

# Glensheen Low Impact Storm Water Improvements

- Goals:** 1) Improve water quality of storm water from Glensheen's parking lot into Lake Superior.  
2) Reduce lakeshore bank erosion caused by parking lot runoff.

**Design Features:**

**Grass Swales** – Wide shallow grassy swales spread out and slow down storm water, allowing some water to infiltrate into the soil while the blades of grass filter out fine sediments.

**Rock Check Dams** – Small piles of rock within the grass swales further slow down and pool the storm water, causing additional sediments to settle out.



**Bioretention Area** – The bioretention area is a shallow temporary ponding area where storm water is gathered. The area can hold up to 1 inch of rainfall (90 % of most rainfalls) on the parking lot before storm water tops the overflow structure. The soil is a mix of sand, topsoil, and compost so that the standing water should filter through within 6 hours. Organic matter, suspended solids, and phosphorous are filtered by the soil. Soil microbes and native plants biologically remove nutrients. Pollutants such as oils and hydrocarbons are removed from the area via evaporation or aerosol formation. Once the storm water filters through the soil, it flows through a drain tile line and down the rock chute into Lake Superior.

**Native Plants** – The bioretention area is planted with native flowers and grasses. Native plants have longer root systems that are better adapted than introduced species to survive the periodic change between excessive water and prolonged drought.

**Rock Chutes** – Rock chutes are swales down a steep slope that are reinforced with geotextiles and large angular rock. They prevent erosion by providing a protected way for the storm water to get over and down steep embankments.

**This project was a joint effort by South St. Louis Soil & Water Conservation District, Minnesota Board of Water & Soil Resources, CCLNS Joint Powers Board, University of Minnesota Duluth Facilities Management, and Glensheen.**

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For more information on local storm water issues visit the Duluth Streams website at [www.duluthstreams.org](http://www.duluthstreams.org)  
Additional information on the UMD Storm Water Pollution Prevention Program visit [www.d.umn.edu/outreach/stormwater](http://www.d.umn.edu/outreach/stormwater)



South St. Louis Soil & Water Conservation District

