

# ENVIRONMENTAL PROFILE Prelos Sewer™

**Collecting and Conveying Treated Wastewater** 



## **Environmental Profile**

Prelos Sewer

#### **Background** Many developers, engineers, and municipalities want products that reduce the environmental impact of construction projects. Wastewater projects are no exception. The need for environmentally sound sewer systems is especially great in sensitive areas. Prelos Sewers are a sustainable solution for unsewered communities, new subdivisions, developments on the fringe of urban areas, and municipalities with inadequate or maxed-out sewer infrastructure.

Product Prelos Sewers are an adaptable, cost-effective way to meet sewerage needs. In a Prelos Sewer, raw sewage flows from a home or business to an underground, on-site tank that provides primary treatment, includes a Biotube<sup>®</sup> wastewater filter, and is designed to eliminate inflow and infiltration. Solids remain in the tank and are anaerobically digested, reducing overall solids management. Only filtered liquid is pumped to shallow, small-diameter collection lines that follow the contour of the land.

**Energy Efficiency** *Passive primary treatment*: Unlike gravity sewers, Prelos Sewers remove waste materials that float or settle, thus providing natural primary treatment inside the underground tank, with no power requirement.

**Secondary treatment:** Because partially treated and filtered effluent, rather than full-strength sewage, is transported to downstream municipal treatment plants, they need less power to accomplish secondary treatment. This treatment-process savings may include reduced energy demand, reduced chemical use, and less biosolids handling. Additional capital savings may also be realized in investments such as headworks, clarifiers, aeration basins, solids handling, and blowers.

**Energy-efficient collection:** Available exclusively from Orenco, and designed according to our unique, industryleading specifications, our 1/2-hp (0.37 kW), high-head effluent pumps are a highly energy-efficient method of transporting wastewater. They can last more than 25 years<sup>1</sup> with minimal or no maintenance and come with an optional, extended 10-year limited warranty.



The Prelos Processor<sup>TM</sup> provides primary treatment, so only liquids are conveyed to the treatment facility.

Our patented Biotube Pump Vault filters out solids, and our pumps can last more than 25 years,<sup>2</sup> requiring minimal or no maintenance.

One-inch (25-mm) diameter service laterals can be easily installed with a trencher.

Small-diameter main lines follow the contour of the ground, saving on excavation costs. No expensive manholes or lift stations are required.

The primary wastewater treatment provided by the Prelos Sewer can decrease the capital cost and operating cost of the wastewater treatment plant.<sup>3</sup>

This illustration shows how Prelos Sewers work. The filtered effluent can flow to an existing gravity sewer or to a low-cost, low-maintenance treatment system, including a lagoon, sand filter, or textile filter. After treatment and disinfection, the effluent is ideal for reuse, when local regulations allow.

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Water Reuse	Combined with a decentralized AdvanTex <sup>®</sup> Treatment System, Prelos Sewers can provide water reuse for irrigation,* reducing the demand on other water sources. Effluent from Prelos Sewers can also be treated to reuse quality at a centralized facility for distribution to water reuse sites.
Low Construction Impact	Prelos Sewer collection uses small-diameter pipe and pressurized flow, which allows for shallow pipe burial and enables the use of small, fuel-efficient excavation equipment, resulting in less site disturbance. Directional drilling can also be used for minimal above-ground impacts.
Better Land Use	<b>Reduced footprint:</b> Using Prelos Sewers lets developers cluster homes more closely together than is possible with individual septic systems. This helps maintain biodiversity and a higher ratio of open space to development.
	<b>Modular construction:</b> The modular nature of a Prelos Sewer allows mainlines to be added to projects as needed and avoid unnecessary infrastructure. This approach to wastewater treatment saves money and limits the environmental impact of installation.
	<b>Small-scale facilities:</b> With a Prelos Sewer, large centralized treatment facilities aren't necessary. Solids are treated on each individual lot, so decentralized wastewater treatment can take place on a neighborhood scale, minimizing noise, odor, and visual impacts from buildings, parking lots, and aeration tanks (common at large plants).
Public Health	<b>Biosolids control:</b> Prelos Sewer collection allows for excellent biosolids control, with on-site passive reduction in overall biosolids of up to 80%. <sup>4</sup> If homeowners or renters abuse their system, detrimental materials remain in their own onsite tank, minimizing problems for the entire system, including the treatment facility.
	<b>Reduced pollution:</b> Prelos Sewers don't use manholes and lift stations, which can become overflow points during floods and heavy surface water runoff. Because Prelos Sewers are designed to be watertight, untreated sewage is kept out of the environment.

