



**National Biosolids Partnership**

**Biosolids Management Program Interim Audit Report**

**Littleton Englewood Wastewater Treatment Plant  
Englewood, Colorado**

Audit Dates: October 20 to 21, 2016

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

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

Report Date: November 9, 2016

Reviewed By: Jim Tallent, Littleton Englewood Wastewater Treatment Plant (11-09-16)

Approved By: Michelle Hunn, DEKRA (11-11-16)

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## 1. EXECUTIVE SUMMARY

DEKRA Certification, Inc. (DEKRA) conducted an independent audit of the biosolids management program (BMP) being used by the Littleton Englewood Wastewater Treatment Plant (LEWWTP). The audit was conducted onsite October 20 to 21, 2016 at LEWWTP's request and was Interim Audit #4 following DEKRA's Verification of LEWWTP's BMP in October 2012.

### Audit Purposes, Scope, Criteria

This interim audit was conducted to:

- Verify that the management system being used by LEWWTP in managing its biosolids activities meets National Biosolids Partnership (NBP) expectations and requirements of the NBP BMP Elements. (audit criteria)
- Confirm that LEWWTP is managing its biosolids program effectively, with practices in place consistent with the LEWWTP Biosolids Program.
- Examine outcomes that LEWWTP is achieving through the use of a systematic approach in managing its biosolids program.
- Review the effectiveness of corrective action taken in response to nonconformances from the previous third party audit in October 2015.

The audit scope covered parts of the LEWWTP biosolids value chain, consistent with NBP requirements and the Scope of Work agreed by Littleton Englewood and DEKRA. Audit criteria were the requirements of the 17 NBP BMP Elements and the LEWWTP BMP as documented.

### Summary of Audit Results and Conclusions

One minor nonconformance from DEKRA's audit in 2015 remains open. All other open nonconformances from previous DEKRA audits have been effectively corrected and are now closed.

No major nonconformances and 2 minor nonconformances were found during this audit. The nonconformances are unconnected and do not represent a systemic problem. LEWWTP has prepared corrective action plans for each nonconformance that have been approved by DEKRA's Lead Auditor. The effectiveness of completed corrective actions will be reviewed during DEKRA's next audit.

Based on the results of this audit, DEKRA has verified that LEWWTP's biosolids management program is functioning effectively and meets NBP expectations and requirements of the NBP BMP Elements, with minor exceptions. LEWWTP has demonstrated that the use of a management system approach is generating positive outcomes in the areas of regulatory compliance, environmental performance, quality practices and relations with interested parties.

DEKRA recommends continuing "Platinum" certification of LEWWTP's biosolids program within the NBP Biosolids Management Program.

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## **2. AUDIT DETAILS**

The following presents details for the audit described in this report.

### **2A Agency**

Name: Littleton Englewood Wastewater Treatment Plant (referred to as LEWWTP in this report)

Number of Employees = 79

Biosolids Production Sites: Littleton Englewood Wastewater Treatment Plant, Englewood Colorado

Volume of Wastewater Treated = 22 MGD annual average (capacity 50 MGD)

Biosolids Produced = approximately 3,100 dry metric tons per year (Class B – 100% agriculture land application)

### **2B Audit Team**

DEKRA conducted this audit at the request of the Littleton Englewood Wastewater Treatment Plant. Mr. Jon Shaver led the audit on behalf of DEKRA. Mr. Shaver is certified as a Biosolids EMS Lead Auditor and Biosolids Auditor by NBP. DEKRA and our auditor have an independent relationship with LEWWTP that meets NBP criteria for Third Party Audit Companies and Auditors.

### **2C Audit Criteria, Scope and Methodology**

The scope of this audit covered parts of the Littleton Englewood Biosolids Management 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 and Scope of Work agreed by DEKRA and LEWWTP.

1. Management System Dynamics (+Effectiveness Review)
  - Review of changes affecting the biosolids management program
  - Biosolids Policy commitments
  - Review of Effectiveness:
    - Corrective & Preventive Action Process
    - Goals & Objectives Process
    - Management Review Process
  - Review of Internal Audits (& related Corrective Action)
2. Process Audits:
  - BMP Documentation (BMP Manual or equiv)
  - Wastewater treatment & solids generation
  - Biosolids stabilization, conditioning, handling
  - Compliance (with legal & other requirements)
  - Critical control points & operational controls
3. Verification of effective correction of open nonconformances from previous Third Party audits (Interim Audit, October 2015)
4. Examination of Outcomes

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Requirements stipulated in the NBP BMP Elements (July 2011) and the LEWWTP "Biosolids Management Program" were used as criteria for this audit.

