



National Biosolids Partnership

Biosolids Management Program Interim Audit Report

**East Bay Municipal Utility District
Oakland, California**

Audit Dates: November 17 to 19, 2015

Audit Conducted By: DEKRA Certification, Inc. (North Wales, PA)

Audit Team: Mr. Jon Shaver, Biosolids EMS Lead Auditor / Biosolids Auditor

Report Written By: Mr. Jon Shaver, Biosolids EMS Lead Auditor

Report Date: Final December 18, 2015

EBMUD Review By: Alicia Chakabarti, EBMUD (December 18, 2015)

Report Approved By: Michelle Hunn, DEKRA Operational Excellence Director

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1. SUMMARY

DEKRA Certification, Inc. (DEKRA) conducted an independent audit of the Biosolids Management Program (BMP) being used by East Bay Municipal Utility District (EBMUD) in Oakland California. The audit was conducted November 17 to 19, 2015 at EBMUD's request as part of its participation in the National Biosolids Partnership (NBP) Biosolids Management Program and NBP Platinum certification requirements. This was the fourth Interim Audit of the EBMUD biosolids program following DEKRA's Verification in September 2011.

Audit Purposes, Scope and Criteria

This interim audit was conducted to:

- Confirm that EBMUD is managing its biosolids program effectively, with practices and procedures being performed as documented.
- Verify, through sampling, that the EBMUD biosolids program continues to meet NBP expectations and requirements.
- Examine outcomes that EBMUD is achieving through the use of a systematic approach for continually improving its biosolids program.

The audit scope covered specific activities within the EBMUD biosolids value chain. Audit criteria were the requirements of the 17 NBP BMP Elements and EBMUD's BMP requirements.

Audit Findings and Conclusions

The EBMUD BMP is functioning effectively, generating positive outcomes and meets NBP expectations and requirements with 2 minor exceptions (minor nonconformances). No nonconformances from previous DEKRA audits remain open.

DEKRA recommends continuing NBP "Platinum" certification of EBMUD's BMP.

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2. AUDIT DETAILS

2A. Local Agency Details

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); 65 MGD annual average daily flow

Biosolids Produced = 74,000 wet tons per year (Class B) – approximately 50% to land application, 50% to landfill Alternative Daily Cover.

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 (two use options). Contractors are employed for managing biosolids transportation and use options. Biosolids use includes agriculture land application and landfill alternative daily cover. EBMUD manages their biosolids program using a management system approach based on the NBP BMP Elements.

2B. DEKRA Audit Team

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

2C. Audit Criteria, Scope and Methodology

Audit Criteria

Requirements stipulated in the NBP BMP Elements (July, 2011) and the documented EBMUD BMP were used as criteria for this audit.

Audit Scope

The scope of this audit covered parts of the EBMUD biosolids program, with special attention to practices and management activities that directly support biosolids-related operations, processes and activities. The audit covered the following topics, consistent with NBP requirements for interim audits, the interim audits program previously agreed to by DEKRA and EBMUD and the Scope of Work for this audit agreed by EBMUD and DEKRA.

1. Biosolids Management System Dynamics Review, including:
 - Review of any significant changes affecting the biosolids program

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- Consistency with Biosolids Policy commitments
 - Communications (internal and external)
 - Review of Effectiveness:
 - Corrective and Preventive Action Process
 - Goals and Objectives Process
 - Management Review Process
 - Review of Internal Audits (and related Corrective Action)
2. Process Audits:
- Biosolids use option – landfill alternative daily cover
 - Biosolids use option – agriculture (+ related contractor control)
 - Management Involvement and Direction (including roles / responsibilities, management review)
 - Document control
 - Recordkeeping
 - Process design / engineering
 - Pretreatment & collection (interceptors)
 - Truck Waste Program
3. Examination of outcomes (regulatory compliance, interested party relations, environmental performance, quality practices)
4. Interested party interviews

Biosolids Use / Disposition Sites Audited

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

Contractors Participating in Audit

S&S Trucking - biosolids transportation
Terra Renewal - biosolids land application
Vasco / Republic - alternative daily cover – landfill

Interested Parties Interviewed

California Association of Sanitation Agencies
USEPA

2D. Audit Methodology

The audit was conducted by interviewing key personnel with biosolids responsibilities, observing practices in place and reviewing pertinent documents and records. Interested parties were interviewed and transaction tests were performed to verify management system effectiveness. It was performed in

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a manner that is consistent with the NBP Auditor Guidance. Standard audit sampling techniques were used. This audit was conducted as a systems audit and is not a verification of compliance with any legal requirements applicable to practices performed by the agency or its contractors.

2E. 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, or the existence of multiple related minor nonconformances, or failure to effectively correct a nonconformance in a timely manner. For verification to proceed, correction of major nonconformances must be verified by a third party audit within 90 days.

Minor Nonconformance – an isolated departure from requirements that does not represent a systemic failure. Minor nonconformances require timely and effective correction by the agency and verification by a Third Party Auditor during the next third party audit.

