

# GLOUCESTER COUNTY UTILITIES AUTHORITY

WEST DEPTFORD, NEW JERSEY

## OPERATIONAL EFFICIENCY CASE STUDY

### GCUA

- Permitted to treat 24.1 MGD
- Average daily flow of 20 MGD
- Secondary treatment process
- Treats leachate from local landfill
- Treats Septage

### AWARDS

Silver Award by the National Association of Clean Water Agencies



## ACCELERATING ACTIVATED SLUDGE TREATMENT RECOVERY



### TREATMENT OVERVIEW

The **Gloucester County Utilities Authority (GCUA)** provides service to 15 municipalities with approximately 207,000 residents, covering a total service area of 150 square miles.

The GCUA WWTP is currently permitted to treat 24.1 MGD, and the plant treats leachate from the local landfill, as well as septage that is hauled to the plant.

The influent passes through bar screens and then the grit is removed. The next step in the treatment process uses primary clarifiers to settle out the solids. The partially treated water is then treated using a fine bubble activated sludge treatment system. The treated solids are settled out, and the solids are sent to an aerobic digester. The treated water is disinfected, and the solids are blended and dewatered on the belt filter presses. The filtrate then moves to the return stream back to the plant, and the sludge is incinerated in 2 fluid bed incinerators.

### PROJECT INTRODUCTION

Gloucester County is a well operated wastewater treatment plant, however, during heavy rain events can experience challenges. Record rainfall in August 2011 caused the plant's inflow to nearly double the design flow, causing severe ammonia problems in the aeration basins.



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### PROJECT OVERVIEW

Filamentous Bacteria  
Levels High

Record Rainfalls Led to  
Very High Inflows

Ammonia Levels in Aeration  
Basins Reach Severe Levels

Biology Depleted

Increased Truckloads of  
Leachate Delivered

September 27th, 2011:  
BAE® Added at 20 Gallons/Day

October 1st, 2011:  
Significant Improvements in  
Operations Recorded, Signifying  
Complete System Recovery



From the Earth...for the Earth®  
A JSH international™ Company

### PROJECT OVERVIEW

Due to the record rainfalls in August and September 2011, the plant experienced influent flows of 53 MGD, and the plant biology was depleted. In addition, the amount of leachate delivered to the plant increased more than five fold. Truckloads per day increased from 12 truckloads per day to 63 truckloads per day, creating an ammonia problem in the aeration basins.

As a result, chlorine demand was at a very high level. Plant operations were disrupted due to lower detention times and solids wash outs.

GCUA turned to **BAE®** to bring balance back to the treatment process. A protocol was developed to introduce **BAE®** at the head of the aeration basins at a rate of 20 gallons per day for a period of 2 weeks beginning September 27, 2011.

### RESULTS SUMMARY

On Saturday October 1, 2011, only 5 days after the start of the treatment with **BAE®**, the plant had started to recover:

- Air demand and chlorine dosage rates had dropped.
- Sludge blankets in the final clarifiers had lowered to normal levels.
- The amount of filamentous bacteria had lowered to an acceptable rate.
- The rotifers and stalked ciliates had increased and the biomass was returning to normal levels.
- The RAS had increased from 4700mg/L to 9200 mg/L.



**BAE®** proved to be GCUA's go-to tool to solve the unexpected problems that can arise. Within just a matter of days the operations of the aeration basins were stabilized and back to normal. In addition, it is believed that moving to a regular maintenance program with **BAE®** will strengthen the plant's biology and help it fight off and/or recover from similar inevitable and unpredictable problems.