

# Monastery Run Improvement Project

## Wetland #3 and Mesocosm

Saint Vincent College Environmental Education Center  
Loyalhanna Creek Mine Drainage Coalition

Wetland #3, located behind the Saint Vincent Gristmill, was designed by USDA Natural Resources Conservation Service under a cooperative arrangement with Saint Vincent College. It was constructed in the summer of 1997. Wetland #3 is a 3.11 acre passive treatment wetland system used to treat abandoned mine drainage. It primarily treats water from the artesian discharge which was known as "The Bubbler". Using the head pressure in the underground mine complex, the mine water from "The Bubbler" is piped upstream 600 feet to a suitable location for treatment. The passive treatment wetland system allows for aeration and detention time sufficient to reduce the iron content from about 90 mg/L to about 2 mg/L.

A Mesocosm (outdoor laboratory) was designed by EES Consultant, Terry Rightnour and consists of four equal-sized cells where field research on mine water treatment may occur. Water can be controlled and monitored to research alternative field treatments. Mine water from a nearby discharge or "The Bubbler" can be used.

### Special Features of Wetland #3:

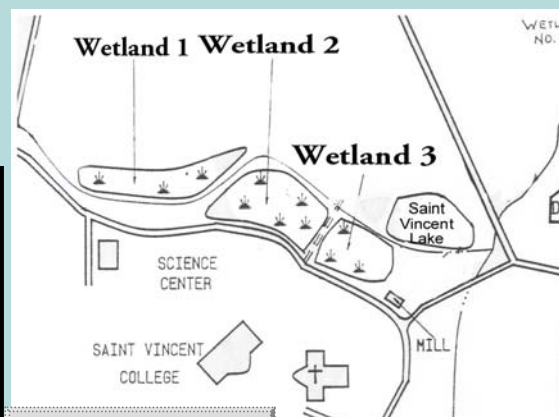
- Maintained an undisturbed 50-foot riparian buffer zone during construction which has been enhanced by additional planting.
- Allowed portions of cattail marsh to remain throughout construction to support biological life.
- A bentonite slurry cut-off trench was installed under the exterior dike to prevent subsurface flow of water between the wetlands and the stream.
- Designed to allow different water depths and flow patterns between cells.
- Hydrogeologic exploration to relocate the "Bubbler" to achieve a better capture of the mine pool. Drilling occurred in 2002.



Aerial Photograph of Wetland #3 and Mesocosms

### Water Quality Data

Parameter	Average Influent	Average Effluent	PA Water Quality Standard
pH	6.07	6.72	6.0 - 9.0
Acidity (mg/L)	-52	-71	0
Total Iron (mg/L)	95.7	2.3	< 7.0
Manganese (mg/L)	3.38	2.32	< 4.0
Aluminum (mg/L)	0.33	0.30	<4.0



Project Site

<b>Contractor:</b>	Stoy Excavating, Somerset, PA
<b>Contract Administration:</b>	Saint Vincent College in cooperation with Natural Resources Conservation Service
<b>Construction Cost:</b>	\$220,000
<b>Dedicated:</b>	August 1997
<b>Operation/Maintenance:</b>	Saint Vincent College/Wimmer Corporation