CASE STUDY

An Affordable Wastewater Treatment and Reuse Solution for Municipalities and Communities

MORGAN'S POINT RESORT, TEXAS

Problem Approaching forty years in operation, the wastewater treatment plant at Morgan's Point Resort, Texas, was rusted so much that it was literally in danger of falling apart. It also had constantly running aerators that used a lot of energy and were so loud that nearby residents complained.

Solution City leaders toured another town served by an Orenco liquid-only (effluent) sewer, followed by Orenco's AdvanTex® Treatment System, and became convinced they should install their own AdvanTex facility. This would not only eliminate the noisy aeration process required by their old sludge plant, but would also reduce operation and maintenance costs.

New Texas Treatment System Surpasses TCEQ Requirements

The city of Morgan's Point Resort is situated next to Lake Belton, which serves as the source of the city's drinking water, in addition to providing recreational opportunities to local residents. The marina has been designated as a "Certified Clean Texas Marina."

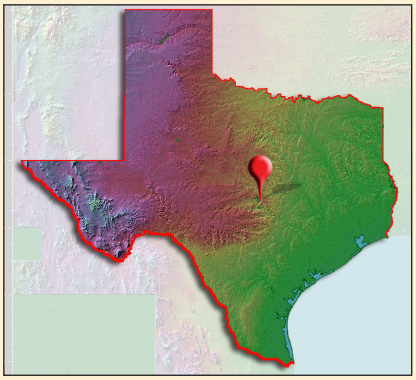
When its 1960's-era activated sludge plant failed, the City of Morgan's Point Resort, Texas, had no choice but to haul its waste to neighboring treatment facilities. Fortunately, its new wastewater facility was nearing completion at a site just a few yards away.

As far back as 2003, city leaders saw the need to begin planning to replace their aging wastewater facility, which was originally installed in 1965. According to Robert Russell, then Superintendent with Morgan's Point Resort, the old plant "took a lot of man hours to keep it maintained, and it was just too dangerous for the employees."[1] Finally, an arm that braced one of the aeration chambers gave in, causing the plant to be shut down.

Municipal and Community Market

Project Overview

MORGAN'S POINT RESORT, TEXAS



Design Parameters
- ~75 households
- 5,500 gpd (20.8 m^3/day) average daily flow
- 15,000 gpd (56.8 m^3/day) capacity

Start-Up Date
- 2007

Funding Sources
- Certificates of obligation issued by the city

Fees
- $83.04/month per residence

Primary Treatment
- 40,000 gallon (151.4 m^3) primary tank

Secondary Treatment
- 6 AdvanTex AX-100 pods

Tertiary Treatment
- Chlorine disinfection per TPDES permit

Effluent Quality*
- <5 mg/L BOD_5 and TSS

Dispersal
- Surface irrigation of approximately 3 acres (1.2 ha) of greenbelt easements between residences. Remaining effluent discharged into nearby Lake Belton per TPDES permit.

Monitoring and Control
- Orenco TCOM™ telemetry control panel

** Samples collected and analyzed by a third party between 3 December 2007 and 27 March 2008.*

MORGAN'S POINT RESORT, TEXAS

In replacing the old sludge plant, Russell saw an opportunity for the city to realize the many advantages offered by a different treatment process, including lower operation and maintenance costs, less noise, and minimal odor. "Cost, noise, smell… you name it, and we were concerned about it," remembers operator Jesse Measles.

At that time, Morgan's Point Resort contracted with Comprehensive Engineering Solutions (located in nearby Temple, Texas) for help in designing the new facility. As Russell and owner Kristine Andrews, P.E., were exploring the city's options, they were approached by Patrick Kern of Paramount Wastewater Solutions, also based in Temple. He recommended that they consider using Orenco System's AdvanTex AX100 units as the basis for their new facility.

Sitework for the new, low-profile wastewater treatment facility at Morgan's Point Resort. Its rusting activated sludge plant can be seen at the rear.

Six AX-100 pods provide all the treatment capacity the city currently needs, plus room to grow. These low-maintenance units can be installed in-ground or partially bermed, for an even lower profile.

A Field Trip Shows the Possibilities

To see for themselves how Orenco equipment looked and performed, Andrews and city staffers traveled to another town that had recently installed 45 AdvanTex AX100 recirculating filter pods at two treatment sites. According to Andrews, "The AX100 was a very appealing product. It offered a multi-dimensional solution to our unique problem."

Kern recalls that Morgan's Point Resort officials had also been considering the installation of another open-top activated-sludge plant, but "they had zero tolerance for any kind of smell. With the AX100, everything was enclosed. They really liked that."

Another huge advantage offered by the AX100 was the opportunity to greatly reduce the amount of noise coming from the treatment site. At the deteriorating sludge plant, Russell noted, "The old circulation pump was on top of the facility and ran 24/7. People blocks away could hear it at night."[2]

Not only were the high-head effluent pumps of the AX100 units much quieter than the loud aerators on the old plant, but also the AdvanTex system didn't require continuous pump operation. Instead, they cycled on and off, for a total operation time of less than three hours per day.

