



Littleton/Englewood Wastewater Treatment Plant

Biosolids Management Program Performance Report - 2014

Through commitment to the National Biosolids Partnership (NBP) Code of Good Practice, the L/E WWTP Biosolids Management Program (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:

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

Summary of Monitoring Data, Goals and Objectives

Under these goals, thirteen (13) objectives were initially established for our 2014 BMP. Eighty-five percent (85%) of objectives were met (11 of 13) for 2014.

Better Relations With Interested Parties

Better relations, with interested parties, continue to improve. This is achieved through:

- Develop and deliver at least one presentation regarding biosolids and EMS programs: *Objective met*
- Send follow-up tour surveys to all scheduled tours of the L/E WWTP - 100% (38% response): *Objective met*
- Meet at least 2 times with our NBP mentored facility: *Objective met*

In addition to these objectives, open public meetings (i.e. Joint City Council meetings, public hearings and community interaction), 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.

Environmental Performance*

- * *See Appendix A for all performance details*
- Reduce diesel fuel requirements for biosolids transportation and disposal by 8% (2 year objective from 2012 to 2014) – Objective not met: 6.3% reduction actual
- Reduce electric energy requirements for wastewater treatment by 2% (2 year objective from 2012 to 2014) – Objective met: 5.2% reduction actual

Regulatory Compliance*

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

Quality Management Practices

- Maintain 100% distribution of biosolids to beneficial use programs – *Objective met*

- Complete three (3) outstanding Standard Operating Procedures (SOP) from original objective to provide a sustainable biosolids program: *(finish from 2013) Objective met*
- Reduce biosolids program operation (O&M) cost by 5% – (0% change) *Objective not met*
- Complete 95% of equipment preventive maintenance (PM) tasks as established in Equipment Asset Management (EAM) program – (98.9% complete) *Objective met*
- Reduce wastewater treatment operation cost by 2% – (6.4% reduction) *Objective met*
- Approve and complete 2014/15 biosolids research project with Colorado State University - *Objective met*

Summary of Relevant Contractor Activities

No contractor activities occurred, related to the biosolids value chain, in 2014.

Summary of Actions That Have Been Taken on a Voluntary Basis

Below is a summary of actions taken on a voluntary basis in 2014:

- L/E WWTP biosolids were re-registered with Colorado Department of Agriculture as a soil amendment – *registration renewed*
- A biosolids research program for 2015 was approved with Colorado State University *(33 continuous years)*
- Successfully completed our 2014 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
- Beneficial Use Supervisor Completed RMWEA Supervisory Leadership course
- Initiated mentor activity with Ft. Collins BMP development program for NBP

Summary of 2014 Internal Audit

BMP Strengths Noted:

- Tour feedback (usually verbal) is positive regarding housekeeping and visual appearance of the facility.
- Management is committed to establishing an effective biosolids management system and a strong teamwork approach is being used to do this, with input from several areas of the plant.
- Trend analysis capability is used more frequently for analyzing monitored parameters and supporting process changes.
- Existing internal communications systems are being utilized more (i.e. plant newsletter and electronic bulletin board).
- SCADA system is used more to evaluate process and conducting CAPA reviews.
- L/E WWTP Energy Improvement Program implemented in 2014 as a result of BMP energy reduction objective.
- Documentation practices improving through use of Enterprise Asset Management (EAM) software.
- Training extended through NBP mentorship for City of Ft. Collins, CO.
- Achieved Platinum Certification with National Biosolids Partnership.
- L/E WWTP active participation with NBP Advisory Committee.
- More active incorporation of BMP processes (i.e. CAPA review) into operation activity.
- Identified source of nitrification inhibition and implemented corrective action to eliminate process impact.

BMP Outcomes:

Quality Biosolids Practices

The L/E WWTP produces Class B biosolids with monitored metals concentration at least 10% below the Pollutant Concentration ceiling concentrations for Class B biosolids. The L/E WWTP beneficially reused 100% of its biosolids, implemented a biosolids knowledge management program and

achieved 100% voluntary land applier operator certification for biosolids staff. In 2013, the L/E WWTP received the NACWA “Excellence in Management Gold Recognition” and NACWA Gold Peak Performance Award. They also received the WEF George W. Burke Award, for safety and the RMWEA Plant Performance Award. The program functions in compliance with established regulations/permits and is fully maintained and operated by plant staff. There is little or no contractor involvement.

Regulatory Compliance

Review of annual reports to US EPA and Colorado Department of Public Health and Environment indicate 100% 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 are being implemented. Energy optimization is being approached through a Process Efficiency program sponsored by XCEL Energy. Use of fuel for biosolids transport and application was reduced by 6.3% and energy requirements for treatment have been reduced by 5.2%

Relations with Interested Parties

The L/E WWTP has implemented various

communication methods to improve their relations with interested parties. Several articles have been published, BMP information has been posted on the web site, and follow-up surveys have been implemented to solicit feedback on effectiveness of programs. Open public meetings provide for information transfer to better understand present and future regulatory and watershed direction. Collaborative affiliations with state, 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.

