

PROJECT PROFILE

An Affordable Wastewater Collection and Treatment Solution for Municipalities and Communities

LACEY, WASHINGTON

Problem Lacey, Washington, began growing rapidly between 1980 and 2000, with its population more than doubling in that period. The town needed an affordable wastewater solution to support construction in the Urban Growth Area (UGA) it shares with neighboring communities.

Solution The City of Lacey chose to install an Orenco Effluent Sewer in its UGA, even though effluent sewers were a relatively new technology at the time. The effluent sewer discharges into the city's gravity sewer lines, creating a "hybrid" system. Now, more than 20 years later, the system successfully serves about 11,500 gravity sewer connections and almost 3,200 effluent sewer connections, and its operators have developed experience and expertise in maintaining a "hybrid" sewer system.

Early Effluent Sewer Adopters Develop Hybrid System



Lacey, Washington has a hybrid wastewater system with about 100 miles of gravity sewer lines (11,500 connections) and about 50 miles of effluent sewer lines (3,758 connections).

Lacey, Washington — about 50 miles south of Seattle — began growing rapidly between 1980 and 2000. During that period, its population more than doubled, from 14,000 to 31,000.

With the neighboring cities of Olympia and Thurston, Lacey signed an Urban Growth Management Agreement that defined the Urban

Growth Area (UGA) for the region. The three cities agreed to focus new growth towards the UGA and to provide sewer infrastructure to support it, instead of allowing septic.

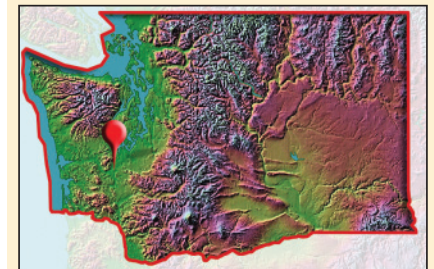
Providing gravity sewers to these rapidly growing areas would have been extremely costly. At the time, Orenco effluent sewers were a relatively new technology. Even so, the City of Lacey decided to become an "early adopter." In 1986, the first effluent sewer mains were installed in the Lacey UGA.

Today, Lacey's 33-square-mile wastewater service area includes approximately 100 miles of gravity sewer mains and 46 miles of small-diameter, watertight effluent sewer mains. The system has about 11,500 gravity sewer connections and almost 3,200 effluent sewer connections, which include

Municipal and Community Market

Project Overview

LACEY, WASHINGTON



Installation Date

- 1986

Sewer Collection System

- Hybrid system:
 - Effluent sewer discharges into gravity sewer mains
- Gravity Sewer:
 - 11,552 connections
- Effluent Sewer:
 - 3,194 connections
 - 20 STEP (Septic Tank Effluent Pumping) lift stations

Secondary Treatment

- All wastewater treated at a regional treatment plant

"We truly appreciate the effort that Orenco has made in doing what they can to reduce our costs and effort," said Terry Cargil, water and wastewater supervisor for the city of Lacey. "They have taken the time to help us strategize ways to make wastewater service more affordable for our customers and reduce the effort required for maintenance."

~ Terry Cargil, City of Lacey Water and Wastewater Supervisor

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an underground tank and a Septic Tank Effluent Pumping (STEP) system. Some homes are also connected to community STEP tanks that accommodate as many as 100 households.



Developing efficient maintenance protocols has helped Lacey operate its hybrid sewer system economically.

All the effluent sewer mains discharge into the city's gravity sewer infrastructure, where the combined wastewater is conveyed to a regional treatment plant.

When the system was designed in the late 1980s, effluent sewers were uncommon, and Lacey couldn't compare notes

with any similar-sized communities about O&M protocols. So Lacey first adopted a policy of performing reactive maintenance on the effluent sewer system, rather than preventive maintenance.

This protocol worked in the early years, when all the equipment was new. But by 1998, deferred maintenance and a high call-out rate were becoming an issue. At this point, Lacey implemented an aggressive maintenance program. For the on-lot equipment, that included pumping the tank, cleaning it, and replacing floats at every service call. For the collection system, maintenance included annual cleaning of air release valves. Because of odor issues caused by the design of the connections where the effluent lines met the gravity lines, the city adopted a chemical injection program for the connection sites.

Under this regimen, the emergency call-out rate declined to 6% per year (all causes), even as the system doubled in size to 2,867 connections. The city had an excellent level of service, with prompt response to citizen calls. But the cost of this highly proactive maintenance program was high, and the city urgently sought a way to get it under control.

In 2007, at Lacey's request, Orenco's Asset Management Group began analyzing the city's maintenance protocols. Orenco then worked with Lacey to develop a plan for a sustainable, affordable level of service. Changes included the following:

- Increasing the interval between full service visits to STEP systems from five to eight years
- Experimenting with aeration for odor control, instead of chemical injection.
- Evaluating increased use of residential on-lot tanks instead of community tanks for all new construction

Data used by Orenco to derive the representations and conclusions contained within this Project Profile were current as of August, 2011.

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"Over the past two-plus decades, Lacey has developed tremendous experience in managing a hybrid sewer system, and utility managers have experimented with various maintenance protocols in an effort to maintain a high level of service while controlling costs. Because of the city's long-term experience with effluent sewers, Lacey's O&M history serves as a valuable resource for other communities."

~ **Darren Paschke**, Orenco Post-Sales Account Manager

For more information about effluent sewers, Orenco Sewers™ and AdvanTex® Treatment Systems, contact Orenco Systems®, Inc.



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