2401 SE Monterey Road
Stuart, Florida 34996

Board of County Commissioners

Agenda Item Summary

File ID: 19-0446 DEPT-6 **Meeting Date:** 4/23/2019

PLACEMENT: Departmental

TITLE:

UPDATE ON BIOSOLIDS MANAGEMENT

EXECUTIVE SUMMARY:

Biosolids are the result of sewage sludge treatment that meets regulatory standards. They are a source of water, energy, and nutrients that can be recovered and used. About two-thirds of produced biosolids are used for land application or composting and the other third is disposed in landfills. There is statewide concern that land applied biosolids containing excess nutrients and other contaminants are being introduced into surface waters and degrading water quality. It's recognized that steps are needed to enhance current biosolids management practices and to implement innovative biosolids technologies that provide enhanced resource recovery, beneficial use and sustainable management practices.

DEPARTMENT: Utilities and Solid Waste

PREPARED BY: **Name:** Anne Murray
Title: Hydrogeologist / Water Resources Coordinator

REQUESTED BY: Sam Amerson, P.E., Utilities and Solid Waste Director

PRESET:

PROCEDURES: None

BACKGROUND/RELATED STRATEGIC GOAL:

Sewage sludge is the solid, semisolid or liquid material produced during domestic waste treatment. Biosolids are the result of additional treatment of the sludge materials for land application that meet the EPA pollutant and pathogen requirements. There are three regulatory classes of biosolids for beneficial use by land application in Florida that include minimum quality Class B, intermediate quality Class A and high quality Class AA. The classes refer to treatment level of the biosolids to reduce pathogens (Class B) or eliminate pathogens (Class A). Class A biosolids that meet EPA restrictions for certain metals are referred to Class AA. Class AA biosolids are exempt from nutrient restrictions for land application based on the high level of treatment required. Typical Class AA biosolids contains high amounts of organic material and moderate amounts of nitrogen, phosphorous making it ideal for marketing and distribution as a soil amendment to improve agricultural productivity.

Alternatively, a Class AA biosolids product can be produced utilizing dewatered biosolids in composting operations by eliminating pathogens through temperature processing and meeting

certain metal thresholds. Biosolids feedstock is processed with vegetative and wood waste adding organic matter that improves soil properties including, porosity, carbon content and slow release of nutrients preventing leaching of excess nutrients into water sources. Further, the soil moisture holding capacity is increased yielding reduced irrigation demand and use of water resources. In summary, biosolids are generally referred to as a soil fertilizer, while compost is typically used as a soil amendment.

Brief History of Martin County Utilities Biosolids Management

Biosolids management began in 1983 with small system sludge drying beds for dewatering. In1997 sludge treatment was upgraded to alkaline stabilization technology to minimize odor, destroy pathogens and reduces vector attraction. In 2002 a mobile centrifuge was installed to more effectively separate solids so waste could be readily gathered for landfill disposal. In 2013 land application of Class B biosolids was banned by the state in South Florida including Martin County. Although Martin County Utilities (MCU) biosolids were never land applied, action was taken by the BOCC to improve treatment and increase the beneficial use of the resource. Hence, a chemical injection technology, a proprietary BCR Neutralizer process, was introduced in 2015 to create a Class AA biosolids product.

Recent Regional and State Actions

In 2018, with growing concerns about the impact of land applied biosolids on the environment and another hard hitting harmful algal bloom, there were a number of actions taken at both the state and local level.

On June 8, 2018 a Regional Biosolids Symposium sponsored by the Treasure Coast Regional Planning Council (TCRPC) and the Indian River Lagoon National Estuaries Program was held in Stuart. The purpose of the event, which was attended by 170 participants, was to discuss how to better manage and reuse biosolids resources in a sustainable way that significantly reduces negative environmental impact. On the same day, FDEP announced that it was formulating a Biosolids Technical Advisory Committee (TAC) to evaluate current management practices and potential opportunities for improvements to protect water resources.

In mid-July, in response to a major algal bloom event, Indian River County placed a moratorium on land application of Class B biosolids which is still in place. Days later, the TCRPC passed a resolution on July 20, 2018 naming state and local partnerships to raise awareness on biosolids management and to prioritize reduction and eventual elimination of biosolids land application and establishing a pilot program to explore technologies to improve recovery and provide innovative use of biosolids. Following suit, Martin County passed a similar resolution on August 21, 2018 adding a request for the State of Florida to immediately establish standard protocols and fund the identification, quarterly tracking and monitoring of biosolids application sites. On the same day, St Lucie County passed a similar resolution in support of TCRPC's resolved actions.

