



Project Summary

The Washington Conservation District (WCD) completed the Lake McKusick subwatershed stormwater retrofit assessment for the Middle St. Croix Water Management Organization (MSCWMO) that identified cost-effective stormwater BMPs. As a result of the assessment, six bioretention cells were installed within catchments McK-NE and McK-18 that drain directly to Lake McKusick. The bioretention cells will reduce the degradation of Lake McKusick by infiltrating stormwater runoff.

Project promotion, design, and construction oversight were conducted by WCD with in-kind funding from MSCWMO and cash funding from the St. Croix River Association (SCRA) and the Clean Water Fund (CWF) from the Clean Water, Land and Legacy Amendment. Long-term maintenance will be conducted by the landowners under an agreement with MSCWMO.



Project Specifications

Bioretention Cells Installed..... 6
 Date Installed October 2011
 Total Bioretention Area..... 1,140 ft²
 Total Capacity 950 ft³
 Watershed Treated 3.0 acres

Installation Funding

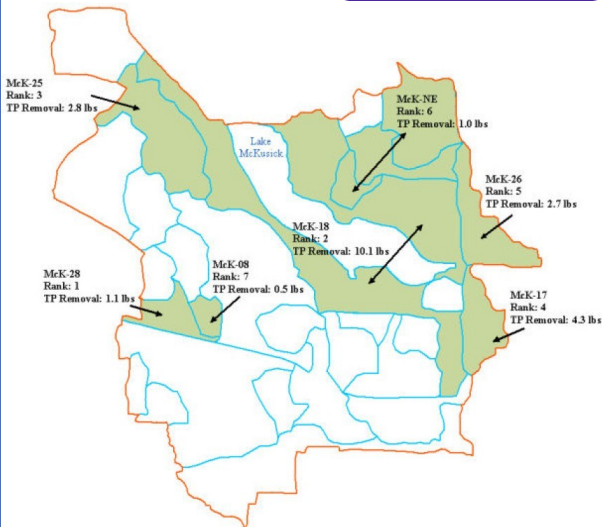
SCRA..... \$383.50
 State of MN CWF \$20,000.00
 Total Project Cost \$20,383.50

Other Funding

Design..... \$1,800
 Construction Oversight \$800
 Promotion/Administration \$1,000
 Ongoing Maintenance..... \$1,200/yr

Lake McKusick Priority Catchments

McK-NE and McK-18 catchments are both considered high priorities of the MSCWMO



Within the subwatershed assessment, catchments McK-NE and McK-18 were identified for several retrofit projects intended to:

- Decrease stormwater volume
- Decrease pollutant loads (TP, TSS)

The catchments consist of residential development with a high percentage of impervious cover. The table below highlights important characteristics of the catchment as well as WinSLAMM model outputs of total phosphorus (TP), total suspended solids (TSS), and volume contributions prior to bioretention cell installation.

Acres	154.8
Dominant Land Cover	Residential
Parcels	418
TP (lbs/yr)	125.8
TSS (lbs/yr)	39,487
Volume (acre-feet/yr)	108.1

Modeled Pollutant Reductions

WinSLAMM modeling was used to estimate reductions in water volume, total suspended solids (TSS), and total phosphorus (TP) following bioretention cell installation. The table to the right highlights these reductions for the combined drainage areas within McK-NE and McK-18 in which bioretention cells were installed. Water quality benefits to receiving water bodies associated with these reductions include:

- Groundwater recharge
- Increased water clarity
- Decreased pollutant loading
- Decreased nutrient loading

Cost/Benefit Analysis	Volume Reduction	TSS Reduction	TP Reduction
Annual Project Total	139,314 ft ³	2,477 lbs	5.8 lbs
30 Yr Project Total	4,179,420 ft ³	74,310 lbs	174.0 lbs
Benefit / \$100 Spent* (over 30 years)	6,968 ft ³	123.9 lbs	0.3 lbs
30 Yr Cost* / Unit	\$625.18/acre-ft	\$0.81/lb	\$344.73/lb

* Includes install., design, oversight, administration, and 30 year maintenance cost

Site Monitoring/Post-Project

Post-project monitoring verified acceptable vegetation establishment and proper pretreatment function following storm events. Monitoring will continue to ensure proper long-term functionality and vegetation quality.



Completed bioretention cell, October 2011. Inlet pretreatment box chamber prevents debris and sediment entry into the bioretention cell. Lake McKusick is visible in the background.