Root River Watershed: Water Plans

The Root River Watershed encompasses Dodge, Fillmore, Houston, Mower, Olmsted, and Winona Counties. Each county has developed a 10-year rotating comprehensive local water management plan (LWMP) in order to improve water quality within Minnesota. The water plans are comprised of a set of concerns the counties have described as a priority, along with how they intend to effectively manage them.

This document contains two parts: (1) A comparison of management goals from each county (2) A summary of all county water plans in the watershed including priority concerns, goals and objectives, and actions related to nutrient management.

Water Plans:
Dodge County LWMP 2006-2015 amended 2011
Fillmore County LWMP 2006-2015
Houston County LWMP 2007-2017 amended 2012
Mower County LWMP 2006-2015 amended 2010
Olmsted County LWMP 2013-2023
Winona County LWMP 2011-2015

Water Plan Evaluation

Concern	Dodge	Fillmore	Houston	Mower	Olmsted	Winona
Education						
Feedlot Compliance						
Groundwater						
SSTS/ISTS						
Surface Water						
Technical/Financial Assistance						
Wetlands						
Conservation BMPs						
Coordination/Partnership						
Shoreland Management						
Stormwater Management						
TMDL - Impaired Water						
Watershed-based Approach						
Wellhead Protection						
Erosion Control						
Monitoring						
Municipal Wastewater						
Sediment						
Priority Pollutants						
Seek Funding						
Manure Management Plan						
Nutrient Management						
Demonstrations						
Development Concerns						
New Technology						
Nonpoint Source Pollution						
Water Retention						

Concerns addressed in County Water Plan associated with nutrient issues

Strong ongoing activities implemented in programs outside of the County Water Plan

Dodge County LWMP 2006-2015 amended 2011

Priority Concern: Fertilizers and herbicides from agricultural fields seeping into drinking water

Priority Concern: Nutrients and chemicals from animal feedlots flowing into rivers and streams

Priority Concern: Nutrients and chemicals animal feedlots seeping into drinking water

Priority Concern: Soil, fertilizers and herbicides from agricultural fields flowing into rivers and streams

Priority Concern: Loss of natural vegetation and habitat due to urban and rural development

Priority Concern: Flash flooding or the quick rise and fall of water and stormwater management

Priority Concern: Inadequate individual septic systems, municipal sewers, and community systems that drain to field tile, wetlands, and streams or rivers

Goal: Safe drinking water in all aquifers and pollutants loads in protected waters below state and federal standards including TMDLs

Objective: Inventory mapping

Actions:

- Annually update data and maps in County's Environmental Atlas. Distribute atlas to elected officials, policy makers, and staff. Within 5 years make atlas available on the County's Web Page.
- Regularly update County Well Index by field locating newly drilled wells and wells with construction and water quality information.

Objective: Groundwater monitoring

Actions:

- Provide well water testing service to public. Assign lab results to well record in County Well Index.
- Coordinate a network of citizen volunteers to sample their wells over a long period of time to determine trends.

Objective: Surface water monitoring

Actions:

- Maintain network of volunteer stream monitors to collect turbidity tube measurements and macroinvertebrate samples.
- Maintain existing automatic sampling station.
- Seek out and actively participate in Total Maximum Daily Load (TMDL) studies and grant opportunities which seek to clarify information relating to surface water conditions, health risk, and pollutant transport. Pursue partnerships with government agencies and other groups to aid in this effort.

Objective: Education and Technical Assistance

Actions:

- Annually summarize drinking water quality conditions per aquifer and report to local elected officials, state agencies, and public.
- Annually summarize surface water quality conditions per watershed and report to local elected officials, state agencies, and public.
- Distribute at least 6 “news releases” per year to all local newspapers.
- Support SWCD’s long-standing annual “conservation lesson” for middle school students.
- Annually advertise in local newspaper or through direct mailings, a summary of regulations related to water and waste management.
- Annually advertise in local newspaper or through direct mailings, a summary of local services related to water management including technical and financial assistance.
- Provide technical assistance upon request for information related to existing regulation and incentive programs.
- Create, update, and make available to public; brochures and publications related to water management. Seek opportunities that promote citizen engagement among county residents in programs dealing with ground water and surface water protection/restoration.
- Include information on the County’s Web Page.
- Support and encourage enrollment in all land set-aside programs that help implement the objectives of the Water Management Plan including, but not limited to, CRP, CREP, RIM, WRP, CSP, WREP, etc. Focus attention on “Special Project Areas” in the county where greater

attention is directed to the protection and restoration of highly-valued resource areas, and the encouragement of practices that retain water on the land. See Appendix C for the location of special project areas, including sensitive ground water areas, flood-prone regions, and watersheds, such as the Cedar River, Milliken Creek, and the Middle Fork Zumbro River, with specific environmental concerns.