## LEED Profile — Prelos Sewer

Background	The Leadership in Energy and Environmental Design (LEED) Green Building Certification for new commercial buildings and major renovations is an important accreditation for today's environmentally aware designers, engineers, architects, and builders. With increasing interest in environmental sustainability and efficiency, more of these professionals are seeking LEED Certification for their projects. Prelos Sewers can help.
Energy & Atmosphere	<b><u>Optimize Energy Performance</u>:</b> Passive primary treatment takes place inside each property's processor tank, reducing power requirements at downstream municipal treatment plants.
	<b><u>Optimize Energy Performance</u></b> : Orenco's low-horsepower (1/2 hp or 0.37 kW), high-head effluent pumps run for just minutes per day, resulting in an extremely energy-efficient method of transporting and treating wastewater.
	<b>Optimize Energy Performance:</b> Prelos Sewers are designed to be completely watertight, so they don't experience the inflow and infiltration (I&I) common to gravity sewers, eliminating the expense of transporting and treating extra liquid. And less I&I also means a reduced hydraulic load at the treatment facility.
Water Efficiency	<i>Outdoor Water Use Reduction:</i> A Prelos Sewer coupled with an AdvanTex Treatment System can provide recycled water for subsurface irrigation.*
	Indoor Water Use Reduction: A Prelos Sewer coupled with an AdvanTex Treatment System can provide recycled water as an alternative water source for toilet flushing, reducing the indoor use of potable water.*

\*when local regulations allow

#### LEED Profile — Prelos Sewer

#### **Sustainable Sites**

**Construction Activity Pollution Prevention:** Prelos Sewer mains use small-diameter pipes and pressurized flow, which allows for shallow burial depth. This minimizes site disturbance and enables the use of small, fuel-efficient excavation equipment. Minimal digging also reduces potential erosion and airborne dust.



Photo courtesy of Innoflow Wastewater Specialists

**Open Space:** Prelos Sewers enable developers to cluster homes more closely together than is possible with individual septic systems, allowing for a higher ratio of open space to development, which promotes biodiversity. And the use of narrow-trench or directional-boring installation reduces disturbance of native soil and vegetation.

With a deep respect for the environment and a long tradition of innovative problem-solving, Orenco Water designs and builds the world's best decentralized wastewater systems with pride in Southern Oregon. Our products help ensure the health and safety of people, neighborhoods, and communities everywhere by protecting the world's water.

Founded in 1981, Orenco has become an industry leader, with more than 350 employees and some 330 points of distribution in North and Central America, Australasia, Europe, and Africa. Our systems have been installed in more than 70 countries around the world.

We maintain an environmental lab and employ dozens of civil, electrical, mechanical, and manufacturing engineers, as well as wastewater treatment system operators. Orenco's technologies are based on sound scientific principles of chemistry, biology, mechanical structure, and hydraulics. As a result, our research appears in numerous publications, and our engineers are regularly asked to give workshops and trainings.

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



Company

 $^{\scriptscriptstyle 3}$  As seen in the Montesano, Washington, sewer system.

<sup>&</sup>lt;sup>1</sup> As seen in the Elkton, Oregon, sewer system.

<sup>&</sup>lt;sup>2</sup> Ibid.

<sup>&</sup>lt;sup>4</sup> Metcalf & Eddy, Inc., Wastewater Engineering: Collection, Treatment, and Disposal (New York: McGraw-Hill, 1972).