

# Wastewater Solutions

**Affordable Wastewater Treatment Solutions from Orenco Systems<sup>®</sup> Inc.**

Mining camps. Military camps. Disaster relief centers. All need sanitation facilities. But wastewater treatment systems for temporary camps pose unique challenges (see sidebar). Orenco's AdvanTex<sup>®</sup> AX-Mobile™ Treatment Systems are ideal for these challenging applications because they use a multi-pass, packed-bed filter treatment technology that is more stable and produces more consistent effluent quality than other technologies, even with wide variations in flow and waste strength. Orenco's wastewater systems have been successfully installed in temporary camps and other remote locations all over the world.



*Frigid conditions and poor soils at the Castle Resources work camp made adequate wastewater treatment a challenge.*

## Stewart, British Columbia, Canada

### *Excellent treatment under harsh conditions*

Owners of a remote work camp near the Granduc copper mine in northern British Columbia were looking for a unique wastewater treatment solution. They needed a portable system that would not only provide good treatment for this rocky, environmentally sensitive area, but could also withstand the harsh conditions at the remote site. Effluent had to meet permit limits of 30/30 mg/L BOD and TSS.

Castle Resources, the mining company developing the site, contacted a local engineer with its requirements. The engineer suggested an AX-Mobile system because these robust units work well in extreme conditions and are easy to ship and set. Since the systems also require little energy and have minimal O&M needs, they were an excellent fit for this remote location at the base of a glacier. The 21-ft (6.4-m) AX-Mobile unit was transported to the work camp site via a barge and truck with flatbed trailer. Setup was minimal because the AX-Mobile's components are pre-installed at the factory, so the system is virtually "plug and play." The unit is monitored by an Orenco<sup>®</sup> TCOM™ remote telemetry control panel and, after UV disinfection, the resulting effluent is dispersed via subsurface discharge.

### **Design Considerations for TEMPORARY CAMPS**

Wastewater treatment systems for temporary camps need to meet permit limits for their remote locales and operate reliably for long periods of time with minimal operation and maintenance. In addition, their owners need to be able to connect them, disconnect them, and move them from place to place as easily as possible.

AX-Mobile™ units are completely self-contained and pre-plumbed. Because units are made of relatively lightweight fiberglass, they can be transported via truck, rail, ship, or aircraft and are easy to set up and decommission. Modules can be added or taken offline as camp occupancy fluctuates.

AdvanTex<sup>®</sup> AX-Mobile Treatment Systems produce such outstanding effluent that, depending on local regulations, it can be reused for dust control, vehicle washing, or irrigation.

For a copy of Orenco's AdvanTex Design Criteria, call 800-348-9843 or +1-541-459-4449.

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AX-Mobile™ units are easy to ship and set. They can be transported by truck, rail, barge, helicopter, or other aircraft.



The NDCEE pilot project required custom AX-Mobile units that were built inside shipping containers.

## Pearsall, Texas

### Portable treatment for oil & gas service center

Seventy Seven Energy, an oilfield services firm based in Oklahoma City, needed a portable wastewater treatment solution for a new facility in Texas. The Pearsall Development is located in a desert area with cement-like soils and features six buildings, including offices and living quarters for about 300 workers. With the addition of the living quarters, flows would exceed the 5,000 gpd (18.9 m<sup>3</sup>/day) threshold and therefore require a state permit. The choice was made to treat all the site's wastewater together, and staff began researching effective options.

The project's construction company had installed an AX-Mobile system at a similar site and recommended it to Seventy Seven's project manager. The resulting system, permitted for 24,000 gpd (90.8 m<sup>3</sup>/day), includes an Orenco Effluent Sewer collection system followed by four 42-ft (12.8-m) AX-Mobile units. After UV disinfection, treated effluent is discharged to a nearby creek. Flows average 12,000 gpd (45.4 m<sup>3</sup>/day) with BOD<sub>5</sub>/TSS requirements of less than 10 mg/L each.\* The system's operator tests both the site's well water and its wastewater effluent. When you look at both samples, he says, "You can't tell the difference."

\* Samples collected and analyzed by a third party between 08-28-12 and 09-23-14.

## NDCEE, Fort Leonard Wood, Missouri

### Energy-efficient treatment for military camps

The National Defense Center for Energy and Environment (NDCEE) wanted to evaluate a mobile and energy-efficient wastewater treatment system that would meet the health and sanitation needs of soldiers in the field. The system also had to meet the environmental requirements of any area where it might be placed.

The NDCEE set up a demonstration project using an Orenco AX-Mobile. The AX-Mobile uses just 1-2 kWh of power per 1000 treated U.S. gallons (3785 L), is easy to start up, and has low O&M requirements. The NDCEE ordered a multi-stage system that includes a T-Max™ tank for primary treatment and an AX-Mobile packed bed filter unit for secondary treatment. After secondary treatment, effluent was passed through a UV disinfection unit. Permit limits were 30/30 mg/L for BOD<sub>5</sub>/TSS, and the system's effluent averaged 21.9/21.8 mg/L for BOD<sub>5</sub> and TSS, respectively.\* After decommissioning, the NDCEE intends to transport the unit for further field evaluation.

\* Source: NDCEE, Mobile Wastewater Treatment Technology Demonstration Project, Fort Leonard Wood, MO.

## Erbil, Iraq

### Low-maintenance system for remote site

BGP International, a seismic surveying firm, needed portable, turn-key wastewater systems for a series of 500-person remote camps in Kurdistan, Iraq. After viewing a similar system in operation at a mining site in Texas, U.S.A., BGP chose two AX-Mobile portable wastewater treatment systems.

The system includes gravity collection to an Orenco lift station with a 36-inch (900-mm) filament-wound basin. Effluent is pumped from the lift station to a dewatering unit, then to (2) Orenco T-Max™ collection tanks followed by (3) AX-Mobile treatment units. Finally, treated effluent runs



Multiple AX-Mobile units installed in surveying camps outside Erbil, Iraq, were quickly decommissioned as ISIS advanced.

through a UV disinfection unit and is pumped out for sub-surface dispersal. The resulting effluent is clear, with minimal odor. For more information, visit [www.orenco.com/ax-mobile](http://www.orenco.com/ax-mobile), or call Orenco and request a copy of the Erbil Case Study.

Data used by Orenco to derive the representations and conclusions contained within this Case Study were current as of September, 2016.

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