

# ST. CLOUD BIOSOLIDS CONTINUOUS IMPROVEMENT

- Working with EPA Region 5 to Classify Biosolids Product as Class A EQ
- Nutrient Recovery and Reuse (NR2): Construction to be completed in 2019
- Participation in the “Partnership for Clean Water” Optimization Program, American Waterworks Association
- Optimization of the High Strength Waste program to increase biofuel production
- WEF Utility of the Future Recognition



St. Cloud Biosolids: Powering the Future with People

St. Cloud Wastewater Treatment Facility  
525 60th Street South  
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PLACE  
STAMP  
HERE

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CITY OF  
**ST.CLOUD**  
MINNESOTA



**BIOSOLIDS  
DIGESTER**

Biosolids Management Program

Annual Report for 2017

## A YEAR IN REVIEW:

The City of St. Cloud Resource Recovery Facility provides wastewater treatment services to St. Cloud residents and 5 surrounding cities. A total of 18 staff members help to operate the facility 24 hours a day, 365 days a year with an average flow of 9.8 million gallons per day.

In 2017, the City maintained Platinum Certification through the National Biosolids Partnership and conducted the Year 5 Internal Audit of all elements. An external review of the program is scheduled for May, 2018.

The City has provided high quality biosolids product to local farmers free of charge for decades. Not only does the biosolids program save area farmers thousands of dollars on fertilizer costs, it also presents an opportunity to reintroduce beneficial nutrients to the soil which supports cover crops or agricultural feed crops.

The City of St. Cloud biosolids product has exceeded regulatory requirements for many years, however several projects are underway to further improve the quality of the biosolids product and further recover highly valuable nutrients from the waste stream. The Nutrient Recovery and Reuse Project (NR2) broke ground in 2017 and includes; a centrifuge to dewater the biosolids fertilizer to provide more storage capacity and the installation of a Lystek reactor which will further condition the biosolids to produce a Class A level product, as

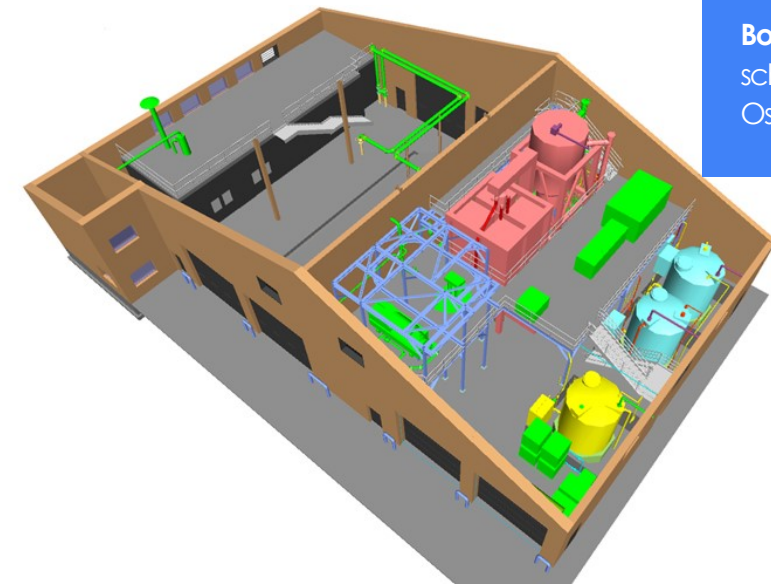
regulated by the Environmental Protection Agency. In addition, an Ostara phosphorus recovery system will capture 99% pure phosphorus from the centrifuge effluent. The captured phosphorus will be refined and used as a commercial grade fertilizer by the manufacturer.

2017 also saw the completion of the Biofuel Recovery Project. The 633 kW biofuel generator was commissioned in February of 2017. Over the course of the year, the High Strength Waste program was further developed to optimize fuel production for the generator. Additionally, an Evoqua Biogas Membrane was installed which increases the storage capacity of Biofuel. The biofuel generator and installed solar arrays enabled the facility to have several days “off the grid” in 2017.

The NR2 Project has an expected completion date of Spring, 2019. Through these innovative and future thinking projects, St. Cloud continues to be a leader in Minnesota and the nation.



