

# CASE STUDY

## An Affordable Wastewater Treatment Solution for Commercial Properties

### ALYESKA PUMP STATION, ALASKA

#### Problem

The Alyeska Pipeline Service Company in Alaska (Alyeska) needed to replace a failing, 50-year-old activated sludge sewer treatment plant quickly, with an above-ground solution that could handle the unique climate and geography of its location.

#### Solution

Alyeska installed a mobile, pre-packaged Orenco® AdvanTex® AX-Mobile™ Treatment System, a stable, recirculating packed bed filter that uses an engineered textile to treat wastewater in an above-ground, enclosed environment.

Alyeska's Yukon Response Station/Pump Station 6 is located three hours north of Fairbanks, on the Alaska Pipeline near the Yukon River. It serves as a remote base for firefighting teams in the summer, and for pipeline monitoring staff year-round. Temperatures can range from the 90's (35° C) in the summer to -60° (-50° C) in the winter. Also, the ground is permafrost, so infrastructure has to be installed above-ground. Alyeska needed a wastewater solution that could address the site's temperature extremes and installation parameters.



*Alyeska Pump Station 6 is located on the Yukon River in Alaska, just south of the Arctic Circle.*

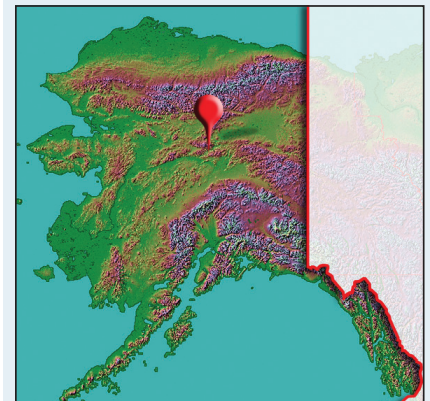
The station had a 50-year-old activated sludge treatment plant, complete with rusting parts and weirs held together with C-clamps. The plant had a hard time accommodating the variable flows from large fluctuations in seasonal staff residing on-site. It also had to meet NPDES permit requirements for surface discharge, since subsurface discharge was not an option given the climate and terrain.

Alyeska approached Bristol Environmental & Engineering ([www.bristol-companies.com/engineering\\_services](http://www.bristol-companies.com/engineering_services)) for help designing a new system to better meet its needs. The solution had to be economical, installed above ground, and start up quickly. At the time, Alyeska was interested

### Commercial Market

#### Project Overview

#### ALYESKA PUMP STATION, ALASKA



#### Design Parameters

- 12-44 residents on site
- Variable Flows
  - ~2,500 gpd average (9.5 m³/d)
  - ~4,500 gpd peak (17 m³/d)

#### Start-up Date

- December 2009

#### Primary and Secondary Treatment

- 12,000-gal. primary tankage (45 m³)
- 4,000-gal. recirculation tank (15 m³)
- 100 ft² of textile media (9.3 m³)

#### Permit Requirements

- 30 mg/L cBOD<sub>5</sub>
- 30 mg/L TSS
- 20 MPN/100 ml fecal coliform
- 6.5-8.5 pH

#### Effluent Quality (average)

- 6.1 mg/L cBOD<sub>5</sub>
- 4.6 mg/L TSS
- 5.9 MPN/100 ml fecal coliform
- 7.4 pH

#### Controls

- Orenco TCOM™ remote telemetry control panel

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in a membrane treatment system. Bristol suggested an Orenco AdvanTex system for treatment, since costs for a membrane system could be up to twice as much.

According to engineer John Blees, “An AdvanTex system more than met the requirements of Alyeska’s NPDES permit, and did so cost-effectively. It also provided better sludge digestion than a membrane system, which was critical because the nearest sludge discharge point was three hours away in Fairbanks.”

The customer agreed. The system was built at Orenco’s manufacturing facility in Oregon and was then shipped to Pump Station 6. It was installed on a custom foundation, above ground.

The Advantex AX-Mobile is a complete, fully-plumbed wastewater treatment system designed to be quickly installed for decentralized applications with medium-to-large flows, scalable up to 1M gpd (3800 m<sup>3</sup>/d). It’s ideal for systems with permits requiring secondary treatment or better. The system designed for Pump Station 6 provides primary, secondary, and tertiary treatment. Treated effluent is discharged to the surface, according to the parameters of the site’s NPDES permit.

The system had to be properly designed and insulated to allow the necessary biological treatment processes to function optimally, year-round. AdvanTex Dealer Tom Varney, of Anchorage Tank, commented on the tank’s constant temperature due to the system’s well-insulated design. Says Varney, “The temperature inside, no matter what time of the year, is always about 65° F (18° C).”

Alyeska’s AX-Mobile also includes an optional control room built over the treatment system. Varney continues, “It can be kind of a spooky place out there when it’s 20 below (-30° C) and dark. But that control room is always warm and toasty.” The control room



*The insulated control room allows for easy maintenance regardless of weather conditions.*

offers workers a location to easily monitor operations if necessary, regardless of the current weather conditions.

Effluent quality is excellent. While the NPDES permit allows 30 mg/L of both cBOD<sub>5</sub> and TSS, the system’s effluent averages 6.1 mg/L and 4.6 mg/L, respectively. Instead of the 1-2 hours per day maintenance workers had to spend on the old system, minimal oversight is required. Anchorage Tank has a maintenance agreement with Alyeska and inspects the system quarterly.

In addition, each week Tom Varney checks the site remotely through the Orenco TCOM™ telemetry panel monitoring the system. Varney can check

its status, see if any alarms have sounded, etc., all through an easy-to-read computer interface. (In Anchorage, some 12 hours away!) Says Varney, “Every week, I go through my list of AdvanTex systems to make sure everything’s functioning properly. That way, we can discover issues before they become problems.”

Orenco’s Tristian Bounds, P.E., sums the project up as follows: “The AX-Mobile was an excellent option for Alyeska, providing an affordable, plug-and-play solution that can withstand extreme climate variations. The system’s effluent has been consistently meeting better than secondary treatment levels year-round.”

For more information about Orenco Effluent Sewers and AdvanTex® Treatment Systems, contact us at:

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