contractors through 2016.
- In the process of adding fixed covers to digesters (odor control).

Review of each of the above changes determined that they have been implemented consistent with the EBMUD EMS requirements, including updating critical control points and operational controls, training of personnel and recordkeeping.

4C Biosolids Goals and Objectives Process

Biosolids goals and objectives are set by the management team, with action plans involving relevant personnel. During the past year, seven of eleven objectives were achieved, with two in progress, demonstrating the effectiveness of this process. Objectives were updated for 2011.

Audit Results

Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

4D Biosolids Preparation

Biosolids preparation, including primary and secondary wastewater treatment, solids collection and thickening, anaerobic digestion, centrifuge dewatering and storage is performed and controlled by qualified EBMUD personnel at the plant. Identified critical control points and operational controls are consistent with actual operations. A SCADA system is used to monitor operating characteristics. Desired parameters are determined and communicated by Supervisors.

Audit Results
Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

4E Biosolids Transportation

Biosolids are transported to end use locations by contractors (S&S Trucking and Terra Renewal). Drivers are qualified and aware of controls needed (e.g. tarping), requirements for maintaining vehicles and what to do if a spill occurs. Biosolids information is available on the vehicles.

Audit Results
Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

4F Biosolids Use – Agriculture

EBMUD biosolids (Class B) are transported to permitted agriculture sites in Merced County for use in land application and amendment. Consistency with EPA requirements is verified by laboratory testing. Soil tests are conducted before determining agronomic rates. Solids are spread by a contractor) Terra Renewal) with supervision by contractor personnel. EBMUD inspectors make regular inspections to verify regulatory requirements are met. The contractor uses a biosolids management plan and checklist inspections that include confirming land slope and setbacks.

Audit Results
Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

4G Biosolids Use – Landfill Alternative Daily Cover

EBMUD biosolids are transported by a contractor (S & S Trucking) to landfill sites for use as alternative daily cover. The landfill operator maintains records and has operational controls in place (including operating procedures and emergency plans). Managers make efforts to maintain good relations with nearby public and community groups.

Audit Results
Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

4H Communication Program

A proactive external communication program is in place, including sharing information publicly on a website, issuing an annual performance report and participating in community association meetings, such as the West Oakland Liaison Group. A process is in place for responding to inquiries or complaints from the public. Interested parties interviewed feel that EBMUD's external communication is effective in providing biosolids information.

Audit Results
Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

In addition, the following opportunities for improving this process were noted:

- Communicating KPI data internally (e.g. posting, website) could help in getting employees more involved, particularly for improvement suggestions.

4I Competency, Training and Awareness

A program is in place for developing operator competency, including State Certification and mentoring by experienced operators. Annual performance appraisals are used as a way of continually improving personnel skills. All personnel and contractors receive introductory training in wastewater systems, including policy and EMS overview.

Audit Results
Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

In addition, the following opportunities for improving this process were noted:

- Procedures for establishing and providing training in EMS and biosolids roles and responsibilities could be clearer.

4J Compliance (with legal and other requirements)

EBMUD staff identify and track regulatory and permit requirements and take appropriate action to ensure operations comply with these requirements, including ongoing monitoring by operators and testing by an onsite laboratory. Operating data is further reviewed by the Process Control Group. Discussion with a USEPA representative during this audit indicated no regulatory compliance concerns.

Audit Results
Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

In addition, the following opportunities for improving this process were noted:

- Requirements for odor management and the R2 program could be considered as "other requirements"

4K Control of Contractors

A contract is in place with each contractor involved in transporting and/or using EBMUD biosolids. The contract with SandS Trucking requires that they find options for biosolids use. EBMUD approve the options to be used. EBMUD inspectors visit end user sites (land application and landfill) regularly and issues inspection reports.

Audit Results

Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements, except as noted below.

