Project Profile

Martin Lake
Stormwater Retrofit Assessment

Stormwater Assessment

Anoka Conservation District

Summary

The Anoka Conservation District (ACD) is conducting a stormwater retrofit assessment specifically designed to identify cost-effective stormwater treatment practices that will improve water quality in Martin Lake. This is being completed in the area where stormwater drains directly to Martin Lake with little or no treatment. Although opportunities to treat stormwater runoff are limited in the neighborhoods surrounding Martin Lake where development occurred prior to modern stormwater treatment methods, they can be identified through intensive investigation.

Pollutant contributions from this area are relatively small compared to the entire watershed. However, retrofit projects within this area can be just as cost-effective as those addressing larger scale problems. Additionally, projects completed in this area increase the visibility of lake improvement efforts and enable local residents to directly improve water quality.

Work products of this assessment include a detailed geographic information system (GIS) database, computer modeled nutrient and pollutant loads, recommended stormwater retrofit projects, concept designs, and cost estimates.

Excessive sediment entering a catch basin draining to Martin Lake

Stormwater outfall directly into Martin Lake

Project Specs

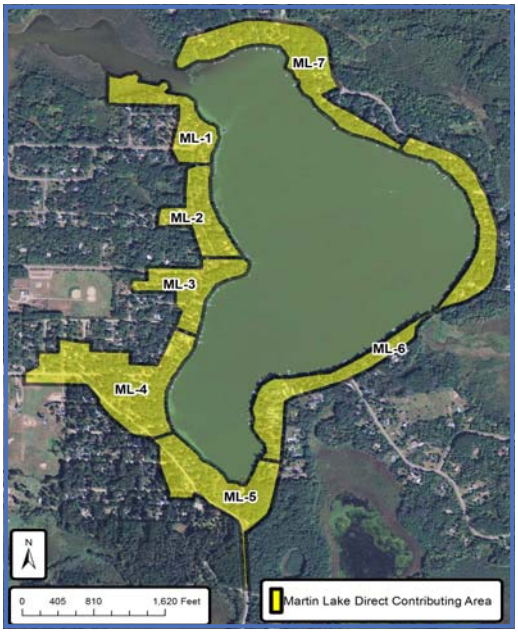
Assessment Area	140 acres
Catchments Identified	7

Assessment Funding Secured

SRWMO	$5,000.00
Martin Lakers Assoc	$3,000.00
Total Available	$8,000.00

Installation Funding Secured

SRWMO	$10,000.00
MCC Crew	$11,000.00
Total Available	$21,000.00



GIS and WinSLAMM Modeling

A GIS database has been generated that includes detailed catchment drainage delineation and existing stormwater infrastructure mapping. Existing and proposed stormwater treatment for each catchment were modeled using WinSLAMM software. The table below highlights characteristics of the subwatershed as well as preliminary WinSLAMM model outputs representing total phosphorus (TP) and total suspended solids (TSS) annual loads generated within the areas directly draining to Martin Lake (see map to left).

Acres	140
Dominant Land Cover	Residential, 1/3 acre lots
Parcels	311
TP (lbs/yr)	69.54
TSS (lbs/yr)	31,712

Retrofit Projects

Funds have been secured to install stormwater retrofits identified by the assessment. Projects that provide the most benefit per dollar spent will be installed first. Project types will vary and may include pond modifications, swales, rain gardens, underground treatment devices, and modified maintenance schedules. Stormwater retrofit projects within the Martin Lake subwatershed are intended to:

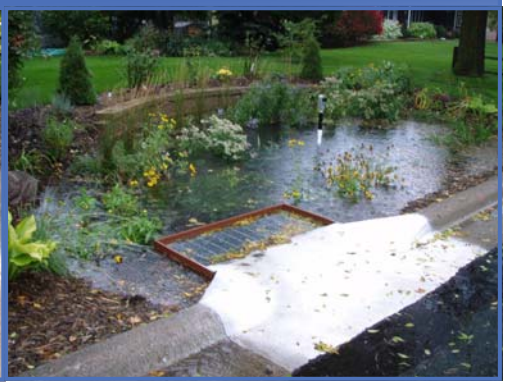
- Decrease stormwater volume,
- Decrease pollutant loads, and
- Increase infiltration to recharge groundwater.

Below are some examples of stormwater retrofit projects that could benefit Martin Lake.

Stormwater retrofit projects will reduce the pollutants seen here

Curb-cut Rain Gardens

Curb-cut rain gardens receive stormwater runoff from the existing curb and gutter system and infiltrate quickly to avoid standing water (see pictures to right). In addition to recharging the groundwater which helps maintain stable water levels in Martin Lake, the rain gardens remove pollutants and nutrients that would otherwise flow directly into the lake.



Potential Rain Garden Site in Martin Lake Subwatershed

The high infiltration rates present across the Anoka sand plain are ideal for retrofit practices such as the curb-cut rain garden pictured to the left in a computer simulation. In addition, curb-cut rain gardens do not require large areas of open space, and would therefore work well in the areas surrounding Martin Lake.

New Ponds and Pond Retrofits

New ponds and pond retrofits can provide treatment for large drainage areas by removing nutrients and pollutants from stormwater before it enters Martin Lake.

Swales

Swales promote filtration and infiltration of stormwater runoff and can be installed in opportunistic locations such as ditches that are otherwise unsightly.

Project Partners

Anoka Conservation District

Martin Lakers Association

Minnesota Conservation Corps

Sunrise River Watershed Management Organization