

## STROUD WATER RESEARCH CENTER

# Ecological Wastewater System Upgrades for a Water-Focused Research Center

Avondale, Pennsylvania

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The Stroud Water Research Center (SWRC) and its 800 ha, third-order drainage basin was designated in 1981 as an Experimental Ecological Reserve by the National Science Foundation.

This designation recognizes that this field research facility is dedicated to long-term experimental research on an ecosystem that is an outstanding representative of its type. The East Branch of White Clay Creek is classified by the State of Pennsylvania as an “Exceptional Value” stream and watershed which is the highest classification given by the State. The designation affords the stream and its watershed special protection against environmental disturbance of anthropogenic origin.

When SWRC constructed its new lab, office, and classroom facility to expand their research capacity, they turned to Biohabitats to design a natural wastewater management system to process flows from the overall campus and replace outdated septic fields. The treatment system integrates directly into the landscape, providing a relevant and dramatic backdrop to the Center’s research. The treatment system was

designed to be highly protective of groundwater and nearby streams.

The treatment facility includes a primary treatment tank with built-in equalization to absorb flows from events and gatherings from the campus’ various buildings. Secondary treatment is provided through a series of terraced subsurface flow constructed wetlands and a trickling filter tower. A re-circulating sand filter polishes effluent prior to dispersal in a subsurface drip irrigation field. SWRC’s research team will monitor the treatment system and drip dispersal field to evaluate performance.

Biohabitats collaborated with SWRC’s internal team, M2 Architecture, Andropogon Associates (landscape architecture), Meliora Design (environmental permitting) and Lanchester Soil Consultants (drip irrigation). The wastewater system was funded in part by a state Growing Greener Grant.

*conservation planning*  
*ecological restoration*  
***regenerative design***



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