Mill Creek Lowhead Dam Modification

**Project Type:** Stream Restoration  
**Total Project Cost:** $512,405  
**Funding Sources:** Section 319 grant: $307,443; Local match: $204,962  
**Implementation Timeframe:** 2016-2017

The Mill Creek Lowhead Dam Modification project cost effectively addresses the last two remaining lowhead dams in the Lower Mill Creek in the City of Cincinnati. These lowhead dams are concrete encased sewer pipes.

The primary goals of this project are to (1) increase in-stream habitat and decrease non-point source pollution in the Mill Creek, (2) increase recreation potential, and (3) permanently protect critical Metropolitan Sewer District of Greater Cincinnati (MSDGC) infrastructure. In partnership with the City of Cincinnati Office of Environmental Quality and MSDGC, the Mill Creek Watershed Council of Communities (Council) secured a $307,443 Section 319 grant. In order for this Federal funding to be invested in Mill Creek improvement, $204,962 of local in-kind or cash match is required. Without local match, none of the grant money is available.

**Project Summary:** Lowhead dams create barriers to both fish and human passage in the stream. Dams also create deep scour pools in the streambed as water flows over them with high energy, displacing cobbles and sediment on the stream bottom. By creating riffles downstream of the lowhead dams, the energy of the current 3-4 foot drop in the stream is transferred from the dams to the riffles. New riffles in the stream will allow fish passage, canoe and kayak passage, and provide healthy riffle-pool development in the stream bed, benefiting the overall ecological health of the stream.

**At-Risk Infrastructure:** Both lowhead dams proposed for modification in this project are MSDGC sewer crossings. The upstream dam contains a 12” clay pipe; the downstream dam contains a much larger 72” semi-elliptical reinforced concrete pipe. Modification of the dams as proposed will not remove any of the existing casing on the pipes, but will move the current drop in stream surface profile to a downstream riffle structure as shown below.

The proposed dam modification will create a downstream riffle structure.
Lowhead Dam #1: Mill Creek main stem in the City of Cincinnati immediately south of Clifton Avenue overpass, parallel to Spring Grove Avenue behind Spring Grove Resource Recovery. Contains a 12” clay sewer pipe.

Lowhead Dam #2: Mill Creek main stem in the City of Cincinnati between Clifton Avenue overpass and Ludlow Viaduct, adjacent to the intersection of Dooley Bypass and Spring Grove Avenue. Contains pipe a 72” reinforced concrete pipe.
**Previous Application on the Mill Creek:** These types of structures have been used successfully on the Mill Creek and elsewhere. In highly modified urban streams where full dam removal is cost prohibitive, these constructed riffles are a cost-effective approach to protecting threatened infrastructure and improving in-stream habitat.

**Top right:** Before photo of the lowhead dam containing a sewer pipe just downstream of the Hopple Street Viaduct.

**Middle right:** After photo of a rock riffle constructed downstream of the lowhead dam just downstream of the Hopple Street Viaduct. The sewer infrastructure has been permanently protected with careful placement of rock and localized in-stream habitat has been improved. This structure allows for fish passage.

**Bottom right:** A constructed rock riffle just downstream of North Bend Road. These structures protect infrastructure, improve habitat, and provide recreational opportunity for paddlers. Note OEQ’s own Larry Falkin in the stern of the blue canoe. This area is also one of the best fishing spots in the Mill Creek.

Both of these projects were funded by MSDGC as part of its Supplemental Environmental Projects in the consent decree.