

CASE STUDY

An Affordable Wastewater Treatment Solution for Commercial Properties

COUNTRYSIDE MOBILE HOME PARK, NORTH CAROLINA

PROBLEM The owner of a mobile home park needed a new wastewater treatment system to replace the park's deteriorating package plant. The new treatment system would have to meet the requirements of the existing discharge permit but would ideally need less oversight than the current plant and also not be an eyesore in the neighborhood.

SOLUTION Orenco's AdvanTex® technology was ideal for meeting not only the effluent requirements and the desire for fewer operation and maintenance visits, but also the park's site constraints. The AdvanTex system was a low-impact solution to a problem that none of the residents wanted to see, hear, or smell.

AdvanTex: Low Impact, Low Maintenance

Countryside Mobile Home Park in Sophia, North Carolina, needed a replacement for its 1970s-era package plant that was long past its life expectancy. With a permitted flow of 15,000 gallons per day and a 7.5 mg/L BOD₅ daily maximum, Countryside needed a solution that was robust, discrete, and easy to maintain.

The owner reached out to Kevin Davidson, a consulting engineer at Agri-Waste Technology. After considering the site constraints (including proximity to residents) and the effluent requirements for maintaining the existing discharge permit, he proposed a design with two AdvanTex AX-Max™ treatment units and flow equalization. And by adding remote monitoring, a permit reclassification to a weekly operator visit was approved.

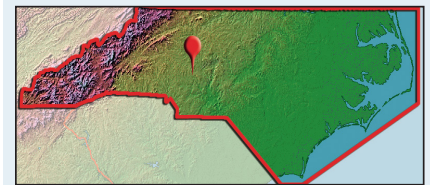


Because the AdvanTex AX-Max Wastewater Treatment System has a small footprint, these units (at right) could be installed while the old plant (at left) was still operating.

Commercial Market

PROJECT OVERVIEW

SOPHIA, NORTH CAROLINA



Design Parameters

- 65 lots
- 15,000 gpd (57 m³/day) permitted flow
- 8,000 gpd (30 m³/day) average summer flow

Permit Limits

- 5 mg/L BOD₅ (monthly summer average)
- 30 mg/L TSS (monthly average)
- 2 mg/L NH₃-N (monthly summer average)

Effluent Quality*

- 3.7 mg/L BOD₅
- 3.6 mg/L TSS
- 1.1 mg/L NH₃-N

Start-Up Date

- March 2022

Project Cost

- \$520,000 (included contracting, demolition of the old treatment plant, and all equipment for the new installation)

Collection

- Gravity sewer

Primary Treatment

- Three 10,000-gal (37.85-m³) precast concrete tanks
- Tanks manufactured by Shoaf Precast (Lexington, North Carolina)

Secondary Treatment

- Two AdvanTex AX-Max units

Disinfection

- Ultraviolet light

*Samples collected between December 2022 and February 2024 and analyzed by a third party.

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Davidson says, "Orenco's AdvanTex technology was the best solution for this project for several reasons – its history of reliable performance, its small footprint that allowed for installation while the old plant was still running, the way it minimizes noise and odor, and the fact that we could reduce operator visits from daily to weekly."

Installation began in the fall of 2021. AQWA, the local Orenco dealer, provided contracting services that included demolition of the old treatment plant, as well as all the equipment needed for the new installation.

The existing collection system was located and marked so that all excavation work could avoid those components and allow them to operate until the new AdvanTex facility was complete. Installation challenges included shallow rock, existing infrastructure, and tight workspaces.

Positioned at the back of the available design space, the AX-Max units were placed first. Due to their sturdy fiberglass construction, the units could be "walked in" with an excavator.

Three 10,000-gallon precast concrete tanks provide the necessary primary tankage. Two sequential septic tanks allow for ample solids retention and storage, and an equalization tank buffers the flow during peak usage. In addition, a small building was constructed on-site to house the control panel, chemicals, and ultraviolet disinfection units.

The pre-plumbed, pre-wired AX-Max units – along with the use of AQWA as a single supplier for all major components – ensured an efficient, almost seamless installation, and the new facility was ready for start-up in March 2022. Soon afterward, wastewater flow was diverted to the AdvanTex system, and the old plant was demolished.

With dependable wastewater treatment in place, the park has been able to add new mobile homes. Lab samples show strong treatment results that are consistently well below regulatory levels.

AQWA's Michael Clayton says, "The old plant was loud and smelled terrible, affecting everyone in the park. Replacing it has greatly improved life for the local community, making it a rewarding project for our team."



These AdvanTex AX-Max units are so easy to maintain that operator visits are only required every week – as opposed to the daily visits required for the old package plant.

Commercial Market

Discharge

- Into nearby creek

Monitoring and Control

- Orenco TCOM™

Engineer

- Kevin Davidson
- Agri-Waste Technology, Inc. (Apex, North Carolina)

Equipment Supplier

- AQWA (Wilson, North Carolina)

Operation and Maintenance

- AQWA

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– Kevin Davidson, P.E.
Agri-Waste Technology, Inc.

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



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All product and performance assertions are based on proper design, installation, operation, and maintenance according to Orenco's current published documentation.