



Clean Michigan Initiative Clean Water Fund

#2001-0030



Muskegon Conservation District

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Muskegon Lake RAP Project

August 2002 - September 2005

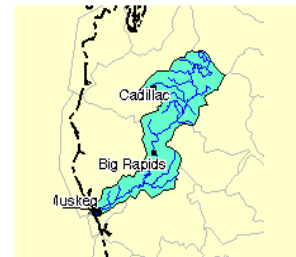
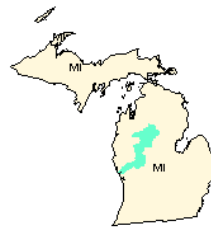
The overall goal of this project was to fulfill the Muskegon Lake Area Of Concern's Remedial Action Plan (RAP) recommendations to improve water quality and to take steps toward de-listing two Beneficial Use Impairments (BUIs): 1) Loss of Fish and Wildlife Habitat and 2) Degradation of Fish and Wildlife Populations. This was achieved by restoring three urban shoreline sites that originally contained degraded vegetative buffers, alterations of wetland areas, stormwater runoff, excess nutrient and sediment loading, and deteriorating recreational access.



Grant Amount: \$324,500

Match Funds: \$148,500

Total Amount: \$473,000



Best Management Practices:

- Infiltration trench draining 1.45 acres
- Bioretention basin treating .12 acre feet
- 3 check dams
- 1,175 lineal feet of filter strips
- 7,751 ft² recreational access site stabilization
- 1.93 acres critical area treatment
- .53 acres of wetland restoration
- 1.10 acres forest riparian buffer strips
- 15.1 acres of permanent conservation easement

Annual Load Reductions:

- 33.2 tons sediment / year
- 33.2 lbs. nitrogen / year
- 66.4 lbs. phosphorus / year



I&E Activities:

- Project and BMP interpretive sign
- Transportable display for use by community organizations
- Site demonstration tours
- Volunteer workdays
- Site factsheet / brochure



Partners involved:

- USDA-NRCS
- Michigan Department of Environmental Quality
- Grand Valley State University, Annis Water Resources Institute
- Timberland RC&D
- City of Muskegon
- Muskegon Environmental Research and Education Society
- Sappi Fine Paper
- Technical and Stakeholder Advisory Team
- Muskegon River Watershed Assembly
- Reeths Puffer Middle / High School
- Bunker School (Muskegon Public Schools)
- Great Lakes Marina
- Muskegon Lake Public Advisory Council
- JFNew
- Muskegon Youth Volunteer Corps.
- Lakeside Neighborhood Association

Grand Trunk (Muskegon, MI)

Before



Original 24' wide dirt roadway sloping to wetland and bay to the west.

After



Roadway removed and replaced with 6' wide gravel walking path and disturbed areas replanted with native perennials.

Great Lakes Marina (Muskegon, MI)

Before



Great Lakes Marina roadway looking north toward Muskegon Lake. Stormwater runoff traveling along east edge of road and entering wetland at single point without treatment.

After



Infiltration trench along east edge of road (with one of three check dams in foreground) following seeding of trench, side slopes, filter strip with native perennial grasses and wildflowers.

MERES (North Muskegon, MI)

Before



Erosion within wetland and along Muskegon River due to foot traffic at low water.

After



Wetland boardwalk protecting wetland ecosystem and mitigating impacts from foot traffic.