Littleton/Englewood Wastewater Treatment Plant (LEWWTP)

Biosolids Management Program (BMP) Performance Report - 2016

Through commitment to the National Biosolids Partnership (NBP) Code of Good Practice, the LEWWTP BMP continually improves through the use of an Environmental Management System approach. Utilizing four key outcomes, objectives are established to meet or exceed goals related to:

- Improve Better Relations with Interested Parties
- Improve Environmental Performance
- Improve Regulatory Compliance
- Improve Quality Management Practices.

Summary of Monitoring Data, Goals and Objectives

Under 2016 goals, fifteen (15) objectives were established for our 2016 BMP. Sixty percent (60%) of established objectives were met. Of those objectives not met, progress is indicated.

Continually Improve Relationship with Interested Parties and the Public

- Participate in at least one presentation or activity regarding biosolids and EMS programs: *Objective met (5 events completed)*
- Send follow-up tour surveys to all scheduled tours of the LEWWTP (100%) with 40% response: *Objective not met - 100% sent with 37% response*
- Contact LEWWTP farm lease holders at least once in 2016: *Objective met (contacted 3 times each)*
- Meet at least 2 times with NBP facility being mentored in preparation for their certification process: *Objective met*

In addition to these objectives, open public meetings (i.e. Joint City Council meetings, public hearings and community interaction, where appropriate) provide the opportunity for public input to better understand present and future regulatory and/or watershed direction. Collaborative affiliations with local, state and federal regulatory agencies; watershed interest groups and other interested parties, also result in programs which benefit the community, as well as the environment.

Continually Improve Environmental Performance

- Reduce diesel fuel requirements for biosolids transportation and disposal by 3% - (gallons fuel/metric ton applied from 2015): *Objective not met - 1.2% reduction*
- Reduce electric energy requirements for wastewater treatment by 3% (Kwh/MGD from 2015): *Objective not met - 1.9% reduction*
- Research alternatives to reuse biogas currently being flared to atmosphere (3 alternatives considered and issued RFI to further evaluate top 2): *Objective met*

Continually Improve Regulatory Compliance*

** See Appendix A for performance details*

- Monthly compliance with all existing federal, state and local *biosolids* regulations, and demonstrate performance at least 10% below permit requirements: *Objective met - 100%*
- Monthly compliance with all existing federal, state and local *discharge regulations*, and demonstrate performance at least 10% below permit requirements: *Objective met - 100%*
- Install five (5) liquid level monitors in the in-plant sewer system to warn of impending Sanitary Sewer Overflow (SSO) (storm water permit): *Objective met*

Quality Management Practices

- Maintain 100% distribution of biosolids to beneficial use programs: *Objective met – 100%*
- Publish six (6) new Standard Operating Procedures (SOPs) to provide a sustainable biosolids program (2 in draft status): *Objective not met*
- Complete 95% of equipment preventive maintenance (PM) tasks as established in Equipment Asset Management (EAM) program: *Objective not met- 76% complete*
- Approve continued annual biosolids research project with Colorado State University for CY2017 - *Objective met*
- Track biosolids/treatment program costs (increases or decreases) and communicate to management/staff (financial integrity): *Objective not met - Dashboard complete: however final format still in development*

Summary of Relevant Contractor Activities

There was no contractor activity in 2016 for direct handling of biosolids.

Summary of Actions That Have Been Taken on a Voluntary Basis

Below is a summary of actions taken on a voluntary basis in 2016:

- LEWWTP biosolids were re-registered with Colorado Department of Agriculture as a soil amendment
- Approve a biosolids research program for 2017 Colorado State University *(35 continuous years!)*
- Successfully complete our 2016 World Water Monitoring Challenge and Water Exposition *(watershed education event)*
- Continue in role as NBP Advisory Committee member
- Continue in role as RMWEA Biosolids Committee member
- Participate as instructors at the 2016 Rocky Mountain Water/Wastewater Operators Biosolids School
- Continued mentor activity with Ft. Collins BMP development program for NBP certification
- Payment in lieu of taxes *(Arapahoe County)*

Summary of 2016 Internal Audit

BMP Strengths Noted:

- Beneficial Use personnel are well-trained and understand their roles and responsibilities related to making the BMP successful.
- Plant staff serves as members of the NBP Advisory Committee and RMWEA Biosolids Committee.
- Operations personnel utilize the Corrective and Preventative Action (CAPA) process to address program deficiencies and promote overall program improvement.
- Members of the plant's Executive Management Team have started learning management system and strategic planning concepts and principles so

they can be better integrated into the workplace.

- The management system approach has been integrated into the Operations Division and is generating positive outcomes for the plant's biosolids program in the areas of regulatory compliance, process failure investigation, quality practices and relations with interested parties.

BMP Outcomes:

Quality Biosolids Practices

- The program functions in compliance with established regulations/permits and is fully maintained and operated by plant staff. Contractor involvement includes farming, grit landfilling, equipment maintenance, mechanical repairs as well as numerous contractors that serve in various capacities performing analytical, monitoring, design, construction and maintenance services throughout the plant.