> Minor Nonconformance JS/R/11-03 Several NBP EMS Elements state requirements for contractors involved in biosolids activities. EBMUD inspections of biosolids use sites does not address some requirements stated in NBP EMS Elements (e.g. ensuring training, operational controls, public communications, emergency plans)

4L Corrective and Preventive Action

The Corrective and Preventive Action (CAPA) process is a key part of EBMUD efforts to continually improve their biosolids program. Triggers include noncompliances, near misses, complaints, audit findings, incidents and accidents and other issues that the Biosolids Management Program (BMP) Coordinator determines.

Audit Results

Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements, except as noted below.

> Minor Nonconformance JS/R/11-04 NBP EMS Element #14 requires that formal corrective action plans be established to address findings of internal EMS Audits. Results (findings) from internal audits do not always link to corrective action needed.

In addition, the following opportunities for improving this process were noted:

- The CAPA process could include a step for verifying the effectiveness of action taken.
- "Lessons Learned" following capital project construction could be evaluated using the Corrective and Preventive Action process.

4M Critical Control Points and Operational Controls

Critical control points affecting biosolids quality, environmental impacts, regulatory compliance and relations with interested parties and methods for controlling operations to achieve desired results in these areas are identified in the EMS Manual. These are reviewed annually and updated as needed.

Audit Results

Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements, except as noted below.

> Minor Nonconformance JS/R/11-02 NBP EMS Element #3 requires the organization to identify and document critical control points for biosolids management activities throughout

the biosolids value chain. EBMUD definition of critical control points includes control of environmental impacts, regulatory requirements, quality practices and interested party relations. EBMUD's identification of critical control points (process control points) and operational controls for biosolids operations does not readily link to requirements for quality and interested party relations.

In addition, the following opportunities for improving this process were noted:

- Critical Control Points (i.e. process control points) and required operational controls could be prioritized based on risk assessment (environmental impacts, quality, interested party relations, regulatory compliance, possibly health and safety). Use a simple, repeatable procedure to identify high, medium, low risks and how/where these are best controlled.

4N Document Control and Recordkeeping

Documents and records requiring control are identified in the EMS Manual. Documents are controlled through review / revision and approval. Records are controlled using an established Records Retention Schedule.

Audit Results
Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

4O Emergency Preparedness

A thorough Emergency Preparedness Program is in place and continually updated based on lessons and reviews. A "Base Operations Team" has been delegated with responsibilities in the event of emergencies. Regular drills and exercises are conducted to test the plan.

Audit Results
Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

4P EMS Planning

EMS Planning is done by a Biosolids Management Program (BMP) Team led by the BMP Coordinator and comprised of Division Managers. The team conducts regular reviews of the system (with updates if needed), authorizes audits and coordinates management reviews.

Audit Results
Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

4Q Engineering

Engineering directs the design and installation of new and modified processes requiring capital budgets. Changes are as planned by the management team and consistent with biosolids goals and master plan. Contractors are qualified, trained and supervised

Audit Results

Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

4R Internal EMS Audits

An internal audit of the management system is conducted by EBMUD personnel. The audits are broken into parts to make them easier to perform and act on, including (2011) Policy, Emergency Preparedness and EMS performance. Findings and recommendations are reported to the BMP Team.

Audit Results

Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements, except as noted below.

> Minor Nonconformance JS/R/11-05 NBP EMS Element #16 requires the development of a schedule for internal audits. Planning of internal audits includes timing, but does not include the purpose or scope of the planned audits.

In addition, the following opportunities for improving this process were noted:

- Internal audits could be performed to assess and improve the effectiveness of key processes such as management of changes.

4S Maintenance

An effective preventive maintenance system (Maximo) is used, resulting in 99.8% equipment availability. Maintenance personnel are qualified and trained. Work orders are used.

Audit Results

Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

4T Management involvement (including Policy, Management Review)

Top management plans and directs wastewater activities based on desire for sustainability. Public input into planning is encouraged. A Steering Committee consisting of the Director and Division Managers conducts management reviews annually to assess performance (including objectives) and to identify and respond to emerging issues. Department Manager Meetings are held to discuss biosolids program performance at the Department level.

Audit Results

Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements, except as noted below.