The audit was performed in a manner that is consistent with the NBP Auditor Guidance, with standard audit sampling techniques used. It was conducted by interviewing key LEWWTP 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. This audit was conducted as a management a system audit and does not represent or make conclusions regarding regulatory compliance.

## **2D Interested Party Interviews**

During this audit, DEKRA interviewed representatives from the City of Englewood and the City of Littleton. Both were complementary about LEWWTP's communication and community outreach.

## **2E Reference Materials**

The following documents were used as references during this audit:

- LEWWTP 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

## **2F Definitions of Audit Findings & 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 EMS based on auditor observations. There is no obligation for action in response to these observations.

## **2G Additional Information**

Further information about this audit and/or the National Biosolids Partnership Biosolids Management Program can be obtained from the Littleton Englewood Wastewater Treatment Plant. Contact Mr. Jim Tallent (telephone: 303 762-2610, e-mail: jtallent@englewoodgov.org).

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### **3. BIOSOLIDS MANAGEMENT PROGRAM DYNAMICS**

Review of the biosolids management program dynamics and outcomes is conducted to verify that the biosolids management program is functioning effectively and generating positive outcomes and that changes are being incorporated consistent with requirements. The following summarizes DEKRA's review of the dynamics of LEWWTP's BMP.

#### **3A Significant Changes**

No significant changes affecting the LEWWTP BMP have occurred since the previous DEKRA Audit.

#### **3B Revisions to the Management System and Related Documentation**

Minor changes were made in the LEWWTP BMP Manual. These changes did not significantly affect the BMP.

#### **3C Effectiveness Reviews**

##### Biosolids Policy Commitments

The LEWWTP Biosolids Policy remains as approved in September 2012. The Policy includes a commitment to follow the principles of the NBP Code of Good Practice. Review of performance in meeting commitments made in that Policy demonstrated that it has been incorporated into the BMP.

##### Communications Program

The Littleton Englewood Communications Program includes proactive methods for communicating with interested parties through public meetings, tours and through their website. No complaints have been received in over 2 years. Internal communications occurs through regular staff meetings. Interested parties were positive about communication channels with LEWWTP.

##### Biosolids Goals and Objectives Process

9 of 11 objectives set for 2015 were achieved. Progress is being made in achieving the other 2 objectives. Objectives have been updated for 2016. The Goals and Objectives process is working effectively.

##### Internal Audit Process

Internal audits are conducted annually by LEWWTP personnel to verify the effectiveness of the BMP. The most recent internal audit was completed 10/13/16. Findings are corrected using the BMP Corrective Action Process. The Internal Audit process is working effectively.

##### Corrective Action Process

The Corrective and Preventive Action process is used to address findings from third party audits, internal audits and emergency incidents. The Corrective Action process is functioning effectively.

##### Management Review

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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. Follow-up actions are recorded. The Management Review process is functioning effectively.

### **3D Examination of Outcomes**

The LEWWTP Biosolids Management Program 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.

#### Environmental Performance

- Reduce diesel fuel requirements for biosolids transportation and disposal by 8% (*2 year objective from 2012 to 2014 - extended to 2015*) – *Objective met: 8.8% reduction*
- Reduce electric energy requirements for wastewater treatment by 2% (*2 year objective from 2012 to 2014 – extended to 2015*) – *Objective met: 12.3% reduction*

#### Quality Practices

- Maintain 100% distribution of biosolids to beneficial use programs – Objective met
- Approve continued annual biosolids research project with Colorado State University for CY2016

#### Regulatory Compliance

- Monthly compliance with all existing federal, state and local biosolids regulations, and demonstrate performance at least 10% below permit requirements - Objective met

#### Relations with Interested Parties

- Participate in at least one presentation or activity regarding biosolids and EMS programs: Objective met
- Send follow-up tour surveys to all scheduled tours of the L/E WWTP (100%) with 30% return rate - 100% (92% response): Objective met
- Meet at least 2 times with NBP facility being mentored in preparation for their certification process: Objective met.

