

C A S E S T U D Y

An Affordable Wastewater Collection and Treatment Solution for Municipalities and Communities

DUPONT AND CLOVERDALE, OHIO

Problem The village of Dupont, Ohio, found itself under orders from the Ohio EPA to install a new wastewater collection and treatment system that would protect the Auglaize River from septic runoff. The system would need to be reliable, affordable, and robust enough to handle the entire wastewater flow generated by the village.

Solution To qualify for financial assistance from the Ohio EPA, Dupont partnered with the nearby village of Cloverdale to apply for funding and create the Cloverdale Dupont Wastewater Authority. After analyzing their options, village leaders chose a Prelos® Sewer (pressurized, liquid-only sewer) followed by an AdvanTex® AX-Max™ Treatment System, both manufactured by Orenco Systems.

Two Mayors, Two Villages, One Wastewater Plan

The small village of Dupont, Ohio, has historically relied on septic systems at individual homes and businesses to handle its wastewater. But when septic runoff began to pollute the nearby Auglaize River, the village found itself under orders from the Ohio EPA (OEPA) to install



The villages of Dupont and Cloverdale joined forces to obtain funding from the Ohio EPA for their new Prelos Sewer and AdvanTex Wastewater Treatment System, which now allow them to discharge into the Auglaize River without polluting it.

Municipal and Community Market

Project Overview

PUTNAM COUNTY, OHIO



Design Parameters

- Number of connections: 203
- 53,730 gpd (203 m³/day) average flow
- 80,600 gpd (305 m³/day) maximum flow

Permit Limits

- 10 mg/L BOD
- 12 mg/L TSS
- 1 mg/L NH₃-N (summer)
- 3 mg/L NH₃-N (winter)
- > 6 mg/L DO

Average Effluent Quality*

- 3.2 mg/L CBOD₅
- 2.2 mg/L TSS
- 0.55 mg/L NH₃-N
- 7.1 mg/L DO

Start-Up Date

- November 30, 2021

Project Cost

- \$6,020,862

Funding Source

- Ohio EPA

Primary Treatment

- 165 Prelos Processors
- Six larger collection tanks to serve churches and various businesses

Secondary Treatment

- Stage 1: eight 42-ft AdvanTex AX-Max units
- Stage 2: three 35-ft AdvanTex AX-Max units

Tertiary Treatment

- UV disinfection

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DUPONT AND CLOVERDALE, OHIO



A Prelos Processor's watertight tank has a unique, patented¹ "meander" design for superior solids settling, removal, and primary treatment.

a new wastewater collection and treatment system that would protect the river by meeting specific discharge limits for biochemical oxygen demand (BOD), total suspended solids (TSS), and ammonia.

The system would need to be reliable, affordable – not placing an undue financial burden on the approximately 400 residents of Dupont – and yet robust enough to handle the entire wastewater flow generated by the village.

The first challenge Dupont faced was a lack of funding. Although the village had been directed by the OEPA to prevent any further septic pollution of the Auglaize River, the agency hadn't been willing to supply financing for a project that affected only one small village.

But then the engineer hired by Dupont to help the village solve its wastewater crisis had an idea: if another village joined the project, it could qualify for funding as a regional effort. The engineer met with the mayor of Cloverdale (three miles south of Dupont), and the mayor was later able to bring his residents on board with the idea. The villages formed an alliance and were successful in their subsequent application for wastewater funding through OEPA. They proceeded to create the Cloverdale Dupont Wastewater Authority.

Prelos Collection and AdvanTex Treatment

After analyzing the options they could afford, village leaders chose a Prelos Sewer (pressurized, liquid-only sewer) followed by a two-stage, AdvanTex AX-Max packed-bed filter treatment system. Both are offered by Orenco Systems. Since 1981, Orenco has researched, designed,



In a Prelos Sewer, a Processor is installed underground at each home. Small-diameter service lines carry the primary-treated effluent from the Processor to the AdvanTex treatment facility.

and manufactured leading-edge wastewater collection and treatment technologies.

Prelos Sewer is based on 40 years of proven sewer solutions. At its core is the Prelos Processor, which would be installed underground at each home in both villages.

The Processor's watertight tank has a unique, patented "meander" design for superior solids settling, removal, and primary treatment. The Processor is easy to maintain, with long-lifespan components that include a lightweight effluent pump that can last more than 25 years.² Plus, an optional 10-year, extended pump warranty is available.

Inside the Processor, solids are screened by a passively self-cleaning pump vault and filter, so only liquids are transported to the treatment facility. Small-diameter service lines that follow the contour of the land carry the primary-treated effluent from the Prelos Processor to the AdvanTex treatment facility.

AdvanTex treatment systems use a fixed-film, attached-growth treatment process and are an excellent solution for small communities and small-flow applications. In an AdvanTex system, wastewater is uniformly distributed onto unsaturated textile media. The system uses fractional-horsepower fans to draw air through the media and provide sufficient oxygen for aerobic digestion.

Low-horsepower, high-head turbine pumps operate intermittently with sophisticated controls that automatically adjust pump run-times based on daily flows to meet pre-set recirculation ratios. The energy needed for aerating and distributing the wastewater onto the media is considerably less than for an activated-sludge treatment system (typically used by larger municipalities).



Trenchless construction is a less intrusive method of installing the small-diameter service lines used in a Prelos Sewer. It helps reduce environmental impacts and neighborhood disruption.

Overcoming Installation Challenges

Because the combined population of Dupont and Cloverdale was fewer than 600 people, only one AdvanTex treatment facility would be needed and could be constructed between the two villages. Nevertheless, the location of this facility posed a challenge, because Dupont and Cloverdale are on opposite sides of the Auglaize River.

Fortunately, a Prelos Sewer needs only small-diameter mainlines, and construction crews were able to successfully bore underneath the river to install the necessary sewer pipes.

DUPONT AND CLOVERDALE, OHIO



Construction crews bored underneath the Auglaize River to install the small-diameter sewer pipes that connected each village to this shared AdvanTex treatment facility. AdvanTex is an excellent solution for small communities and small-flow applications.

Today, following secondary wastewater treatment at the new facility, effluent that now meets OEPA standards is safely discharged into the river.

1. U.S. patent 10,392,281

2. As seen in the Elkton, Oregon, and Diamond Lake, Washington, sewer systems.

All product and performance assertions are based on proper design, installation, operation, and maintenance according to Orenco's current published documentation. Data used by Orenco to derive the representations and conclusions contained within this Case Study were current as of September 2022.

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Discharge

- Into the Auglaize River

Monitoring and Control

- Orenco Systems TCOM™ telemetry control panel

Engineer

- Christopher Hunt of Hunt Engineering

Contractors

- Miller Contracting (for Dupont)
- TAM Construction (for Cloverdale)

Operation and Maintenance

- Part-time operator (twice a week)

** Samples collected and analyzed by a third party between 2 June 2022 and 27 July 2022.*

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



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