Case Study
USNHWW-162.001

Mixing For Better Denitrification With Less Energy

Achieve simultaneous nitrification & denitrification in the same basin

Topics: mixing, wastewater, activated sludge, energy savings, nitrification, denitrification

SolarBee®and GridBee® mixing solutions optimize process and energy efficiency often with a fast payback.

Location & Contact Information:
Further information may be available upon request. Please contact Ixom Watercare by phone at +1 866-437-8076 or by e-mail, watercare@ixom.com

System Overview: This basin is part of an activated sludge treatment plant serving 17,000 residents with an average influent of 5 million gallons per day. (18.9 million liters per day)

Basin Build Information:
Volume: 4 million gallons (15.1 million liters)
Type: Aeration Basin
Dimensions: 370.0 ft by 37.5 ft (112.8 m by 11.4 m)
Depth: 11.5 ft (3.5 m)

Pre-Deployment Conditions: The anoxic portion of the basin was not able to achieve de-nitrification. Effluent Total Nitrogen was 15 mg/l.

Objectives: Reduce effluent Total Nitrogen to 8 mg/l or less by converting the main basin to three zones as follows:

- Zone 1: 0-1 mg/l DO for de-nitrification
- Zone 2: 2 mg/l DO for BOD reduction, nitrification
- Zone 3: 0-1 mg/l DO for de-nitrification

Solution: Three (3) GridBee® GF Series Floating Wastewater Mixers (2013) to mix Zone 1 and Zone 3.

Results: Effluent Total N was reduced from 15 mg/l to less than 5 mg/l. Aeration blower energy in Zones 1 & 3 were reduced by 55% resulting in an operational cost savings of ~$5,000 USD per month.

The capital cost to the City for the entire project was less than $200,000 and they avoided spending $12,000,000 for a Moving Bed Biofilm Reactor (MBBR) system to achieve nitrogen compliance.

The Customer continues to add Ixom Watercare mixing solutions to their system for process improvement and energy efficiency benefits. They remain happy with all their SolarBee® and GridBee® equipment and their Ixom Watercare Service Plan.

Update (2016): One (1) GridBee® AP Series Air-Powered Wastewater Mixer was purchased.

Update (2021): One (1) SolarBee® SB2500 v20 wastewater mixer was purchased.

Update (2022): One (1) SolarBee® SB10000 v20 wastewater mixer was purchased.

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