- Inform all landowners and contractors of the important functions of wetlands. Also provide information and technical assistance that helps landowners recognize wetlands, how to protect them and how to restore them.
- Evaluate options to encourage and/or require vegetative buffers along the shoreland of wetlands and streams not identified as public waters.

Objective: Financial Assistance

Actions:

- Provide opportunity for landowners to obtain an AgBMP Loan.
- Provide opportunity for landowners to obtain a grant from the County's Environmental Trust Fund for actions that are consistent with the objectives of the Water Management Plan.
- Provide opportunity for well owners to receive a free water testing kit if the well is shallow (< 60' deep), the resident of the home is expecting a child or has an infant less than 1 year old, or if the well has never before been tested.
- Seek funding through the Citizen and Community Participation Program in order to aid community partners in the implementation of practices designed to reduce stormwater runoff and retain water on the land.

Objective: Regulation, Ordinance, Planning

Actions:

- Implement the County's Water Management Plan, Comprehensive Land Use Plan, and Solid Waste Management Plan and enforce related ordinance. Existing regulations include: individual sewage treatment systems, wetlands, shoreland, floodplains, storm water, waste disposal, recycling, feedlots, contaminated soil, and land use (zoning).
- Regularly update plans and ordinances.
- Propose a county-wide policy that defines the county's position and responsibility for stormwater flow management in the context of an entire watershed. In other words, define what the county's role is in reducing impacts of flash floods and sedimentation affecting downstream neighbors.
- As time allows, assist local governments implement similar regulations.
- Review public drainage regulation and determine how implementation would help meet objectives of the water management plan.
- The County will work with the Cedar River Watershed District (CRWD) in the implementation of their existing rules as they pertain to the Water Plan.

- Develop strategies to protect higher quality ground water and surface water systems and address concerns of lower quality systems. Consider related zoning amendments that conform to the objectives of the water management plan.
- Dodge County plans to close, and place final cover on, its demolition landfill in accordance with Minnesota Pollution Control Agency rule.

Objective: Administration and Coordination

Actions:

- The County will carry-out the Local Water Management Plan including annual activity planning, staffing, contracting, and reporting.
- The County will collaborate with partners to reach shared goals and objectives. Partners include Federal Agencies, State Agencies, Soil and Water Conservation District, Watershed Districts and Partnerships, Local Governments, Joint Powers Boards, not for profit organizations, businesses, and individuals. When possible the County will jointly work on "accessory activities" as outlined below:
    - Inventory and Mapping
        - Obtain annual aerial photographs at a scale that will improve accuracy of inventories and improve ability to educate public, provide technical assistance and enforce regulations.
        - Make Environmental Atlas an interactive product on internet that allows user to overlay multiple themes and analyze data.
        - Seek out and actively participate in research studies which seek to clarify information relating to pollutant transport, ground water sensitivity, surface water conditions and health risk.
        - Map and Inventory condition of existing buffers on Protected Waters.
        - Update Feedlot Inventory.
        - Inventory of unique, rare and endangered natural habitat.
        - Compile flood damage information.
        - Identify primary sources of soil erosion at a sub watershed scale and calculate amount of soil lost to streams.
        - Pursue updated FEMA flood maps.
    - Groundwater Monitoring
        - Regularly obtain (and pay for) groundwater samples from a network of drinking water wells to provide baseline and long-term trends of water quality in primary aquifers.
        - Seek out and actively participate in research studies which seek to clarify information relating to pollutant transport, ground water sensitivity, and health risk.
        - Gain more information about potential risks from manure storage basins; earthen and concrete construction.

