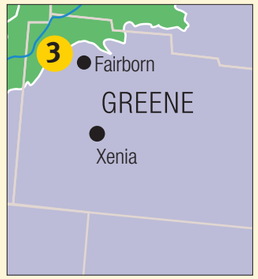
Enhanced Wetland Slows Stormwater and Filters Pollutants



Project Description

The Hidden Hills Detention Basin is designed to enhance a wetland along the Hebble Creek just upstream of Fairborn, Ohio. The wetland slows stormwater that could flood downstream properties and reduces polluted runoff that would otherwise drain to the Hebble Creek which flows to the Mad River.

Project Details

A 450-foot channel was created to move stormwater overflows from the Hebble Creek into a 28-acre wetland and prairie. Ground was excavated to create two pools connected together at various elevations to control the flow from the channel into the pools. A channel was constructed to flow toward the wetland when the water in Hebble Creek reaches a certain height. Therefore, the pools fill with water during high water or prolonged rain events. The site is planted in native wetland and prairie grasses that help slow the water. They also allow the plants to absorb excess nutrients in the water that can be used for plant growth but could be detrimental to aquatic life.

Invasive plant species were removed and replaced with native wetland and prairie species that provide superior erosion control and wildlife habitat. Finally, the Hebble Creek streambank was planted with native hardwood tree species to stabilize possible erosion. The creek, wetland, and surrounding prairie are now a wildlife-rich passive recreation area and outdoor classroom managed by the City of Fairborn.

Partners

The City of Fairborn led this project in partnership with the Greene Soil and Water Conservation District (SWCD) office. The city's Park and Recreation Department provided project management, and the SWCD provided scientific and engineering expertise to help design the wetland and prairie.

While the Hebble Creek wetland area is a joint venture between the City of Fairborn and the Miami Conservancy District, the benefits to the local ecosystem will be enjoyed by the entire region.

Benefits

Before the project, the Hidden Hills Detention Basin could only hold 4 acre-feet of water, and could barely handle a "one-year" flood. The wetland is now designed to adequately handle floodwaters, allow sediments and nutrients to settle out, and provide an opportunity for water to seep back into the ground, recharging the aquifer.

Planting trees along the banks of the Hebble Creek helps to stabilize areas that were eroding and decreases the amount of soil that can flow into the stream. The site also has trails, educational signage, and naturalist-led programs that increase the community's awareness of water quantity and quality issues.

Water Quality Results

As of the printing of this brochure, water quality monitoring is ongoing. Preliminary results show a decrease in sediment and nutrients since the wetland was completed. Contact The Miami Conservancy District for final results for this project.

Lessons Learned

Originally, the project was designed to measure pollutants that might be washed off of the adjacent highway (Interstate 675), such as oil and gas from cars and trucks. Because of the difficult and expensive nature of quantifying those compounds, water quality data is only being collected on sediment and nutrients that flow through the Hebble Creek. Also, due to an unusually rainy season, construction was delayed several times.

Costs

The total cost of the project was $55,700, including:

- Hiring a contractor to remove extensive invasive species (primarily honeysuckle).
- Enhancing the wetland through soil movement.
- Planting native prairie grasses and hardwood tree species.

Left: Land in the Hebble Creek wetland and prairie had to be moved to achieve the water flow conditions needed to maintain the desired pool height during prolonged rain events. Still, the wetlands quickly recovered and now serve as a sanctuary to animals and native grasses.

Below center: Construction of I-675 (shown in the background) no doubt obstructed the natural flow and drainage of rainwater from the area, making even "one-year floods" a common occurrence.

Below: Native wetland and prairie grasses allow the Hebble Creek wetland to mimic the habitat common in Southwest Ohio in the early and mid 1800s.