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

2F. Reference Materials

The following documents were used as references during this audit:

- EBMUD BMP Manual (current version)
- NBP “BMP Elements” (July 2011)
- NBP Third Party Auditor Guidance (August 2011)
- NBP Code of Good Practice
- NBP Manual of Good Practice

2G. 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 official DEKRA Verification or interim audit decision. Information about the appeals process is available from NBP by contacting Ms. Lisa McFadden at lmcfadden@wef.org.

2H. Additional Information

Further information about this audit and/or the East Bay Municipal Utility District BMP can be obtained from East Bay Municipal Utility District by contacting Ms. Alicia Chakabarti BMP Coordinator (at achakabarti@ebmud.com).

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3. SUMMARY OF AUDIT RESULTS

3A. Verification Conclusion

Based on the results of this audit, DEKRA has verified that the EBMUD biosolids management program is functioning effectively, generating positive outcomes and meets NBP expectations and requirements with two minor exceptions (minor nonconformances). DEKRA Verification continues. DEKRA recommends continuing NBP “Platinum” certification

3B. Nonconformances

The following nonconformances were found during this audit.

Minor Nonconformance JS/15-01/5 NBP BMP Element 5 requires the organization to establish measurable biosolids program objectives for continually improving BMP performance.

Six BMP objectives for 2015/16 include measurable improvements, however 12 objectives do not include measureable targets that demonstrate improvement (wording such as “maximize utilization”, “develop technology evaluations”, “evaluate feasibility”, “develop strategy” do not indicate what the improvement is).

Minor Nonconformance JS/15-02/12 NBP BMP Element 12 requires the organization to establish and maintain document control practices.

The EBMUD BMP Manual states that control will be “in accordance with the responsible divisions’ requirements”, however those requirements are not available or otherwise referenced. In addition, Standard Operating Procedures imply that annual review is required, however there was no evidence that three SOPs checked had been reviewed within the past 12 months.

3C. Summary – Process Audits

DEKRA audited the following processes within the EBMUD BMP and determined the level of conformance with NBP expectations and requirements of the audit criteria as noted. More details are available upon request.

Process	Conformance with Applicable BMP Elements
BMP Dynamics	Conforms, except as noted in Minor Nonconformance 15-01
Biosolids Use – Agriculture soil amendment (+ related control of contractors)	Conforms
Biosolids Use – Landfill ADC (+ related control of contractors)	Conforms
Document control	Conforms, except as noted in Minor Nonconformance 15-02
Management Involvement and Direction	Conforms

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Process	Conformance with Applicable BMP Elements
Pretreatment & Collection (interceptors)	Conforms
Process design / engineering	Conforms
Recordkeeping	Conforms
Trucked Waste Program	Conforms

3D. Opportunities for Improvement

The following “Opportunities” for improving the EBMUD biosolids program were noted during the audit. EBMUD has no obligation to take any action in response to these Opportunities.

- The Strategic Plan update underway provides an opportunity to include or reference the EBMUD BMP to make it part of ongoing systemic management to achieve desired results.
- The headline in the 2014 Biosolids Program Performance Report stating “EBMUD Retains Platinum Certification” could be supported in the description following the headline.
- Internal audit reports could more clearly state the purpose(s) of the audit and conclusions that relate directly to the purpose(s).
- Consider simplifying the list of documents requiring control to include only those documents that directly affect the biosolids program.
- Different methods / forms are used for investigating and correcting systemic problems (e.g. deficiency report, incident investigation, complaints, audit findings). Using a single, unified method to plan and address corrective actions and record these actions could help provide more information for analyzing trends and eliminating repeating causes
- Consider external site inspections as audits of contractor consistency with EBMUD BMP requirements. Those requirements would need to be added to the inspection.
- Emergency preparedness at sites where EBMUD biosolids are used could include security, business continuity plans.
- Consider meeting with contractors at least annually to review respective performance and seek improvement opportunities

3E. Agreements

EBMUD will prepare corrective action plans for each nonconformance and submit these to DEKRA’s Lead Auditor for approval.

The next audit of the EBMUD BMP will be a Reverification Audits to be conducted as a third party audit in October or November 2016.

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4. MANAGEMENT PROGRAM DYNAMICS

Review of the management system dynamics and outcomes is intended to verify that the biosolids management system is functioning effectively and generating positive outcomes (results) and that changes are being incorporated into the system. The following summarizes DEKRA's review of the dynamics of EBMUD's BMP.

4A Significant Changes

Ms. Alicia Chakrabarti has been assigned the role of BMP Coordinator. The Digester Phase 2 project has been implemented, including addition of fixed covers, internal mixing and a new feed system. No other significant changes have occurred since the previous DEKRA audit in 2013.

4B Revisions to the Management System and Related Documentation

The BMP Manual was reviewed in 2014 and minor changes were made (effective 10/22/14). No significant changes have been made in the past two years.

