

## **Mill Creek Confluence Project**

### **City of Sharonville, Ohio**

The Mill Creek Confluence Restoration Project is a collaborative effort lead by the Mill Creek Watershed Council of Communities with support and partnership by Butler County Department of Environmental Services, Metropolitan Sewer District of Greater Cincinnati, and the City of Sharonville. Project funding comes from the Water Resource Restoration Sponsor Program of the Ohio Water Pollution Control Loan Fund, which is administered by the Ohio Environmental Protection Agency.

The restoration project is located in the Upper Mill Creek (UMC) watershed at the confluence of the main stem of Mill Creek and the East Fork of Mill Creek. The project setting is a heavily developed commercial district north of Cincinnati and within sight of the I-75 and I-275 interchange. The 30 acre parcel is owned by the city of Sharonville. Project construction is scheduled for 2008 and 2009. The estimated project cost is \$1.7M.

MACTEC Engineering and Consulting, Inc. (MACTEC) will design this project that has goals for improved water quality, channel stability, aquatic and riparian habitat, floodplain storage, and recreation. Measures that will be implemented will include channel relocation, excavation of soil to create a floodplain bench, bioengineered stream banks, instream habitat structures, riparian planting, and recreation trails.

Specific restoration elements will include:

- Natural channel design to increase sinuosity by channel shaping and increased meanders
- Floodplain recreation by excavating one or both sides of the stream in order to reconnect the stream with the flood plain
- Riparian restoration by planting the flood-prone zone with native riparian trees and shrubs
- Instream habitat restoration through the construction of riffles, j-hooks and boulder clusters
- Creation of a recreation trail with educational signage

Expected outcomes of the restoration will include:

- Reduced streambank erosion
- Elimination of channel downcutting
- Creation of high quality pool/riffle/run complexes

- Increased aquatic and terrestrial habitat and species diversity
  - Improved bedload conveyance
  - Improved retention of high flows with the addition of the meanders and increasing the stream and floodplain connection
  - Reduced embeddedness
  - Increased dissolved oxygen content
  - Improved assimilative capacity of urban runoff pollutants
  - Attainment of WWH use designation
- Provide passive and active recreation such as hiking, bird watching, and education.

A long history of industrial, commercial and residential development has included channelization of much of the UMC, sediment runoff from construction sites, increased runoff from impervious surfaces, point and non-point source discharges, floodplain filling, and encroachment and loss of riparian corridors. Due to the sources of impairment, the Mill Creek and East Fork are not meeting their designated Warm Water Habitat (WWH) use.

An important aspect of this project is the large scale of the undertaking. The project will result in over 5,000 linear feet of restored stream channel and a substantial riparian floodplain that will alleviate localized flooding. It is anticipated that the project will assist the Mill Creek and East Fork segments with meeting the Aquatic Life Use Designations for Warm Water Habitat. Historically, stream restoration projects on the Mill Creek have been smaller, isolated, or only had segments of restoration.