- The LEWWTP's goal is to produce Class B biosolids with monitored metals concentration at least 10% below the Pollutant Concentration (PC) ceiling concentrations for Class B biosolids, beneficially reuse 100% of its biosolids, and reduce biosolids O&M program operation costs by 5%. Although program representatives indicated that these goals are being met, data was not made available to the auditor to substantiate this claim. The program appears to be static as no new goals or objectives have been developed since 2013. Note: Objectives are published in InfoNet and the status is noted as being met each month however, data supporting this is not readily available and a report is being finalized in Hach WIMS to demonstrate this.

- The nonconformances noted in the 2015 internal audit report for Elements 3, 9, 10, 11 and 16 (as well as the related opportunities for improvement) have not been addressed. Specifically, the following opportunities have not been incorporated into the BMP:

    - An emergency plan has not been developed and implemented for the biosolids hauling and application operations.
    - Update program goals and objectives on an annual basis and consider developing new goals and objectives to ensure the program continues to seek new innovations and improvements for consistent expansion and growth.
    - Update the critical control points affecting biosolids management activities with the recommendations developed by plant staff and documented in the "LEWWTP Critical Control Points" report.
    - Update the interactive webpage on the plant's website to make it clear that it is intended to be used for outside parties to voice their opinions about the BMP. Also, consider inserting a link from the biosolids section of the plant website to help users find the form. In addition, update the manual to note that the public may contact staff directly to prevent any confusion.
    - Develop training programs covering the fundamental concepts of the BMP and ensure both new and existing employees receive training and document their attendance. Consider soliciting feedback from the attendees on communicating program initiatives and give trainees the opportunity to contribute to the implementation of EMS concepts.
    - Develop and implement the remaining SOPs to ensure all critical control points throughout the biosolids value chain are being effectively managed to prevent potential negative environmental impacts and ensure applicable staff are trained on the contents.
    - Work with the scale system vendor (Fairbanks) to pursue maintenance and/or repair solutions to ensure staff can effectively control the hardware and instrumentation for weighing the biosolids and integrating fail-safes to prevent spills when the scale is not in use.
    - Update the BMP manual to ensure it defines the scope and frequency of the internal audits, and describes roles and responsibilities of the designated internal auditors.
    - Each member of the Executive Management Team (Divisional Leaders) has not adopted or implemented management system concepts into the

work management practices for their respective Division of responsibility. However, the Operations Division has almost fully adopted and implemented fundamental EMS concepts into daily work practices.

- The CAPA review process has been fully developed and implemented by the Operations Division, and progress towards closure is being tracked.

Regulatory Compliance

The 2015 biosolids performance report to the US EPA and Colorado Department of Public Health and Environment was available to validate compliance to biosolids permit limitations.

Environmental Compliance

Biosolids application practices follow established guidelines at national, state and county levels. Programs to monitor and improve energy use and fuel conservation have been implemented.

Relations with Interested Parties

The LEWWTP has not developed or implemented any new communication methods to improve their relations with interested parties and some existing communication methods don't appear to be working. BMP information posted to the plant's web-site is outdated; providing very little information on current events and innovative strategies, and is difficult to find. There is no documentation of public meetings to facilitate information transfer to better understand present and future regulatory and watershed direction.

Summary of Independent Third Party Audit

(From DEKRA 2016 Interim Audit report: 11-9-16)

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.

Jim Tallent
Treatment Division Manager
March 31, 2017

Appendix A

2016 Regulatory Compliance objective to demonstrate biosolids metals performance at least 10% below PC permit limit - Table 3 of §503.13*—Pollutant Concentrations				
Metal Analyzed	Ceiling Concentration Limit	Pollutant Concentration (PC) Limit*	2016 Test Results	Actual Performance
	mg/kg	mg/kg	mg/kg	% Below PC Limit
Arsenic	75	41	1.7	95.8
Cadmium	85	39	1.5	96.2
Chromium	3,000	1,200	28.6	97.6
Copper	4,300	1,500	724	51.7
Lead	840	300	22.0	92.7
Mercury	57	17	0.16	99.1
Molybdenum*	75	na	11.3	84.9
Nickel	420	420	15.3	96.4
Selenium	100	36	20.1	44.2
Zinc	7,500	2,800	1,001	64.3

* Molybdenum performance based on ceiling concentration limit

2016 Regulatory Compliance objective to demonstrate facility discharge performance at least 10% below permit limit			
Effluent Parameter	Discharge Permit Limit	2016 Performance Results	Actual Performance
	mg/l	mg/l	% Below Limit
CBOD monthly	20	2.4	88%
CBOD removal efficiency (%)	85	98.9	86%
TSS monthly	30	2.1	93%
TSS removal efficiency (%)	85	99.1	86%
NH_3 monthly*	6.275	1.59	74%

* NH_3 monthly performance based on the average of individual month limitations

National Biosolids Partnership
Certified Management Program