4C Examination of Outcomes

The EBMUD BMP is improving through the use of a systematic approach to managing their biosolids activities. The following improvement outcomes within the past two years were confirmed.

Relations with Interested Parties

- A structured outreach program has been developed, including a new public tours program

Quality Practices

- Use of formal corrective action process increasing + better understanding of how / when to use.
- Individual digester flow meters improve process control.
- Improved understanding and control of struvite impact on centrifuge operation.
- Addition of blend tanks for food & truck waste resulted in more stable process + more consistent quality.

Regulatory Compliance

- Noncompliant gas releases have been eliminated (reduced from 2 in 2014) and a flare expansion project will provide adequate capacity to prevent future releases.

Environmental Performance

- The plant is now approximately 130% energy self-sufficient, compared to 120% in 2014.
- Long-term commitment established for receiving food waste for producing compressed natural gas. An innovative project.

4D Correction of Nonconformances from Previous Third Party Audits

No nonconformances from previous DEKRA audits of the EBMUD BMP remained open.

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4E Effectiveness Reviews

Communications Program

The EBMUD Communications Program includes proactive methods for communicating with interested parties, including the public and regulators. Communications occurs through public meetings (e.g. West Oakland Liaison Group), brochures and the EBMUD website. Internal communications occurs through regular staff meetings and contractor meetings.

Biosolids Goals and Objectives Process

15 of 18 objectives set for 2014/15 were accomplished. Progress in achieving goals and objectives set for 2015/16 is being monitored. The Goals and Objectives process is working effectively. See nonconformance 15-01.

Corrective and Preventive Action Process

The Corrective and Preventive Action process was used to address nonconformances from previous Third Party Audits and internal audits. The process was effective in recording, planning and correcting those nonconformances.

Management Review

Management involvement has been demonstrated through actions taken regarding issues raised in management reviews and programs for measurement and improvement. The actions taken are consistent with defined objectives. The review process includes discussion of BMP performance and any need for changes at bi-monthly BMP Team meetings and quarterly Steering Committee meetings. Reports of biosolids program performance are discussed with senior management monthly. Follow-up actions are recorded.

Internal Audits

A three-year plan for conducting internal audits of the BMP is in place. Audits planned for 2013, 2014 and 2015 were completed and the results reported to management. The internal audit process is functioning effectively.

4F Interested Party Interviews

During this audit, DEKRA interviewed the USEPA biosolids regulator and a representative of CASA. Biosolids users at Superior / Vasco Landfill and Waste Management Inc. Altamont Landfill were interviewed. All parties interviewed noted that EBMUD's communication with them is open and proactive and requests are handled effectively.

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5. APPENDICES

List of Participants

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

East Bay Municipal Utility District Personnel

Maura Bonnarens	Senior Civil Engineer
Alicia Chakabarti	Supervisor Wastewater Planning / BMP Coordinator
Vince De Lange	Manager – Wastewater Engineering
Kurt Haunschild	Manager of Wastewater Treatment Division
Jennifer Ku	Assistant Engineer
John Kyser	Supervisor – Wastewater Project and Construction Management
Colin Moy	Senior Environmental, Health and Safety Specialist
Rebecca Overacre	Associate Civil Engineer
Christine Pagtakhan	Wastewater Control Inspector
Carol Wen	Wastewater Operations Coordinator
Chuck Wittorp	Wastewater Control Inspector
Karl Yakich	Associate Civil Engineer

Contractors and Interested Parties Participating

Sarah Deslauriers	Program Manager California Wastewater Climate Change Group, CASA
Sarah Fockler	Environmental Protection Specialist WMI Altamont Landfill
Lauren Fondahl	USEPA
Harvey Getty	Operations Supervisor Superior / Vasco Landfill
Chris Marks	Terra Renewal
Diana Ratto	Operations Manager, Superior / Vasco Landfill

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List of Documents and Records Reviewed

Biosolids Management Goals and Objectives 2014 / 2015, 2015/2016
Biosolids Management Policy 6/26/12
Biosolids Program Performance Report 2014 (March 2015)
BMP Manual 10/22/14
Contractor deficiency notice
Contractor Notice to Proceed 3/7/15
Driver Fact Packet (Denali)
EHS&S compliance checklist
Emergency Response Plan (Vasco landfill 4/17/15)
Hazcom RTK training (Vasco Landfill)
Internal audit reports 10/20/15, 9/22/15, 9/14/15
Internal audit schedule
Joint Technical Document (Altamont Landfill)
Objectives development background & key considerations
Public outreach documents – (various)
Review of incidents & near-misses memo 11/14/15
Site inspection reports (various)
Steering Committee meeting 11/13/15
Strategic Plan July 2014
Sustainability Policy 9/22/15
Tracking goals / objectives action plan 11/4/15
Truck loading inspection report
Wastewater Control Ordinance 8/22/13
Wastewater Engineering Request
Wastewater Unloading procedure
Webdocs searchable database

END OF REPORT