



Performance Focus

Bulletin #0106111



Effluent Compliance/Biological Nutrient Removal Performance Focus: Nitrogen Reduction

In-Pipe Technology® Company, Inc., improves water quality for discharge or reuse by reducing influent organic loading and effluent pollutant levels. In-Pipe Technology has helped compliant plants function more efficiently and helped non-compliant plants achieve their targets. In-Pipe Technology works with both conventional treatment processes and advanced treatment designs including biological nutrient removal and membrane bioreactors.

Summary at a Glance

Project Location: Connecticut
Plant Type: Complete-Mix Activated Sludge
Project Installed: April 2010
Plant Size: 5.65 MGD

Performance Summary:

- Effluent TN Before: 293 lbs/day
- Effluent TN After: 194 lbs/day

34% Reduction

Summary at a Glance

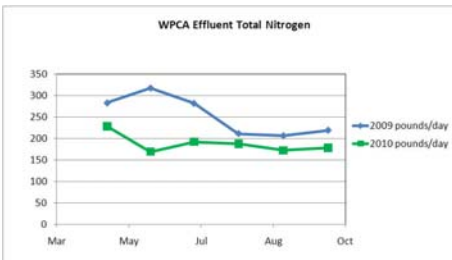
Project Location: Massachusetts
Plant Type: Sequencing Batch Reactor
Project Installed: November, 2009
Plant Size: 1.60 MGD

Performance Summary:

- Effluent TN Before: 92 lbs/day
- Effluent TN After: 59 lbs/day

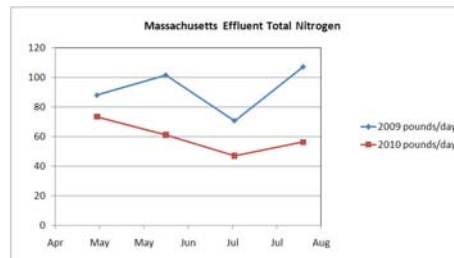
35% Reduction

In 2009, the Water Pollution Control Authority (WPCA) discharged an average of 293 pounds of nitrogen per day and paid an estimated \$22,000 for nitrogen discharged in excess of their permitted amount under the Connecticut DEP's nitrogen credit exchange program.



Since In-Pipe started treating the collection system in May 2010, the WPCA WWTP has reduced effluent nitrogen by 34% and is now discharging just 194 pounds of nitrogen per day. This drastic reduction means that the WPCA can now sell nitrogen credits instead of buying them.

In-Pipe started treating the collection system feeding the Massachusetts wastewater treatment plant in December 2009 with the primary goal of reducing influent sulfides. Since treatment began, the plant has been discharging 35% less nitrogen with the effluent: from 92 pounds per day average in 2009, to 59 pounds per day average in 2010.



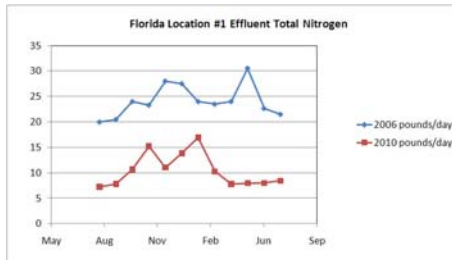
Summary at a Glance

Project Location: Florida #1
Plant Type: Extended Aeration
Project Installed: March, 2008
Plant Size: 2.5 MGD
Performance Summary:

- Effluent TN Before: 171 lbs/day
- Effluent TN After: 71 lbs/day

58% Reduction

In 2008, The Town was challenged to meet a new nitrogen discharge limit that was 70% lower than the plant, which was not designed for nutrient removal, could deliver. In-Pipe started the comprehensive



collection system dosing program in 2007 and since then the plant has gone from discharging an average

of 171 pounds per day of nitrogen down to just 71 pounds per day of nitrogen—a reduction of nearly 60%. With IPT, the average effluent nitrogen concentration was 10 mg/L compared with 24 mg/L before IPT.

Summary at a Glance

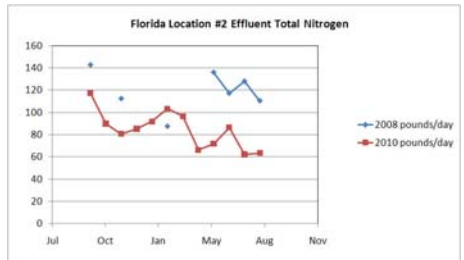
Project Location: Florida #2
Plant Type: Contact-Stabilization
Project Installed: August, 2009
Plant Size: 1.50 MGD
Performance Summary:

- Effluent TN Before: 126 lbs/day
- Effluent TN After: 86 lbs/day

32% Reduction

The City selected In-Pipe Technology to help it improve nitrogen removal performance before and during plant upgrades. In-Pipe was implemented during the late summer of 2009 while the plant was

averaging 126 pounds per day of effluent nitrogen. After In-Pipe was installed, nitrogen in the effluent decreased



by 32%, to just 86 pounds per day on average.

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Service Offering

In-Pipe provides engineered wastewater treatment services to municipalities and industries worldwide. In-Pipe engineers a solution for each customer based on a full system review and includes turnkey installation, service and maintenance.

Proven Improvements

- Reduce Influent Loading
 - TSS 30%
 - BOD 30%
 - Total Nitrogen 50%
- Reduce Sludge Disposal 50%
- Reduce Energy Consumption 30% to 60% (KwH)
- Control H₂S Odor & Corrosion
- Control Fats, Oils, & Grease (FOG)
- Increase Plant Capacity

Unmatched Expertise

- Process Engineering
- Wastewater Treatment Plant Design Optimization
- Microbiology Laboratory
- Project Management
- Control Systems (SCADA) Programming and Remote Monitoring
- Microbial Production

Please contact us for additional information including full project profiles, references, or technical information.