

CASE STUDY

An Affordable Collection and Treatment Solution for Commercial Properties

CLASS VI - MOUNTAIN RIVER RESORT

Problem

A West Virginia resort needed wastewater services for its facilities, but a traditional septic-tank-to-leach-field dispersal system would have required a soccer-field-sized drainfield, with the removal of a stand of trees.

Solution

The owners applied for a direct discharge permit to allow dispersal into a nearby creek. To meet the state's stringent discharge limits, they chose an Orenco AdvanTex® Treatment System, which is capable of secondary and tertiary treatment levels. For collection, they chose an Orenco Effluent Sewer — which required minimal excavation in the hilly terrain.

Secondary Treatment Enables Direct Discharge and Preserves Wooded Area

Adventure WV Resort operates Class VI - Mountain River, a resort in West Virginia that provides outdoor recreation activities, luxury camping, and lodging. In 2006, resort owners were evaluating wastewater options. They briefly considered a traditional septic-tank-to-leach-field solution; however, this would have required the removal of too many trees. "We didn't want to kill trees to put in leach lines," said Class VI's owner, Jeff Proctor. "We wanted to preserve our woods."



Rafters under the New River Gorge bridge. This sensitive water shed is protected by Orenco's advanced wastewater treatment system.

Next they considered direct stream discharge. Because the resort is located adjacent to pristine world-class whitewater rafting, minimizing environmental impact was paramount. West Virginia DEP approved direct discharge into a creek that eventually flows to the New River, but required strict discharge limits.

To meet these discharge limits, Class VI decided to install

a small diameter effluent sewer collection system and two AdvanTex AX100 treatment pods. In addition to preserving forested area by avoiding a leach field, the effluent sewer lines required minimal excavation compared to a traditional gravity system. In this phase, the system served a restaurant, the main lodge, eight rental cabins, a shower house, and other smaller facilities located on the grounds.

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Project Overview

FAYETTEVILLE, WEST VIRGINIA



Installation Dates

- Phase I: June 2006
- Phase II: June 2009

Collection

- STEG (Septic Tank Effluent Gravity)

Treatment

- Stage I: Four AX100 pods
20,000 gal recirc tank
- Stage II: Two AX100 pods
10,000 gal recirc tank

Design Parameters

- 20,000 gpd direct discharge permit
- 8,000 gpd average flow

Permit Limits

- Ammonia: 6 mg/L winter, 3 mg/L summer
- BOD₅: 10 mg/L
- TSS: 30 mg/L
- DO: 6 mg/L
- pH: 6-9

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Photo courtesy of www.class-vi.com

Orenco's Effluent Sewer and AdvanTex Treatment Systems preserved the wooded grounds of this West Virginia resort.

By 2009, Class VI was ready to expand by adding six new cabins. The owners again turned to Orenco's AdvanTex Treatment System to meet the strict limits required for additional creek discharge: 10 mg/L BOD, 30 mg/L TSS, DO of 6 mg/L, pH of 6-9, and ammonia values of 6 mg/L during the winter and 3 mg/L during the summer.

At the height of the rafting season (March-October), flows average 8,000 gpd, but off-season wastewater flows drop off significantly. Fortunately, AdvanTex textile filter technology performs well under the highly variable conditions that are typical of seasonal flows.

System designer Jonathan Carpenter, with Thrasher Environmental, set up a two-stage system: a recirculation blend stage followed by a polishing stage. In the recirc stage, a 20,000 gallon recirculation tank dosing four AX100 pods was installed to reduce the ammonia, BOD, and TSS levels. Following these components, the two existing AX100 pods and a 10,000 gallon recirc tank were configured to provide the polishing.

Start-up for phase II occurred in June 2009. Effluent samples collected the following September and January came in below the permit limits. What's more, resort owner Jeff Proctor and his staff perform their own maintenance — no professional wastewater experience required!

Class VI's resort has been hailed as a model for sustainable, affordable wastewater services in West Virginia. The state's cabinet secretary for the Department of Environmental Protection, Stephanie Timmermeyer, "flipped the switch" on the phase I start-up with TV cameras rolling and, in a news release, said that "... it is the first application of its kind in West Virginia, and could be the harbinger of sanitation solutions for rural areas of the state."



AX100 filter pods can be installed above ground or partially bermed, depending upon site conditions.

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For more information about Orenco Effluent Sewers and AdvanTex® Treatment Systems, contact Orenco Systems®, Inc., at 800-348-9843.



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