



METEOR®

City of East Providence WWTP

Riverside, RI

14.2 MGD Four Stage IFAS SYSTEM

INFILCO
BIOLOGICAL GROUP





City of East Providence WWTP

Riverside, RI

INFILCO METEOR® IFAS/MBBR PROCESS

BACKGROUND

The City of East Providence WWTP was asked by RIDEM to upgrade its facilities to increase treatment capacity and also meet a new more stringent Total Nitrogen limit. The challenge was to upgrade the facility which had limited if any space available to undertake construction of additional treatment trains. After evaluation of several technologies, the Design-Build-Operate team of AECOM Water and United Water chose the METEOR® IFAS system to retrofit the four existing circular aeration tanks with a Four Stage system for year round Ammonia removal and a seasonal Total Nitrogen limit of 5.86 mg/l. IDI rose to the challenge of designing a unique Four Stage IFAS system in circular basins with innovative zone design for the new high flows and loads that is capable of meeting the stringent effluent limits at low wastewater temperature of 11 °C.

QUICK FACTS:

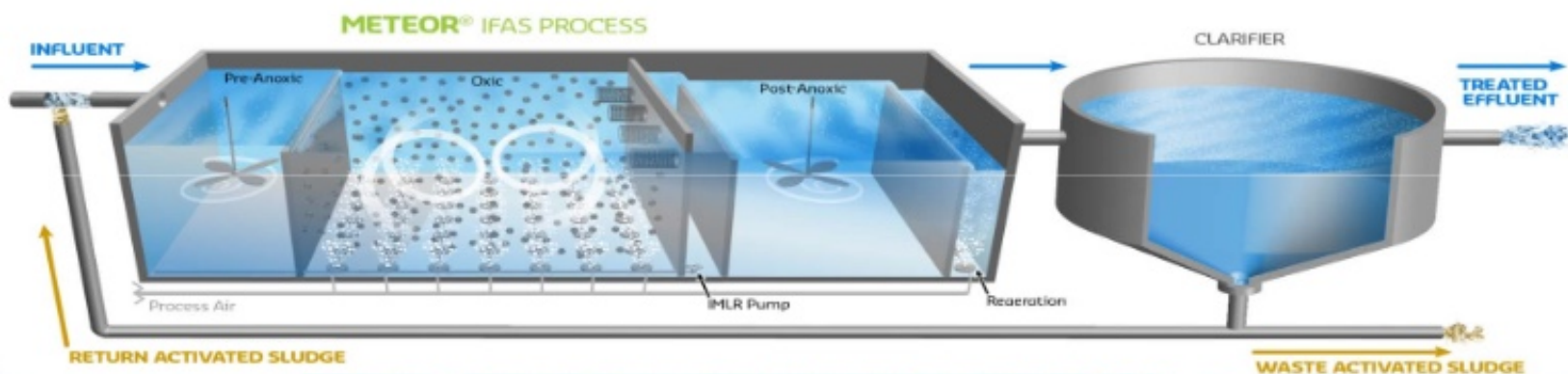
- > **FLOW RATE:** 14.2 MGD Max Month Flow; 19.9 MGD Max Day
- > **PERMIT:** TN < 5.86 mg/l
- > **NUMBER OF UNITS:** 4
- > **START DATE:** December 2010

SOLUTION

The IDI solution included retrofitting the four circular aeration basins onsite with a Four Stage configuration METEOR® IFAS system. Each of the four aeration tanks was divided into four distinct pie shaped zones for optimal use of the tankage for enhanced Nitrogen Removal. The system setup is based on dual anoxic zones, whereby an anoxic stage precedes an aerobic zone and a portion of the nitrified effluent is returned to the pre-anoxic stage. Following the aerobic zone is an additional anoxic stage for further nitrate reduction (with an external carbon source) and lastly a re-aeration stage to strip out remaining nitrogen gas before the secondary clarifier. The high surface area per unit volume provided by the NutriCell™ media establishes a highly concentrated and robust biology in the system without increasing load on the clarifiers. This provides optimum treatment capability even during plant upsets hence enabling the plant to meet its effluent limits year round without any excursions.

PROCESS

4-Stage TN-Removal Configuration



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