Following the tour of the other facility, Morgan's Point staff were convinced: the Orenco AdvanTex system was the wastewater solution they'd been searching for. The city moved ahead with plans for the $1.25 million project (which also included office space for water and wastewater staff), and the new facility began operation not a moment too soon – in November, 2007, just 12 weeks after the failure of the old activated-sludge plant.

Engineer Kristine Andrews laughs about the fact that "for a sewer treatment site, it's actually pleasant to look at. Most people don't even know that it's a wastewater facility." The new facility is located at the end of a residential cul-de-sac right next to popular Lake Belton.

Andrews also notes, "Because they offer a package deal, the Orenco products are good, clean, and easy for an engineer to put together. The support you need is there, and the questions you have are answered."

A Pattern of High Water Quality

The City of Morgan's Point Resort benefits from being located immediately to the east of Lake Belton, which offers a wide-range of recreational activities, including fishing, boating, and swimming. The lake, however, also fulfills a much more fundamental need: it's the source of drinking water for the town's 4,400 residents.

The effluent sample on the left, discharged from the Orenco AX100 unit, is almost indistinguishable from a water sample taken directly from Lake Belton. Weekly effluent tests from the AX system show consistently better results than are required by the TCEQ.

For this reason, Wastewater Operator Jesse Measles pays close attention to the weekly lab results that show the high quality of effluent being released by his facility. Although the treated effluent is primarily used as nightly irrigation for approximately three acres (1.2 ha) of greenbelt easements between residences, additional effluent is also discharged into Lake Belton.

"We're pretty proud of our lab results," remarks Measles, and a quick glance of the data reveals why. Levels of both BOD_5 and TSS consistently hover around 2-5 mg/L, far below the limits set by the Texas Commission on Environmental Quality (TCEQ).

Working under the direction of Wastewater Superintendent Dale Sellears, Measles handles maintenance and operations for both the water and the wastewater departments, along with two other full-time operators, Ben Wilkerson and Damon Balboa. According to Measles, wastewater maintenance is pretty routine, so "we spend most of our time on water issues."

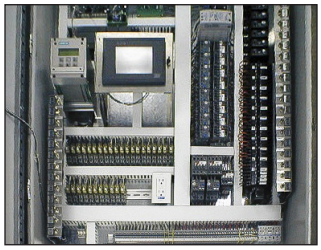
Saving Time and Preserving the Environment

When it comes to the smooth operation of their wastewater system, however, the job is simplified by an Orenco TCOM™ telemetry control panel installed at the facility. This touch-screen panel gives operators the ability to remotely monitor and control the performance of mechanical equipment in real time. For instance, if a pump were to malfunction, the panel would auto-dial the operator on call, alerting him to the situation and saving him the time of having to troubleshoot the source of the problem.

Constructed by the U.S. Army Corps of Engineers, Lake Belton is located on the Leon River and offers arguably some of the best fishing, camping, and boating in central Texas.

MORGAN'S POINT RESORT, TEXAS

In addition to opening its new wastewater treatment facility in 2007, the city also built an adjacent 3,500 sq. ft. (325 m²) facility to house both its water and wastewater departments.



Orenco's TCOM panel provides remote monitoring and control.

Such a time-saving device is important to the city's overall effort to productively serve its residents. "We are looking for the best cost-efficiencies … always," states David Huseman, City Manager of Morgan's Point Resort.

Huseman views the city's wastewater facility as a key factor in helping city officials maintain their role as stewards of the local environment. "We look at our operations with the utmost scrutiny so that we can take pride in our efforts to reduce any possible environmental impact. This facility allows us to do that. It received the highest marks possible during our last TCEQ inspection."

Although the population of the city of Morgan's Point Resort has been stable for the last few years, it increased 40% between 2000 and 2012.[3] From time to time there's talk of future development, possibly including an additional wastewater treatment site. "In that case, I would definitely recommend an Orenco system or anything else that performs as well or better," says Huseman, adding, "... if there is such a product."

Municipal and Community Market

"For a sewer treatment site, it's actually pleasant to look at. Most people don't even know that it's a wastewater facility."

– **Kristine Andrews, P.E.**

[1] *Barclay, Emily. "Morgan's Point Resort Gets New Wastewater Facility." Quality on Tap! March/April 2008: 8-10. Print.*

[2] *Ibid.*

[3] *City-Data.com, Morgan's Point Resort, Texas, Nov. 2013, www.city-data.com/city/Morgan-s-Point-Resort-Texas.html*

Data used by Orenco to derive the representations and conclusions contained within this Case Study were current as of November 2013.

For information about Prelos™ Sewer, AdvanTex® Wastewater Treatment, or Orenco Controls™, contact Orenco Systems®, Inc.

Orenco® WATER

800-348-9843 • +1 541-459-4449
www.orenco.com