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#### **4. AUDIT RESULTS**

##### **4A Audit Findings – Nonconformances**

One nonconformance from DEKRA's audit in 2015 remains open. Two additional minor nonconformances were found during this audit. LEWWTP has prepared Corrective Action Plans for each nonconformance and DEKRA's Lead Auditor has approved those plans.

##### **Nonconformances Remaining Open**

Minor Nonconformance JS/15-02/10 NBP Element 10 requires the organization to identify operational controls at critical control points, incorporating legal and other requirements and to include appropriate preventive maintenance procedures and work management systems for maintaining equipment.

The critical control point table in the BMP Manual does not discuss regulations and does not state how maintenance is used as an operational control.

##### **Nonconformances Found This Audit**

Minor Nonconformance JS/16-01/1 NBP BMP Element 1 requires a BMP Manual or equivalent set of program documents that describe applicable BMP policies, programs, plans, procedures and management practices and contain biosolids management procedures required by the BMP Elements. The BMP Manual being used by LEWWTP does not fully meet NBP requirements:

- The purposes / desired outcomes for the BMP are not clearly stated
- The methods for identifying and applying other requirements are not stated
- Monitoring / measurement procedures used to demonstrate compliance are not complete
- The need for controlling documents and records is not stated
- There is no reference or link to the format used in recording and correcting Corrective Actions

Minor Nonconformance JS/16-02/17 NBP BMP Element 17 requires that management reviews address the possible need for changes, particularly for policies, plans, procedures, practices, or other BMP Elements.

There is no summary evaluation of BMP suitability, adequacy and effectiveness and no documented "output" from management reviews conducted in March, August & June 2016.

##### **4B Closed Third Party Audit Nonconformances**

Reviews of the effectiveness of completed corrective actions taken in response to nonconformances from the DEKRA's previous audits of the Littleton Englewood BMP are summarized below.

Minor Nonconformance JS / 14-01/ 10 The NBP BMP requires the organization to develop and implement operational controls that include appropriate preventive maintenance procedures and work management systems for maintaining equipment. LEWWTP is responsible for maintaining the electrical sub-stations at the plant, however no maintenance program is in place for those sub-stations.

Corrective Action - LEWWTP determined that this nonconformance was caused by preventive maintenance scheduling failure. In response, LEWWTP added preventive maintenance schedule for electrical sub-stations at the plant and arranged for contractor to perform the PM. Review by



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DEKRA's Lead Auditor determined that this corrective action has been effectively implemented. This nonconformance is now closed.

Minor Nonconformance JS/15-01/10 NBP Element 10 requires the organization to follow best management practices, including the control of livestock on land where biosolids has been applied. The NBP Manual of Good Practice and EPA regulations prohibit grazing of animals for at least 30 days following biosolids application.

Cattle were observed grazing without restraint near land where biosolids application was to occur. While the farmer was asked to move the cattle, it required a few days to complete this. There was no follow-up to ensure the livestock were removed so that biosolids could be applied.

Corrective Action - LEWWTP determined that this nonconformance was caused by fence failure and incomplete procedure. In response, LEWWTP developed procedure for operators to cease biosolids application and report if cattle are not adequately separated from the application area. Review by DEKRA's Lead Auditor determined that this corrective action has been effectively implemented. This nonconformance is now closed.

Minor Nonconformance JS/15-03/12 NBP Element 12 requires the organization to establish and maintain document control procedures and practices and to establish and control records of biosolids management activities.

The BMP Procedure for "Documentation and Recordkeeping" (procedure 12.0, March 2012) does not clearly distinguish between documents and records, often misusing the terms.

Corrective Action - LEWWTP determined that this nonconformance was caused by misunderstanding of requirements. In response, LEWWTP reviewed and revised BMP requirements for control of documents and records. Review by DEKRA's Lead Auditor determined that this corrective action has been effectively implemented. This nonconformance is now closed.

Minor Nonconformance JS/15-04/17 The NBP BMP requires the organization's management to review BMP and its performance at appropriate intervals. Management reviews were recorded for the periods 2012-2013 and 2013-2014 and then monthly in August and September 2015.

