



Bostic and Zippel Creeks Watershed Assessment Project

Featured Project

Sedimentation in two bays on Lake of the Woods is being addressed through a comprehensive, watershed-based approach that has included water quality monitoring and several projects to restore water quality. The sedimentation in Bostic and Zippel bays has frequently prevented access to the lake without dredging, which has reduced water quality, potentially impacted spawning sites on this world-class fishing destination and created financial hardship for resorts in those areas.

Several local, state and federal organizations are working together to resolve the sedimentation problem. Lake of the Woods County hired a private engineering firm to prepare a report identifying the main sources of sediment in the Bostic watershed, potential solutions, and cost estimates for the solutions. Contributing causes include increased flow velocities in drainage ditches installed early in the last century, leading to sedimentation of shallow habitat areas of the lake. The Lake of the Woods Soil and Water Conservation District (SWCD) used the information in the report to develop a plan to implement some of the solutions. The SWCD applied for and received a competitive state grant through the Board of Water and Soil Resources (BWSR) in 2007, which paid for the design of a 2-stage ditch project, completed by a licensed engineer. Two stage ditches allow higher flows to spread out onto constructed benches. The increased area and vegetation growing on the benches slows down the water and reduces its erosive potential.



Construction of the 2-stage ditch was completed in 2009. Grants through the Conservation Cost-Share program, also administered by BWSR, were used to install side inlet controls on privately owned lands adjacent to the ditch to reduce gully erosion from the ditch bank and to help manage water flowing into the ditch. Exclusion fencing and alternative watering sources for cattle that were grazing on the banks of the ditch were paid for through the Environmental Quality Incentive Program (EQIP), administered by the USDA Natural Resource Conservation Service.

The 2-stage ditch and conservation practices helped fix an extremely unstable section of the ditch, but it is only a part of an overall solution to sedimentation in the lake. So the SWCD, with assistance from USDA NRCS, began a watershed assessment of Bostic and Zippel Creeks that is focused on sedimentation issues in these watersheds. Specific goals of the project include:



- Identifying major sources of sediment within these watersheds
- Quantifying the sedimentation damages (monetary and environmental)
- Identifying the causes of instabilities and erosion in the ditch systems
- Using landowner input to identify potential conservation practices for reducing sediment loads and sediment movement within the watersheds

The SWCD has received additional competitive grants through the Minnesota Pollution Control Agency and BWSR to continue implementing solutions and monitoring water quality to quantify the benefits over time.

Location: Lake of the Woods County, Bostic and Zippel bays.

BWSR Featured Project

Partners: Lake of the Woods County (Public Works Department and Land and Water Planning Office), Lake of the Woods SWCD, Minnesota DNR, Minnesota Pollution Control Agency, SWCD Technical Service Area 8 (a joint powers board of SWCDs in North Central Minnesota that provides engineering, surveying, and other technical work needed for conservation projects), USDA Natural Resources Conservation Service, and private landowners and volunteers.

Project Timeline: Construction of a 2-stage ditch was completed in 2009, Clean Water Partnership Grant applied for in 2010 will be received in 2011 to conduct two years of water quality monitoring. As part of the assessment, field inventories started in 2009 for the purpose of gathering data on land use, ditch inventory (dimensions, slope, and condition), gully measurements, daily rainfall amounts, and stream flow measurements at various points in these watersheds. Dredging and ditch maintenance records also have been collected. Public meetings have been held to get landowners' perspectives on current watershed conditions and potential solutions. Additional implementation of conservation measures identified in the plan will be installed with the assistance of funds from the Clean Water Land and Legacy amendment that the SWCD will receive in 2011.

Project Costs/Funding Sources: To keep the project moving forward, the SWCD has pursued a variety of funding through local, state and federal sources. The county does not have ditch assessments for the majority of its Judicial Ditches, nor is there a watershed district with levy authority. Therefore, funding for these projects has mainly come from state grants and local and federal in-kind matches. To design and construct the 2-stage ditch in the Bostic watershed, the SWCD relied heavily on county in-kind and Water Plan funds, and has also used grants through BWSR and the NRCS EQIP program for installation of best management practices along the ditch. To continue the large-scale assessment, the SWCD applied to the NRCS Water Resources Program (currently unfunded) which adopted the project. Most of the SWCD staff time to assist with this assessment has been paid for from Water Plan funds and BWSR grants, but recently the SWCD has recently received \$40,000 to conduct intensive water monitoring over the next two years and nearly \$60,000 to implement best management practices to help treat erosion and sedimentation issues in both watersheds.

Keys to Success: Ditch system maintenance has been a challenge in this remote area. The patchwork ownership of lands in the area among state, county and private individuals presents a challenge in implementing holistic repair and maintenance activities., Coordination among local, state and federal organizations working with private landowners was the key to identifying causes of the sedimentation and securing funding from multiple sources to solve the problem.

BWSR role: Assisting local project partners with project costs and support of the Joint Powers Board technical capacities.

Link / contact for more information: Lake of the Woods SWCD, (218) 634-1842 ext.3, <http://lakeofthewoodsswcd.org/Projects/BZCWAP.php>



Pictured (from top): Judicial Ditch 28 before and during construction of a 2-stage ditch, and after one growing season following construction.