The Metropolitan Sewer District of Greater Cincinnati (MSD) — with the assistance of the Ohio EPA and Mill Creek Watershed Council of Communities — constructed two rain gardens in North Fairmount in 2015. The rain gardens help keep stormwater out of MSD’s combined sewer system, which helps reduce combined sewer overflows (CSOs) into the Mill Creek.

**Challenge and Solution**

During rains, large amounts of stormwater can overwhelm MSD’s combined sewer system and cause overflows of raw sewage and stormwater into local streams and rivers. This is known as a combined sewer overflow (CSO).

Each year, about 11 billion gallons overflow into our waterways, with more than half into the Mill Creek and its tributaries in the Lower Mill Creek watershed.

To help clean up our waterways, MSD has embarked on one of the largest public works projects in the history of our community. Called Project Groundwork, this program helps reduce overflows, improve water quality, create new jobs and provide opportunities for community revitalization.

Project Groundwork is being conducted in two phases: Phase 1 (2009-2018) and Phase 2 (after 2018). Phase 1, estimated to cost about $1.14 billion (in 2006 dollars), includes more than 100 construction projects and a special solution in the Lower Mill Creek watershed called the Lower Mill Creek Partial Remedy. Phase 2, estimated to cost about $2.1 billion (in 2006 dollars) will be completed after 2018 and is still being developed.

**Denham Watershed**

The Denham watershed — part of the Lower Mill Creek watershed — covers about 2 square miles and includes portions of North Fairmount, South Fairmount, Westwood, and East Westwood.

Every year, about 227 million gallons of combined sewage and stormwater overflow into the Mill Creek from five CSO outfalls: CSOs 8, 10, 13, 14 and 530. Less than 25% of the overflow volume is sewage — the rest comes from stormwater and what used to be natural stream flow.

CSO 10, located on the Mill Creek near the intersection of Beekman and Denham streets, contributes the largest volume of stormwater in this watershed, about 162 million gallons a year during a typical year of rain (41 inches).

**Interim Solution in Denham**

As part of an interim solution to manage stormwater and reduce CSOs in the Denham watershed, MSD initiated two smaller-scale green infrastructure projects in North Fairmount, including:

- Denham Street Rain Garden (see details on back).
- Proposed North Fairmount Bioswale Project. This project is currently in design. If implemented, it will be located adjacent to the Denham Street Rain Garden.

**Potential Long-Term Solution in Denham**

MSD is not advancing a full-scale stormwater management solution in the Denham watershed during Phase 1 of Project Groundwork due to cost. However, MSD plans to re-evaluate solutions in the Denham watershed for inclusion in Phase 2.

Potential strategies for inclusion in Phase 2 include:

- Providing dedicated stormwater sewers for 600 of the 900 acres of drainage area for CSO 10.
- Constructing three stormwater detention basins.
- Improving four ravines for stormwater conveyance.
- Installing Real Time Controls (RTCs) to create storage within the sewer pipe near CSO 10.
Denham Street Rain Garden

During 2015, MSD installed two rain gardens on MSD property south of Denham Street between Linden and Beekman streets in North Fairmount. This project was financed in part through a grant from the Ohio Environmental Protection Agency under the provisions of the Surface Water Improvement Fund. MSD partnered with the Mill Creek Watershed Council of Communities to implement the project and grant. Total project costs were about $235,000; the Ohio EPA grant was for $72,000. The project was previously known as the North Fairmount Urban Water Grant project.

Rain Garden Details

A rain garden uses native plants, special soils and layers of gravel to absorb, store and clean stormwater during rains. The main rain garden is about .03 acres in size and captures stormwater runoff from two catch basins on Denham Street and from overland flow. A second, smaller rain garden is located in a low-lying area to the west of the main rain garden and captures stormwater runoff from overland flow. Trees, shrubs, and other vegetation are planted on the rest of the property to help absorb additional stormwater runoff.

The project is anticipated to capture about 250,000 gallons of stormwater a year. Any stormwater not absorbed by the rain gardens is released slowly back into the combined sewer system. This project helps keep stormwater out of MSD’s combined sewer system, which helps reduce combined sewer overflows (CSOs) into the nearby Mill Creek.

Walking Path, Signage and Landscaping

The project includes a mulch walking path and two education signs. MSD also coordinated a volunteer planting day with local citizens in May 2015 to landscape the rain gardens with native plants.

Safety

The rain gardens are not fenced, as they are intended to blend in and beautify the neighborhood. During heavy rain storms, however, the rain gardens should be treated with caution as they can fill up with several inches of water. Caution should also be exercised around the inlet and outlet structures. MSD is responsible for maintaining the rain gardens and should be alerted to any public safety hazards.

Need More Information?

Contact MSD Engineering Customer Service at (513) 557-3594 or MSD.Communications@cincinnati-oh.gov Visit www.projectgroundwork.org

Denham Street Rain Garden

Native plantings include redbud, spicebush and redtwig dogwood, a variety of trees (e.g., honey locust, tuliptree and red maple), and other plants.

This project was financed in part through a grant from the Ohio Environmental Protection Agency under the provisions of the Surface Water Improvement Fund.