The Biosolids TAC met several times during a four month period beginning in September 2018 and in January 2019 delivered their recommendations. The TAC endorsed permitting that minimizes migration of nutrients, specifically phosphorous, to prevent impairment to water bodies by establishing site specific application rates, increasing site inspections, developing monitoring protocols to detect migration, developing and conducting research to improve management and protect water resources and water quality as well as promoting innovative biosolids processing technology to increase recovery and provide greater beneficial use options for end products. As a

result, a Biosolids Management legislative bill (HB 405/SB 1278) was introduced and if passed will require the initiation of rulemaking based on the TAC recommendations.

Increased statewide water quality concerns and its connection to biosolids management practices have prompted Martin County Utilities (MCU) to scrutinize its current practices and to investigate biosolids management alternatives. A purchase order was issued to Dover Engineering on September 27, 2018 to review biosolids processing operation and alternatives to the land application of Class AA biosolids. A number of alternatives were reviewed and presented in the January 25, 2019 report including partnering with an existing biosolids processing facility, constructing a drying facility to pelletize biosolids for sale outside of the region or state, and modifying the BCR Environmental operating schedule, among others. Ranked highest was constructing a biosolids drying facility at MCU's landfill that utilizes landfill biogas supplemented with natural gas to dry and pelletize the end product. The product could either be mixed with residential and vegetative waste and hauled to the St Lucie County Waste to Energy Facility, if constructed, for producing a cellulosic ethanol-based fuel or sold for marketing and distribution outside of the region.

Current Practices

MCU's Class AA biosolids product is the highest quality that can be produced based on optimum operational performance of the treatment process. The end product may be land applied without nutrient restriction. If the process fails to meet quality standards then the batch becomes a Class B product in need of re-processing which is cost and labor intensive, disposed of in the Okeechobee Landfill or land applied at a Class B FDEP approved site. The end product becomes the property of the waste hauler who assumes responsibility for disposal. The disposal location is dependent upon the level of treatment received. It is noteworthy that there are no permitted land application sites in Martin County.

In order to improve biosolids management, MCU has adopted seasonal operation of the BCR Environmental process, which involves producing Class AA biosolids for land application part of the year (July-October) and centrifuging biosolids and hauling to a composting facility (either NuTerra in Indian River County or JFE-Brighton Regional Composting Facility in Okeechobee County) that further treats biosolids through heat to a Class A standard that is then sold as a soil amendment or landfill the other part of the year. The combination of management practices increases the beneficial use of the end product by reducing the volume hauled to the landfill. There are strict FDEP requirements for sampling and monitoring at the composting facilities to monitor biosolids quality and quantity including inbound and outbound product volume and analysis of metals, nutrients and pathogens.

Strategic Goals

Continue to provide high quality Class AA biosolids product while exploring new wastewater treatment technologies to improve biosolids resource recovery and management options with the goal of reducing and eventually eliminating the land application of biosolids.

ISSUES:

- Both Class AA and Class B biosolids fertilizer contain concentrations of total nitrogen and total phosphorous that migrates to surface waters and negatively impact the Lake Okeechobee drainage basin. Nutrient laden water from the Lake is periodically discharged to the St Lucie River, Indian River Lagoon and near shore reef system with harmful consequences. Land application of Class B biosolids were banned in South Florida including Lake Okeechobee,

Caloosahatchee, St. Lucie River and Everglades watersheds, however, the St. Johns River Upper Basin continues to receive approximately 74% of Class B biosolids produced in Florida.

- There is growing statewide concern related to land application of biosolids and introduction of excess nutrients into surface waters; contribution to the increased occurrence of harmful algal blooms that produce toxic cyanobacteria that can impact human health; and the potential impact of compounds found in human wastewater biosolids from personal care products, pharmaceuticals, and unregulated contaminants among others.

- Land application of biosolids has been found to supply an inefficient form of plant fertilization that is not necessary to grow agricultural crops. Alternative technologies are being explored that allow improved biosolids recovery and sustainable management that can capture stored energy, water and nutrients found in biosolids.

- If passed, the Biosolids Management legislative bill (HB 405/SB 1278) will require the initiation of rulemaking based on land application of biosolids.

LEGAL SUFFICIENCY REVIEW:

To the extent this item contains legal issues; it has been reviewed for legal sufficiency, though it is mostly a matter of Board policy.

RECOMMENDED ACTION:

RECOMMENDATION

- Move that the Board direct staff to continue to produce Class A/AA biosolids end product for soil amendment use.
- Move that the Board direct staff to continue to monitor treatment operations and biosolids quality.
- Move that the Board direct staff to keep current on nutrient management research and emerging biosolids technologies.
- Move that the Board direct staff to track anticipated legislation directing more detailed regulation through rulemaking.

ALTERNATIVE RECOMMENDATIONS

None

FISCAL IMPACT:

RECOMMENDATION

None

ALTERNATIVE RECOMMENDATIONS

None

DOCUMENT(S) REQUIRING ACTION:

☐ Budget Transfer / Amendment ☐ Chair Letter ☐ Contract / Agreement

☐ Grant / Application ☐ Notice ☐ Ordinance ☐ Resolution

☐ Other:

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