

# Treatment Change of Pace

## COP™ Clarifier, OxyStream™ Oxidation Ditch



CASE STUDY

**Location:** Pace, Florida  
**Owner:** Pace Water System, Inc.  
**Engineer:** Baskerville-Donovan, Inc.  
**Contractor:** J&P Construction Co., Inc.

### Master Plan

Pace Water System, Inc. provides wastewater treatment for residents in and around Santa Rosa County, Florida. The current treatment plant began operating in 1993 with a design flow rate of 2.0 MGD.

To keep up with projected growth, Pace Water initiated a 3 MGD expansion of the wastewater treatment plant as a part



of their 20-year master plan. The expansion included a new operations center, hurricane shelter and two new wastewater treatment trains, including biological nutrient removal (BNR) oxidation ditch systems and secondary clarifiers.

### Equipment Selection

WesTech was selected to provide two OxyStream™ oxidation ditches and two Clarifier Optimization Packages (COP™).

The first step of the treatment system at the Pace Wastewater Plant is screening and grit removal. Following the headworks, wastewater enters the oxidation ditch process. The first stage of the OxyStream is the anaerobic selector, where return activated sludge (RAS) and influent wastewater mix together without oxygen or nitrate present. This is the first step in the biological phosphorus removal process later to be completed in the aerobic zone.

Wastewater then flows into the anoxic zone, where the mixed liquor is combined with a nitrate-rich recycle stream. In this environment, the microorganisms use the oxygen in the nitrate, converting the nitrate to nitrogen gas. This process is referred to as denitrification.

After the anaerobic and anoxic zones, the mixed liquor flows into the aerobic channels. The mixed liquor is mixed and aerated by

### OxyStream™ Oxidation Ditch

Quantity	2 trains
Design Flow Rate	1.5 MGD per train

the LANDY-7 slow-speed surface aerators. The aerators provide the environment for the microorganism to oxidize the BOD and convert the ammonia to nitrate.

LANDY-7 surface aerators provide a minimum oxygen transfer efficiency of 3.8 pounds of oxygen per horsepower hour, significantly reducing operational costs.

The aerated mixed liquor flows over an effluent weir and into the COP clarifiers. WesTech's COP clarifier provides great quality effluent by integrating the energy-dissipating inlet (EDI), flocculating feedwell, spiral rake blades and sludge withdrawal ring.

WesTech's spiral blade design moves solids to the center area more than four times faster than conventional mechanisms. This is key, considering the problems associated with denitrification or secondary phosphorus

### COP™ Clarifiers

Quantity	2
Design Flow Rate	3 MGD
Dimensions	70' diameter
Sludge Collection	Spiral blades w/ sludge ring

Treated Effluent	
<b>Total Nitrogen</b>	Range: 1.62-5.46 mg/L Avg: 2.58 mg/L
<b>Total Phosphorus</b>	Range: 0.03-0.39 mg/L Avg: 0.12 mg/L
<b>CBOD</b>	Range: 1.50-7.72 mg/L Avg: 3.08 mg/L
<b>TSS</b>	Range: <2.0-2.3 mg/L Avg: <2.0 mg/L

release in a clarifier for a BNR system. When combining the spiral blades with the sludge ring, the solids removal efficiency of the unit is increased, leading to lower RAS rates and higher RAS concentrations. The sludge withdrawal ring reduces sludge inventory while maintaining high solids concentrations. The fixed ring reduces operational and maintenance hassles by eliminating underwater seals.

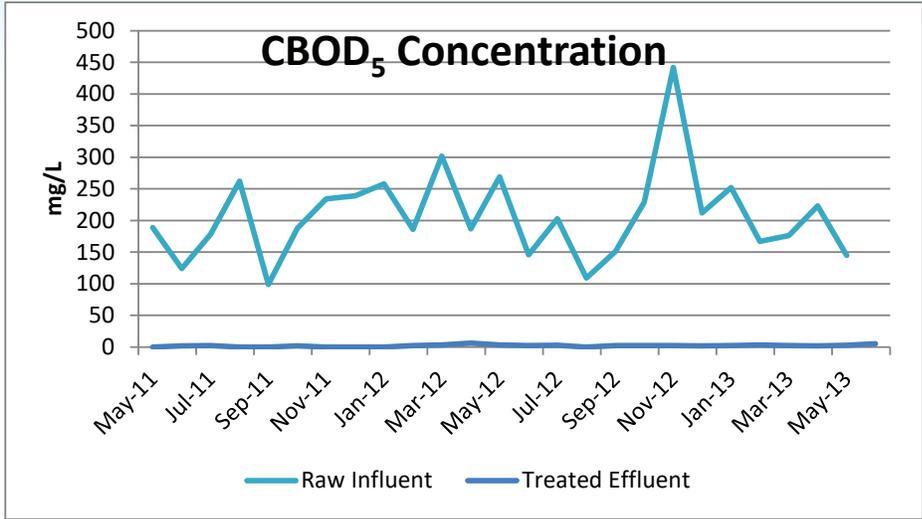
Following the secondary clarifiers, the overflow water is then filtered prior to discharge.

### Customer Satisfaction

Through the use of WesTech's OxyStream BNR system and COP clarifiers, Pace Water System was able to increase capacity, simplify operations and provide for effective nutrient removal. The plant treats total nitrogen to 1.62 mg/L on average with a total effluent phosphorus of 0.12 mg/L, and an average CBOD removal of 98.5%.

Plant operators are pleased with the performance of WesTech OxyStream systems and COP clarifiers, and they have been happy to work with WesTech.

WesTech is committed to providing quality process equipment that will satisfy customers and benefit the people they serve.



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