

Conservation that works: projects outlast floods

In most circumstances, conservation planning and design is not done for the most extreme weather conditions possible. However, many recent conservation projects that were installed withstood the 2012 floods, which was considered a 500-year event.

Grassed waterway and native plantings

Dakota Soil and Water Conservation District

The Dakota SWCD worked with a landowner in Douglas Township (located three miles north of Cannon Falls) in 2009 to install a grassed waterway and establish native plantings along Conservation Reserve Program (CRP) acreage. The upstream watershed is approximately seven square miles and special engineering considerations were considered during its establishment in 2009.

In September of 2010, and after almost two full growing seasons, the area experienced more than five inches of rain in a 24-hour period. The grassed waterway and vegetation did exactly what it was intended to do – hold the soil in place.

During the June 2012 flood event of more than 10 inches of rain in a 24-hour period, the constructed waterway and adjacent CRP buffer again held as intended and saved tons of topsoil within the landowner's property.

This project had an initial investment of \$11,385. Because the project outlasted floods in both 2010 and 2012, it reduced public costs to fix erosion issues and prevented sediment and from entering into downstream surface waters.



From left: (pic 1) Prior to project installation, (pic 2) project following September 2012 flood, (pic 3) project after 2012 floods.

Water and sediment control basin

Rice Soil and Water Conservation District



This is a water and sediment control basin that held up during the June 2012 rains, as sediment did not make it into the ditch.

Though the basin performed as designed, a large amount of sediment did accumulate during the storms. If the sediment is not cleaned out of the structure, the structure loses its capacity to hold back the next rain event.

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June 2012 flood recovery effort

Progress to date in Southern Minnesota

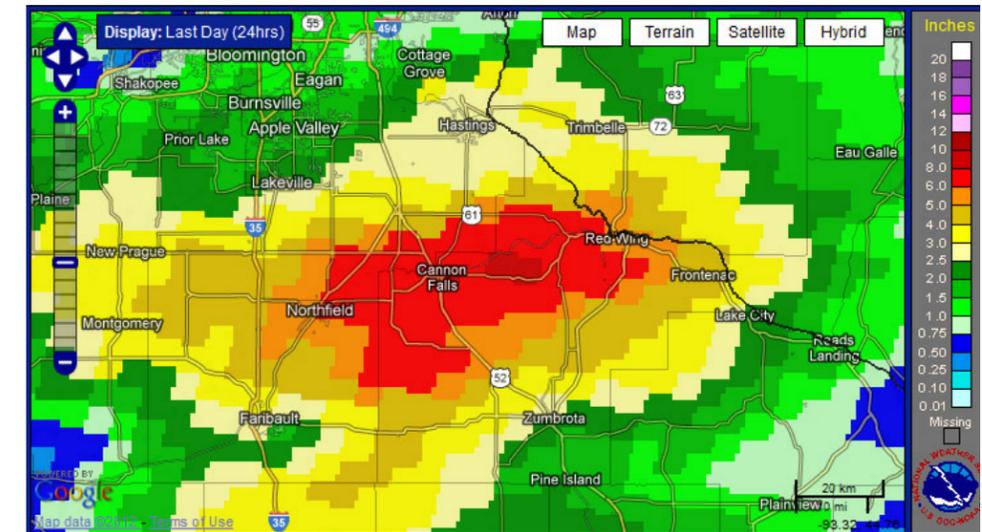
August 2013

During the time period of June 14-21, 2012, severe storms and flooding caused damage to infrastructure, private/public property and natural environments in several Minnesota counties. A Presidential Major Disaster was declared (FEMA, DR-4069) on July 6, 2012. Counties and tribal lands included in the declaration were: Aitkin, Carlton, Cass, Cook, Crow Wing, Dakota, Goodhue, Itasca, Kandiyohi, Lake, Meeker, Pine, Rice, Sibley, St. Louis, and the Fond du Lac Band of Lake Superior Chippewa, Grand Portage Band of Lake Superior Chippewa, and the Mille Lacs Band of Ojibwe.

Rains cause flooding in Goodhue, Rice and Dakota counties

Torrential rains fell from June 14-15, 2012, causing rainfall totals from 7.13 to 8.83 inches in Goodhue, Rice and Dakota Counties, as reported by the National Weather Service.

The heavy downpours caused flooding in basements, as well as rapidly rising rivers. The Little Cannon River near Cannon Falls rose twelve feet in about ten hours and set a new record crest. The Cannon River at Welch was near a record crest by 10 a.m. on June 15. Numerous roads were closed in Goodhue County, including Highway 52.