TOP: Ostara Crystal Green “Pearl” fertilizer



BOTTOM: Design schematic for Lystek/Ostara installation

# BIOSOLIDS PROGRAM ABOVE AND BEYOND

VOLUNTARY ACTIONS ABOVE AND BEYOND COMPLIANCE WITH THE STATE OF MINNESOTA RULES

- Compliance with the National Biosolids Code of Good Practice and Certification
- Facility tours for the public
- Nutrient Recovery and Reuse
- High Strength Waste Utilization
- Presentations at professional conferences

Energy Efficiency

Biofuel Recovery

Solar

Resource Recovery & Reuse

## YEAR 4 PLATINUM AUDIT:

The Biosolids Program completed the Year 4 Platinum Audit in 2017. The program is on track for Platinum re-certification in 2018. The audit found zero non-conformances and 6 opportunities for improvement. All corrective actions have been completed.

## CONTRACTED SERVICES

Contract trucking services were used again for recycling in 2017. The construction projects underway at the facility presented challenges for facility employees, and contracted haulers played an integral role in meeting biosolids recycling and application needs. The partnership between St. Cloud and contracted haulers is critical to the success of the Biosolids Management Program.

## THE FUTURE IS NOW

### COMMITMENT TO SUSTAINABLE ENERGY

The facility has installed cutting edge renewable energy technology to reduce the amount of purchased energy for wastewater operations. In February of 2017, the 633 kW biofuel generator was commissioned and the Evoqua biogas membrane came online in December of 2017, greatly expanding the storage of conditioned biogas. The High Strength Waste program has continued to expand to ensure a continuous flow of "fuel" for the generator.

## 2018: Program Communications

**Internal Audit:** Completed on February 27th, 2018.

The external audit, scheduled for May 8-10 of 2018, is open to the public.

**Annual Touch a Truck:** See City website for future details regarding the date and location.

*Stay tuned to the City website for details on these and additional events.*

## Exceeding Expectations 2017 and Beyond... GOALS UPDATE

Each year the Program reviews current goals and adjusts them according to goals completed, project statuses, or ongoing elements of the program. Goals are set to ensure continual improvement within the program and ongoing compliance with the Mission Statement, the National Biosolids Partnership Code of Good Practice, alignment with City wide goals and compliance with the four key outcomes of the program: Environmental Performance, Regulatory Compliance, Interested Parties Relations, and Quality Practices.

### Updated Goals Summary 2017:

*For a full and detailed list of St. Cloud Biosolids Management Program goals, contact the EMS Coordinator (contact details on last page).*

#### Reduce the volume of semi-truck loads of fertilizer transported to application sites

The Biosolids Improvement Plan (NR2) is currently in progress and has an expected completion date of April 2019. Through nutrient recovery, phosphorus will be more effectively extracted from the biosolids products, helping to minimize the volume of biosolids being transported between the Wastewater Treatment Facility and application sites. The reduction of phosphorus concentration in biosolids fertilizer will also help ensure regulatory compliance and promote farmer interest in available products.

#### Implementation of maintenance programs

Staff continues to work towards

improved tracking of maintenance

programs and equipment to ensure current operations will be completed. Operations related to this goal include truck inspections, injector maintenance, and completion of the end of season checklist. Tracking through ER Portal (asset management software) will ensure maintenance schedules are met keeping the Biosolids Management Program operations on track. NR2 assets will be added as the project moves forward.

#### Improve communications with interested parties

The EMS program continues to strive towards excellent relationships with all interested parties. The St. Cloud WWTF creates opportunities to provide input through tours and various public events. A short survey is now available to patrons following tours to increase public participation.

#### Program improvements to reduce overall purchased energy

Implementation of energy efficiency projects are either completed or in progress at the Facility. Solar panels installed in 2016 are online, the bio-gas generator has been installed and came online in February 2017, training and optimization are still in progress. These additions help meet the goal of reducing purchased energy and allows the St. Cloud Wastewater Treatment Facility to operate more independently from a financial and operational perspective.

## 2017 BY THE NUMBERS

**Generated**  
3.361 billion gallons  
of effluent

**Recycled**  
12 million gallons of  
high quality fertilizer on  
1,400 acres of local land

357,908 pounds of  
phosphorous

284,931 pounds of  
nitrogen fertilizers injected  
for local farmers

The equivalent of  
793,648 kilograms  
of carbon

7.8 million kilograms of  
carbon recycled since 2007



Recycling Today | GREATER Tomorrow

**St. Cloud Biosolids Management Program: PROVIDING A HIGHLY VALUED AGRICULTURAL PRODUCT THAT IS PRODUCED IN A PROFESSIONAL, COST-EFFECTIVE, AND SUSTAINABLE MANNER**