

US EPA ARCHIVE DOCUMENT

**State Innovation Grant Project  
Narragansett Bay Commission  
Progress Report –15  
April 1, 2012 – June 30, 2012**

**Project Title:** Sustainable Energy Management Practices for Wastewater Treatment Facilities

## **Part 1 – Synopsis of Accomplishments**

During the current Project Reporting Period April 1, 2012 through June 30, 2012 the following activities took place: the Project Partners (NBC, RIDEM, URI, National Grid, RIMES and EPA) continued to meet and participate on conference calls to discuss and plan activities associated with project development and implementation, NBC and National Grid completed all Phase II WWTF Technical Assistance Energy Assessments and NBC mailed out letters to all permitted restaurants and food service facilities encouraging their use of the FOG-ERP Workbook posted on Narrabay.com.

## **Part 2 – Summary of Activities Accomplishments**

### **I. WWTF Energy Focused Environmental Management System Project**

#### **EF-EMS Steering Committee**

Throughout the current Project Period the EF-EMS Steering Committee coordinated the completion of Energy Efficiency Technical Assessments (TAs) and Wastewater Treatment Facilities Energy Efficiency Upgrades. The Phase II studies completed include:

- Bristol - Solids handling
- East Providence - Pump station
- Fields Point - Bisulfite Building
- Fields Point - Pump Station
- Newport - Solids Handling
- South Kingstown - Pump stations and Solids Handling
- Warwick – Pump Stations
- West Warwick – Head-Works and Solids Handling
- Westerly – Pump Stations

In all sixteen WWTF TAs have been completed.

On June 12<sup>th</sup> NBC staff met with RIDEM and National Grid to discuss the development of a final WWTF TA summary report. A draft report and Project Summary Table and complete TA reports can be found in Attachments 1, 2 and 3 respectively.

#### **Energy Audits/Scoping Studies and Technical Assessments**

Throughout the last project period the following activities took place with respect to conducting follow-up meetings with participating WWTF:

- On April 17<sup>th</sup> NBC and EPA met with representatives of the Woonsocket Wastewater Treatment Plant. During this meeting a project assessment checklist was completed that collected information on Woonsocket's perspective on the overall EF-EMS approach and their energy efficiency efforts (see attachment 4).

## **II. FOG Environmental Results Program Project**

### **Biodiesel/Glycerin**

In response to a request from the NBC's Bucklin Point (BP) WWTF, investigations have been initiated into the feasibility of utilizing a glycerin by-product from the production of biodiesel as a carbon source within the BP WWTF's biological nutrient removal (BNR) process. The BP WWTF BNR process consists of nitrification in which ammonia nitrogen is oxidized to form nitrate nitrogen followed by de-nitrification in which nitrate nitrogen is reduced to nitric oxide, nitrous oxide and nitrogen gas.

In an effort to improve the effectiveness of the de-nitrification step the NBC is conducting a pilot study using glycerin, generated as a by-product from the local production of biodiesel, as a carbon source within the BNR de-nitrification process. The glycerin is injected into the anoxic zone of one aeration tank treatment train at the surface mixer. This allows for adequate mixing of the glycerin at a point within the treatment process where available carbon is at a minimum. The effect of the glycerin on treatment operation is monitored through the use of in-line sensors and sample collection and analysis.

In January 2012 a pilot study was performed using a bench-top reactor set-up in an in-door laboratory. The results of this pilot test indicate that the biological kinetics of the biodiesel glycerin compare well with other potential carbon sources.

On April 18<sup>th</sup> 2012 a second kinetics pilot study was runs at the Bucklin Point WWTF. Results contained from this test were inconclusive. A third test is being planned for August 2012 at the University of Rhode Island's Center for Pollution Prevention.

### **Restaurant FOG Self-Certification Workbook**

On June 25<sup>th</sup> 2012 a letter was sent from NBC's Pretreatment Program Manager to all NBC permitted restaurants and food service facilities encouraging them to utilize FOG Self-Certification Workbook posted on narrabay.com (see attachment 5).

## **Part 3 – Projection of Activities, Accomplishments, and Major Expenditures for Next Quarter Report**

### **I. WWTF Energy Focused Environmental Management System Project**

- A Roundtable Meeting will be scheduled for September/October 2012
- Conduct EF-EMS follow-up meetings will remaining WWTFs

## II. FOG Environmental Results Program Project

- FOG-ERP Steering Committee – Form Steering Committee and schedule first meeting
- Conduct site visits with select facilities to determine their participation in the FOG ERP

### Part 4 – Financial Report

#### Project Expenses

A summary of grant related expenses to-date is as follows:

**(Removed due to it being confidential business information.)**

#### Attachments:

1. Draft WWTF TA Report
2. WWTF TA Summary Table
3. WWTF TA Reports
4. EF-EMS Follow-Up Checklist
5. FOG-ERP Letter
6. Project Milestone Summary Table