



City of Fort Collins Water Reclamation And Biosolids

2018 Biosolids Management Performance Report



National Biosolids Partnership

The City of Fort Collins Biosolids Management Program attained Gold Level with the National Biosolids Partnership in 2018. The National Biosolids Partnership (NBP) is operated through the Water Environment Federation (WEF) and the National Association of Clean Water Agencies (NACWA) along with local and regional biosolids management organizations receiving support from the U.S. Environmental Protection Agency (EPA).

The Water Reclamation & Biosolids (WR&B) is participating in the NBP Biosolids Management Program (BMP), which is a comprehensive program that aligns with the ISO 14001 program that is already in place for the Drake and Mulberry Water Reclamation facilities. Both the BMP and ISO 14001 programs require and track continuous improvement in the areas of environmental stewardship and regulatory compliance.

The mission of the BMP is to advance the understanding and adoption of effective

practices in biosolids management by offering an EMS based certification program requiring participating organizations to go beyond regulatory requirements. The NBP program has four recognition levels, or tiers, for organizations to complete: bronze, silver, gold and ends with platinum, with each level building on the previous.

On April 7, 2014, The City of Fort Collins WR&B signed a Letter of Understanding with the National Biosolids Partnership (NBP) in which the WR&B agreed to become an NBP participant with the intent to improve its existing biosolids program to achieve national recognition; committed to implement an NBP Biosolids Management Program (BMP); and committed to the NBP *National Code of Good Practice*. By signing the Letter of Understanding, WR&B entered the program at the bronze level. November 2015, we moved from bronze to silver. Our goals are set considering each of the following – environmental performance, regulatory compliance, quality management practices and relations with interested parties.

Meadow Springs Ranch History



Meadow Springs Ranch (MSR) was purchased by the City of Fort Collins Utilities in 1990 for beneficial land application of biosolids. Funds for the purchase came from Water Reclamation and Biosolids (WRB) reserves. As part of the purchase agreement, the previous landowners, Meadow Springs Grazing Association, reincorporated as Natural Fort Grazing Association (NFGA) retained first right of refusal in perpetuity on any grazing lease awarded for the property. NFGA has been the only lessee since the City's purchase of MSR.

In 1993, the City purchased 7,550 acres leased from the Colorado State Land Board. With this acquisition, MSR now covered 25,680 acres. In 2000, forty acres of MSR was sold to the U.S. Department of the Interior for use as a black-footed ferret breeding facility. Since 2000, the City has added another 950 acres to MSR through the purchase of lands interior to ranch boundaries. Currently, the total acreage of MSR is approximately 26,600 acres.

Goals for 2018

In 2018, we achieved the following two goals: installation of new centrifuges and the evaluation of more acreage for applying biosolids. The centrifuges were installed by Hydro Construction and put on-line in October. The acreage evaluation was completed in July 2018 when it was determined the area of interest was not feasible.

Grazing



Immediately after purchasing MSR, WRB reduced the number of animal units grazed from 1400 to 1100 and set the grazing season from May 15 to November 15. These practices are still followed but are modified as drought conditions dictate. The 10-year grazing lease requires consultation with a qualified range specialist to set grazing rotations and provide guidance for acceptable grazing pressure based upon each year's range conditions. WRB staff, the range specialist and members of the grazing association meet to discuss grazing schedules and range conditions. The frequency of meetings increases when there is uncertainty due to drought conditions.

The lease rates at MSR were developed using grazing lease survey data from Colorado AG Services and CSU.

Research and Conservation Partnerships

In 1993, MSR was entered into a conservation agreement with U.S Fish and Wildlife to preserve habitat for a threatened species, the Colorado Butterfly Plant, *Gaura neomexicana ssp. coloradensis*.

MSR has provided research opportunities to CSU in range science, archeology and biosolids. Colorado Parks and Wildlife (CPW) is currently using MSR for a four-year research project to develop an oral vaccine to control sylvatic plague in prairie dogs. This research is critical for recovery in the wild of endangered black-footed ferrets. CPW has also conducted bird and fish surveys at MSR. EPA has conducted biosolids endotoxin research at MSR.

Meadow Springs Ranch (MSR) Biosolids Application Summary for 2017

The State of Colorado Notices of Authorization have been issued for biosolids application at MSR: BMP #1337, 4,205 acres; BMP #1462, 6,760 acres; BMP 2123, 2,960 acres.

A total of 1250 dry tons (1133.75dmt) biosolids were applied to 315 acres (127.48 hectares). The biosolids application rate was 3.9 dry tons/acre (8.8 dmt/ha).

The nitrogen loading rate for MSR was determined by a site-specific vegetative response study that was conducted by Colorado State University from 1991-1993. The study determined that a biosolids application rate of two to five dry tons per acre would increase vegetative growth without promoting growth of undesirable annuals. The study assumed a three-year reapplication cycle. In practice, the biosolids reapplication cycle at MSR ranges

from three to 10 or more years. This year had an application rate slightly higher due to reclamation on a burn area on the ranch.

The WRB continues to stay in compliance with regulatory requirements.

Lab analysis for biosolids quality and soils reporting can be found in the biosolids Annual Report. Also, kept internally and available upon request.

Biosolids Storage

Approximately, one-third of the City's annual biosolids production is air dried (~ 90% Total Solids (TS)) at MSR on a five-acre concrete pad. The dried biosolids are placed in a covered storage building for later application on MSR or the permitted Hardwick Site.

Drying and storing the biosolids allows flexibility in the scheduling of biosolids hauling and application. This flexibility is helpful while cattle are grazed on MSR from May 15-Nov. 15. Interference with the grazing rotation is minimized by drying and storing biosolids during the grazing season. Drying also reduces weight and volume and allows efficient stockpiling. The biosolids dried in summer are stored until transportation to the permitted Hardwick site each January through March of the following year.



On Dec. 31, 2018, there were approximately 942 dry tons of air-dried biosolids in storage at MSR. This weight was determined when the biosolids were loaded for transportation, and a manifest was completed for each load. The dried biosolids are stored for less than one year.

During the cooler months, biosolids drying is not efficient, so the City does not air dry biosolids but instead directly land applies undried biosolids (~ 21% TS) at MSR. On Dec. 31, 2018, there were no undried biosolids on the concrete staging pad at MSR. Stormwater runoff from the staging pad flows to a lined retention area.

The BMP team is continually working on how to improve the operation process by being operationally efficient and regulatory compliant. The team continues to address findings from the Third Party Preassessment audits and internal audits by creating Corrective Action Reports (CARs). Some positives that came from the audit was realizing the Biosolids Value Chain encompassed the whole wastewater process including biosolids application.

The ranch goal of maintaining the amount of biosolids stored on the pad to three windrows or less was accomplished by drying during the summer when the cows were on the ranch and spreading when a predetermined area was soil sampled and applied on.

The goal of installing two new centrifuges was completed in 2018. The centrifuges will improve dewatering of biosolids which will increase efficiency in transportation and land application.

For 2019, the WRB Division has set goals of implementation of year-round land application of biosolids, determining the most efficient polymer for our system and

completing a master plan for Meadow Springs Ranch. These goals will be amended as needed and other goals may be added based on operational needs.