June 14-15, 2012 flood event rainfall totals: Southern Minnesota

The state's response

On Friday, Aug. 24, 2012, Governor Mark Dayton signed a \$167 million disaster relief bill passed earlier in the day by a Special Session of the Minnesota State Legislature. To assist in flood recovery efforts, the Board of Water and Soil Resources (BWSR) received \$11 million to implement erosion, sediment control and water quality protection projects and \$1.5 million to purchase Reinvest in Minnesota (RIM) conservation easements.

Within two weeks of the appropriation, BWSR executed grant agreements and allocated more than \$1 million to eleven soil and water conservation districts (SWCDs) to address emergency flood situations for erosion, sediment and water quality control projects based on preliminary damage assessments and requests from SWCDs.

Tackling emergency flood situations

Emergency allocations (phase I) to 11 SWCDs: \$1,111,769

After a historic rain event, local units of government assess damage and propose projects to mitigate that damage. Most often, a variety of best management practices are installed to fix the damage and to prevent future problems. Below are some 2012 project examples that were completed with emergency funding.

BMP example: Grassed waterways

Dakota SWCD emergency funding: \$250,000



In the pictures at left, a 10-foot wide, three foot deep and 250 foot long gully on each side of an existing grassed waterway formed during the June 2012 storms in Dakota County.

To correct the gully erosion, a 400-foot grassed waterway was constructed. Grass waterways are designed to prevent soil erosion while draining runoff water from adjacent cropland. As water travels down the waterway, the grass vegetation prevents erosion that would otherwise result from concentrated flows. Grass waterways also help prevent gully erosion in areas of concentrated flow. In addition on this site, a 16-acre native prairie planting was established to reduce risk of waterway failure in the future.



The total project cost was \$9,000 and partners assisting the Dakota Soil and Water Conservation District included the Natural Resources Conservation Service, the Minnesota Board of Water and Soil Resources and the Vermillion River Watershed Joint Powers Organization.

From top: (pic 1) A massive gully formed following June 2012 storm, (pic 2) A grassed waterway was constructed and seeded down to correct erosion. (Picture prior to vegetation established.)

BMP example: Water and sediment control basins

Rice SWCD emergency funding: \$50,000

A water and sediment control basin is a small earthen ridge-and-channel or embankment built across a small watercourse or area of concentrated flow within a field. They are commonly built in a parallel series with the first ridge crossing the top of the watercourse and the last ridge crossing the bottom, or nearly so. Designed to trap agricultural runoff water and sediment as it flows down the watercourse, water and sediment control basins keep the watercourse from becoming a field gully and reduces the amount of runoff and sediment leaving the field.

Rice County has a large number of water and sediment control basins, and all of the \$50,000 emergency allocation was utilized to repair basins. A total of eight contracts were executed, repairing a total number of 81 basins.



Repairing one basin costs approximately \$1,500.

Repairing private and public property

Phase II and III allocations to 12 SWCDs and City of Duluth: \$7,530,670

Following BWSR's emergency allocations, local government units applied through the Minnesota Recovers Task Force (MRTF) process for remaining funds and RIM funds. The Minnesota Recovers Task Force ensures applicants meet the eligibility criteria to receive state assistance funds and coordinate eligible funding sources. After assessing need, determining eligible projects, and working with partners on funding sources, phase II funding will tackle ready-to-go projects to help landowners fix their properties. Allocations in phase II will provide grants for more than 175 projects, all managed by local governments. Three project examples are highlighted below.

Project example: Dam repair

Goodhue SWCD funding amount: \$38,700



Picture: The lower end of the dam's emergency spillway is littered with debris from the storm.

During the June 2012 flood, a dam failed on a private property in Cannon Falls, causing more than 2,000 cubic yards of material to erode from the spillway. The storm also caused damage to the landowner's driveway and property downstream. The driveway repair and debris cleanup were started last summer to allow for access to the property, and the dam repair is slated to be completed in the summer of 2013. The landowners have partnered with the SWCD and the NRCS on this project for both financial and engineering assistance.

Project example: Gully erosion at Miesville Ravine Park Reserve

Dakota SWCD funding amount: \$26,040

Active gully erosion formed within Dakota County Miesville Ravine Park Reserve during the June 2012 storm (pictured at right). Repair to this site will take place in 2013, including excavating unstable areas, placing compacted fill materials and re-establishing permanent vegetative cover using erosion control blankets and native seed mixtures. To prevent future gullies at this location, a permanent grade stabilization structure with reduced flow rate outlet will be constructed. Project partners assisting the Dakota Soil and Water Conservation District include Federal Emergency Management Agency (FEMA), Minnesota Board of Water and Soil Resources, Metropolitan Conservation Districts Joint Powers Board and Dakota County.



Project example: Grade stabilization

Rice SWCD funding amount: \$37,000

This gully pictured at right, along with three others, will be controlled with a grade stabilization structure (approx. 200 acre watershed) in spring 2013. Controlling runoff at this location in Rice County will also prevent flooding downstream for the City of Northfield.