There is no record for management reviews conducted in the intervening period

Corrective Action - LEWWTP determined that this nonconformance was caused by failure to follow stated quarterly schedule. In response, LEWWTP scheduled and conducted quarterly management reviews in 2016, including Biosolids Advisory Team members. Review by DEKRA's Lead Auditor determined that this corrective action has been effectively implemented. This nonconformance is now closed.

#### **4C Corrective Action Review**

DEKRA will verify the effectiveness of corrective action completed for each nonconformance during the next Third Party Audit.

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**4D Summary of Conformance and Effectiveness**

As part of this audit DEKRA audited the following processes that Littleton Englewood uses within its biosolids management program and determined the level of conformance of each process with NBP expectations and requirements of the audit criteria.

Process	Applicable BMP Elements *	Status
<b>Process Effectiveness</b>		
Communications (internal & external)	6,9,15	Process functioning effectively
Goals & Objectives Process	5	Process functioning effectively
Corrective & Preventive Action Process	14	Process functioning effectively, except previous Nonconformance 15-01 is taking extra time to close
Internal Audit Process	16	Process functioning effectively
Management Review Process	17	Process functioning effectively, except as noted in Nonconformance 16-02
<b>Assessment of Process Conformance</b>		
BMP Documentation (BMP Manual or equiv)	1	Conforms, except as noted in Nonconformance 16-01
Wastewater treatment & solids generation	3,10,13	Conforms
Biosolids stabilization, conditioning, handling	3,10,13	Conforms
Compliance (with legal & other requirements)	4,10,14	Conforms
Critical control points & operational controls	3,10	Conforms

\* Elements shown are typical. Other requirements may apply and, if so, were included in the audit scope.

**4E Opportunities for Improvement**

During this audit DEKRA noted the following opportunities for improving the LEWWTP biosolids management program. These opportunities are suggestions only and do not represent nonconformities. LEWWTP has no obligation to take any action in response to these opportunities.

- The purposes / intended outcomes of the BMP could be more directly stated when introducing the BMP (e.g. in Manual)

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- The BMP could be established more as a system comprised on inter-related processes rather than a series of discrete elements.
- Progress made on “Recommendations for Improvement” made in management reviews could be stated in each subsequent review.
- Internal audit reports could more clearly state conclusions that relate directly to the purposes of the audit
- Findings from internal audits could more concisely state the requirement not being met, a statement of the problem and evidence supporting the assessment.
- Consider adding safety management to the scope of the Biosolids Management System.

#### **4F 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 verification decision or interim audit decision by the Audit Company. Information about the appeals process is available from the NBP. Contact Ms. Lisa McFadden at [lmcfadden@wef.org](mailto:lmcfadden@wef.org)).

#### **4G Agreement for Future Audits**

The next third party audit of the LEWWTP BMP will be a Reverification Audit and will take place in October 2017. DEKRA and LEWWTP will agree on details for this audit.

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## APPENDICES

### List of Participants

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

#### Littleton Englewood Wastewater Treatment Plant Personnel

Jon Bridges	Industrial Pretreatment Administrator
Dan Delaughter	Environmental Compliance Manager (incoming)
Mary Gardner	Environmental Compliance Manager (outgoing)
Duglas Graham	Beneficial Use Supervisor
Karen Olson	Industrial Pretreatment Specialist
John Saturley	Safety Coordinator
Rebecca Rose	Operator / Internal Auditor
Dennis Stowe	Plant Manager
Jim Tallent	Treatment Division Manager

#### Interested Parties Participating

Eric Keck	Englewood City Manager
Mark Relph	Littleton Acting City Manager

### List of Documents & Records Reviewed

Biosolids Advisory Team mtg minutes (3/31/16, 6/15/16, 8/29/16)	EAM Record review electrical substations
Biosolids Management Policy September 9/17/12	Internal audit report 10/13/16
BMP Manual 10/7/15	Objectives, 2016, 2015
BMP Performance Reports 2015, 2014	PM record primary switchgear
CAPA records (various)	Regulatory compliance report 2015
Colorado discharge permit 10/29/12	Spill Prevention & Response Plan Sept 2012
Colorado State Inspection 10/17/16	Standard Procedures (various)
Critical control point table 3.1	

**END OF REPORT**