



Capital Improvement Project



Farmington: Middle Creek Restoration at Co. Rd. 64

Curving creek channels cleaner water

A creative partnership allowed for a straightened portion of Middle Creek in the City of Farmington to be restored to a meandering condition in 2016.

Years ago, parts of Middle Creek were straightened and its wetlands drained, causing stream habitat to be poor and water (and pollutants) to flow quickly down the channel. The resulting erosion increased sediment and other pollutants flowing into Middle Creek and the Vermillion River. The Minnesota Department of Natural Resources (DNR) began to restore the stream in 2006. However, serious concerns about potential flooding on an upstream property stopped the project.

When Dakota County's Transportation Department proposed to reconstruct Co. Rd. 64/195th St. through a portion of Farmington, VRWJPO staff saw an opportunity to complete the stream restoration concurrently with the road project. A modified engineering design allowed Middle Creek to be restored without causing upstream flooding. The DNR awarded the VRWJPO a Flood Damage Reduction Grant to implement the project, with the cooperation of the landowner, Farmington Area Public Schools.

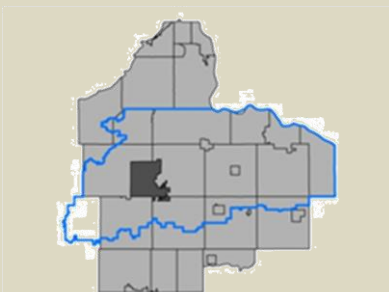
The outcome: Middle Creek's restoration slows water flow, improves water quality, reduces erosion, improves the connection to the floodplain, enhances habitat, and provides stormwater storage for large rainfall events.

Restoring the natural curves and vegetation of a straightened portion of Middle Creek in Farmington reduces erosion, slows water flow, improves sediment and other pollutant removal, enhances stream habitat, and provides a better floodplain connection that makes the creek more resilient to large storms and erosion.

A project completed cooperatively by:

- Minnesota Department of Natural Resources
- Vermillion River Watershed Joint Powers Organization
- Dakota County
- Farmington Area Public Schools

Location



City of Farmington, Minn.
Near 195th St. and Flagstaff Ave.

The Meandering Story of Middle Creek

Restoring a Little Stream's Path Makes a Big Difference



A creek that lost its way

The waterway you are here—Middle Creek—has always been humble. In the past, people didn't always appreciate it. Being easily overlooked, for much of the last century it was treated like a drainage ditch.

To make space for farmland, roads and buildings, the creek's course was regularly re-sorted. Eventually it became a straightened channel and its surrounding wetlands were drained and filled.

When "the straight & narrow" isn't good

People usually think along straight lines when building things. But water doesn't always cooperate with our linear plans. Streams want to meander—that means they naturally curve and bend. So why a straightened channel causes problems.

BEFORE Straightened Channel



Choked with sediment

AFTER Meandering Stream



Sediment deposited naturally



Grass where the egret will go...

WILDLIFE DIVERSITY Plants Are Key

When the creek was straight and degraded, only a couple types of plants dominated its banks and wildlife populations were sparse.

A restored creek can support a variety of native plants. You can see the difference that vegetation makes in the number of animals that are present.



Why do plants make such a big difference?



ROAD TO RESTORATION A Stream's New Beginning

An unlikely friend for the creek turned out to be a road. Reconstruction of 196th Street provided an opportunity to return the creek to a healthy condition. Planners sought to create a naturalized stream that could coexist with designed structures.

Directions to a healthy Middle Creek...

- Meander it—curve a curvy course for the creek's flow
- Leave room for flooding
- Plant a buffer of native grasses and wildflowers along its banks
- Monitor the progress

The natural result?

- More stormwater is captured before it enters the creek
- The slowed flow and vegetation allows filtering of pollutants
- Good habitat supports wildlife
- It's a place for kids and neighbors to enjoy nature



SCAVENGER HUNT What Wildlife Can You Find?

Check the progress of the creek's restoration. A healthy creek supports diverse native plants and animals. More native species is one indicator of a successful restoration.

Keep score of your scientific findings

- Big Bluestem - 5 points for first sighting
- Virginia Wild-ye - 5 points for first sighting
- Joe Pye Weed - 5 points for first sighting
- Succoweed - 5 points for first sighting
- Drumhead or Butterfly - 1 point each
- Ring or Turtle - 2 points each
- Heron or Egret - 5 points each

Ask a teacher or check a guide. Identify another native plant for 5 extra points! Do you see other animals too?



Schools can monitor a restoration by surveying the ecology.

Problem:

- Straightened sections of Middle Creek transported stormwater (and pollutants, such as sediment) too quickly.
- The fast-moving water caused erosion and sedimentation.
- The stream had a poor connection to its floodplain.

Actions:

- Excavated and stabilized a meandered stream channel
- Installed in-stream habitat features
- Re-established Middle Creek's connection to the floodplain
- Seeded deep-rooting native plants

Benefits:

- Meandered and stabilized stream channels reduce erosion and decrease sediment loading by approximately 135 tons/year and reduce phosphorus loading by 140 lbs./year
- Re-establishing the floodplain connection reduces stream velocity and increases resilience to large storm events.
- Native plants filter pollutants from stormwater, stabilize banks, and provide wildlife habitat.
- In-stream habitat for fish and macroinvertebrates is improved

Costs and contributions

- Minnesota Department of Natural Resources Flood Damage Reduction Grant: \$184,095
- Vermillion River Watershed Joint Powers Organization: Engineering, permitting, and construction oversight.
- Dakota County Transportation Department: Design and construction oversight
- Farmington Area Public Schools: Project land



Vermillion River Watershed Joint Powers Organization

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The Vermillion River is a vital natural resource that is important to public health and recreation, as well as to preserving unique wildlife habitats. It flows from New Market Township in Scott County, through residential and agricultural areas in central Dakota County, and cascades into a 100-foot ravine before it enters the Mississippi River near the Cities of Hastings and Red Wing, Minnesota. Throughout its journey, the river reflects urban and rural life within its 335-square-mile watershed.

Teaching about clean water

The Middle Creek restoration illustrates many important factors in keeping streams healthy. Interpretive signage (left) located on site explains the benefits of the project and enhances Farmington Area Public Schools' curriculum to teach students about the river system.