> Minor Nonconformance JS/R/11-01 NBP EMS Element #2 requires the Biosolids Policy to be communicated to employees and incorporated into the biosolids program. Some key personnel (maintenance, laboratory) were not aware of the NBP Code of Good Practice or how their responsibilities affect commitments made in the EBMUD Biosolids Policy.

In addition, the following opportunities for improving this process were noted:

- The effectiveness of key management system processes (e.g. Communications) could be measured to identify improvement opportunities.

4U Pretreatment and Collection

Critical control points and operational controls are in place to help plan how pretreatment can affect biosolids quality (e.g. metals content). A five-year study is underway to assess heavy metals and toxins with the intent of preventing pollution at source. Dental office amalgam separation, pharmaceutical take back and thermometer take back programs are in place and functioning effectively.

Audit Results
Audit of the process described above found it meets NBP expectations and conforms to applicable requirements of the EMS Elements.

APPENDICES

Appendix 1 List of Participants

The following persons participated in this audit. Other persons provided additional explanations, as necessary.

EBMUD Personnel

Ike Bell	Maintenance Manager
Sue Berg	Senior Chemist
Maura Bonnarens	Senior Civil Engineer
Antoine Chamsi	QA Officer
Vince De Lange	Senior Civil Engineer – Wastewater Planning/EMS Coordinator
David Freitas	Wastewater Treatment Superintendent – Process and Reclamation
Kurt Haunschild	Manager of Wastewater Treatment Division
Chandra Johannesson	Wastewater Control Rep
Jennifer Ku	Assistant Engineer – Wastewater Planning
Dave Fulk	Environmental, Health and Safety Specialist
David Freitas	Wastewater Superintendent
Ed McCormick	Wastewater Engineering Division Manager
Robert Newman	Senior Environmental, Health and Safety Specialist
David Williams	Wastewater Director
Linda Winters	Wastewater Supervisor
Chuck Wittorp	Inspector
Carol Weir	Wastewater Operations Coordinator

Contractor Personnel

Keni Acosta	Field Supervisor (S&S Trucking)
Diana Ratto	Manager (Vasco Republic Landfill)
Joel Santos	Environmental Manager (Terra Renewal)
Roger Sissom	Operations Field Manager (Terra Renewal)

Interested parties

Lauren Fondahl	USEPA
Greg Kester	CASA / Tri-Tac
Matt Krup	City of San Jose (observer)

Appendix 2 Documentation / Objective Evidence Reviewed

Air compliance issues write-up
Biosolids EMS Awareness training 9/11
Biosolids inspection reports (various)
Biosolids Management Program semi-annual update Sept 2011
Biosolids management plan (Terra Renewal)
Biosolids Policy 7/8/2003
BOT Activation Plan 11-12-10
Chain of custody 9/20/11
Contractor training Sept 2011

Critical control points and operational controls table
Dept mgmt team mtg 1/24/11
Driver Fact packet
EBMUD strategic plan July 2010
Emergency plan Base Operations structure
Emergency Preparedness Program
Emergency response plan (Vasco Road landfill) 9/16/11
Goals and objectives 2011-12
Goals and objectives action plans 2011-12
Goals and objectives status report 8/1/11
Goals and objectives tracking 2011-12
Good to Great Initiative 9/12/11
Hazardous waste manifest 7/27/11
Internal audit findings 9/16/11
Internal audit reports (July 5, 26, August 25 2011)
LIMS (various)
Maintenance backlog summary
Maintenance work orders (various)
Management Review Report 8/29/2011
Maximo availability data (various)
Mercury program results March 2008
MSDS (various)
Organization charts (various)
Power generating station renewable energy project SD317
Quarterly self-monitoring report (Vasco Landfill)
Records retention schedule 1990
Sample analysis reports (various)
Site checklist (Terra Renewal)
Site locator trend data
SOPs (various)
Stopwaste.org website
Summary of CAP issues 9/14/11
TOC – RARE startup plan
Training records (various)
Truck loading inspection form
Wastewater Engineering request = tracking

END OF REPORT