Summary of Independent Third Party Audit

(From DEKRA 2014 interim audit: 10-26-14)

Three minor nonconformances were found during this audit. These nonconformances are unconnected and do not represent a systemic problem. LEWWTP prepared corrective action plans for these nonconformances that have been approved by DEKRA's Lead Auditor. Verification of effective corrective action for each minor nonconformance will be included in the next third party audit.

Based on the results of this audit, DEKRA has determined that:

- LEWWTP’s biosolids activities are consistent with NBP expectations and meets requirements of the NBP BMP Elements.
- Use of a management system approach is generating positive outcomes for LEWWTP’s biosolids program in the areas of regulatory compliance, environmental performance, quality practices and relations with interested parties.
 - DEKRA recommends “Platinum” certification of LEWWTP’s biosolids program within NBP’s Biosolids Management Program.

For more information

If you have questions or concerns, or just want to provide comments, please feel free to contact us directly:

Littleton/Englewood Wastewater Treatment Plant:
Phone: 303.762.2600
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Treatment Division Manager



Appendix A

2014 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*	2014 Test Results	Actual Performance
	mg/kg	mg/kg	mg/kg	% Below PC Limit
Arsenic	75	41	1.8	95.6
Cadmium	85	39	1.6	95.9
Chromium	3,000	1,200	25.8	97.9
Copper	4,300	1,500	709	52.7
Lead	840	300	22.5	92.5
Mercury	57	17	0.21	98.8
Molybdenum*	75	na	10.4	86.1
Nickel	420	420	16.1	96.2
Selenium	100	36	16.5	54.2
Zinc	7,500	2,800	958	65.8

* Molybdenum performance based on ceiling concentration limit

2014 Regulatory Compliance objective to demonstrate facility discharge performance at least 10% below permit limit			
Effluent Parameter	Discharge Permit Limit	2014 Performance Results	Actual Performance
	mg/l	mg/l	% Below Limit
CBOD monthly	20	3.3	83.5
CBOD removal efficiency (%)	85	98.6	---
TSS monthly	30	2.0	93.3
TSS removal efficiency (%)	85	99.1	---
NH ₃ monthly*	6.275	2.03	67.6

* NH₃ monthly performance based on average of individual month limitations



Life at the Farm

The Littleton/Englewood WWTP has approximately 9,288 acres of farmland permitted for the application of domestic wastewater biosolids. Portions of this acreage, originally purchased by the Cities of Littleton and Englewood in 1995, contain approximately 700 acres of land that are not suitable for biosolids application due to slope restrictions, proximity to stream beds or are enrolled in the Conservation Reserve Program (CRP)*.

Recently, a “birder” asked permission (which was approved) to go into some of these areas on our farm (see accompanying photo of the immediate area around our barn) to observe what kinds of birds are passing through the area as they migrate north. As he described it, “These groves of trees are like ‘islands on the prairie’ – a place for birds to obtain food, rest and protection in an otherwise ‘barren’ ocean of land”. The initial report of observations (2 observers traveling 3 miles in a 150 minute observation span) are as follows:

- | | |
|-------------------------------------|----------------------------|
| 50 Mallard - flyover | 1 Great Horned Owl |
| 4 Northern Pintail - flyover | 7 Burrowing Owl |
| 9 Swainson’s Hawk | 1 Northern Flicker |
| 1 Red-tailed Hawk | 2 Say’s Phoebe |
| 1 Buteo sp. | 1 Loggerhead Shrike |
| 3 Killdeer | 125 Horned Lark |
| 8 Eurasian Collared-Dove | 1 Rock Wren |
| 100 Mourning Dove | 1 House Wren |
| 20 European Starling | 24 Vesper Sparrow |
| 1 Yellow-Rumped Warbler | 1 Song Sparrow |
| 7 Yellow-Rumped Warbler (Myrtle) | 4 Lincoln’s Sparrow |
| 2 Yellow-Rumped Warbler (Audubon’s) | 48 White-Crowned Sparrow |
| 1 Spotted Towhee | 12 Red-Winged Blackbird |
| 9 Chipping Sparrow | 60 Western Meadowlark |
| 30 Common Grackle | 4 House Sparrow |
| 40 Brown-Headed Cowbird | |
| | Other observations |
| 8 Mule Deer | 1 Black-Tailed Jack Rabbit |
| 6 Coyote | Prairie Dogs (numerous) |
| Chorus Frogs (numerous) | |

And you thought all there was at the farm is fields of dry land wheat, dry land corn and rattlesnakes (they’re out there too)!

*The Conservation Reserve Program (CRP) pays a yearly rental payment in exchange for farmers removing environmentally sensitive land from agricultural production and planting species that will improve environmental quality.