**Case Study**

**Medora Corporation**

**Mixing For Better Denitrification With Less Energy**

Achieving simultaneous nitrification & denitrification in the same basin

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

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

**Basin Build Information:**
- **Volume:** 4 million gallons
- **Type:** Aeration Basin
- **Dimensions (ft.):** 370 X 37.5
- **Depth (ft.):** 11.5

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

**Objectives:**
Reduce effluent Total N to 8 mg/l or less by converting the main basin to three (3) zones as follows:
- **Zone 1:** 0-1 mg/l DO for de-nitrification.
- **Zone 2:** 2 mg/l of 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 Zones 1 & 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 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 N compliance.

**Update (2016):**
The City inquired about mixing options without a moving impeller in the water. One GridBee® AP Series Air-Powered Wastewater Mixer was subsequently deployed and later purchased.

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Contact Information:
Further information may be available upon request. Please contact Medora Corporation via phone at 866-437-8076 or by e-mail, info@medoraco.com

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**GridBee® GF Series Floating Wastewater Mixers (left) and a GridBee® AP Series Air-Powered Wastewater Mixer (right)**

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**GF Series Floating Wastewater Mixer deployment.**