        - Study soil sampling protocol to help define opportunities for improving use of soil testing data by landowners.
        - Seek out and actively participate in research studies and grant opportunities which pertain to increasing our knowledge of groundwater trends and protecting
        - sensitive ground water areas of the county, particularly, those areas of northern and eastern Dodge County where the first carbonate aquifer have no shale or clay protection.
    - Surface Water Monitoring
        - Continue to monitor Salem Creek (impaired water) for fecal coliform bacteria and assist landowners in evaluating options to reduce fecal contributions including feedlot runoff, manure land spreading, and septic systems.
        - Expand the number volunteer stream monitors to accurately judge conditions of all sub watersheds.
        - Install and operate continuous flow meters on primary river segments.
        - Expand the sampling program to a point when one or two water quality parameters can be recognized by the general public as indicators of water quality and the conditions that lead to said quality.
        - Seek out and actively participate in research and grant opportunities which seek to clarify information relating to pollutant transport, surface water conditions, and health risk. Direct special attention to low floodland areas of the county and projects which emphasize the county's upland water retention potential from its position at the top of 3 watersheds.
        - Demonstrate soil erosion control features at farm scale.
        - Work with MPCA, and other agencies, to establish and maintain surface water monitoring sites on a small subwatershed, such as Milliken Creek, to record trends in water quality/quantity and track impacts of land management practices.
    - Education and Technical Assistance
        - Support cooperative education efforts, and demonstration projects, to promote Agricultural BMP's including, but not limited to: nutrient management (including reduction in fall application of nitrogen), conservation drainage systems to promote water storage capabilities, buffers for protected waters and sensitive features like sinkholes, soil testing, pesticide application, etc…
        - Inform all citizens of the importance of sealing unused wells.
        - Demonstrate options for treatment of milkhouse waste.
        - Assist municipalities to develop and enforce a Shoreland Overlay Zoning District, Stormwater Management Plans, and Wellhead Protection Plans.
        - Partner with them, and provide technical assistance, on grant opportunities designed to improve surface and ground water in the county. Where appropriate, assist with city storm water projects.

        - Lead the effort to write a plan with goal to repair all failing septic systems. Part of the plan should be education and incentives to encourage homeowners to voluntarily repair their failing septic systems. Education should include information about the risks of a failing system, how to recognize a failing system, how to repair it, and where to get financial assistance. The education should include a comparison of the "facts vs. myths" regarding mound type individual sewage treatment systems.
        - Lead a demonstration of Stormwater Management techniques, conducted on a "farm scale" or construction site, that illustrate methods to retain and treat storm water runoff including wetland restoration.
        - Identify additional "special project areas" of the county where conditions merit special attention to ground and surface waters issues due to susceptibility to pollutants, or opportunities for increased utilization. Pursue funding and partnerships, where appropriate, to address these issues.
    - Financial Assistance
        - In addition to existing grant and loan programs, seek opportunities for financial assistance for activities such as:
        - Grants to feedlot owners to fix physical conditions that pose a pollution potential.
        - Low interest loans for replacing septic systems. The loan payback system should include an option for a special assessment payable on the property tax statement.
        - Grants to landowners who seek to implement practices designed to retain water on the land, e.g., wetland protection and restoration.
    - Regulation, Ordinance, Planning
        - Implement the South Zumbro Watershed Storm Water and Capital Improvement Plan.
        - Adopt a policy and process that supports full enforcement of MN Rule 7020 including: regularly verifying that Manure Management Plans are properly implemented, regularly inspecting feedlots for compliance, and enforcing Open Lot Agreements. Inspections should occur on 20% of the feedlots each year. Enforcement policy should include easily administered penalties for violations.
        - Adopt a policy and process that supports full enforcement of stormwater management and erosion control standards including standards found in the Zoning Ordinance and construction stormwater permits.
        - Encourage growth in or near the cities, utilizing city services. Discourage expansion of the designated Urban Expansion District (2005 Zoning Ordinance) prior to completion or full development within the current boundary.
        - Discourage large-lot rural housing outside the Urban Expansion District. Encourage cluster, low impact development with associated open space where rural subdivisions are allowed.
        - Support efforts to protect unique natural resources and open space.

        - Support efforts to sunset old plats in rural areas that have not been developed (see Goodhue Co. as example).
        - Lead in the implementation of a system that tracks compliance with septic system maintenance standards and regularly notifies the owner when maintenance is due.
        - Evaluate the pros and cons of a “soil loss ordinance”; consider options for implementation in the county.
        - Require landowners to be in compliance with all regulations as a condition of approval of any zoning permit (even regulations unrelated to the permit request; for example….proof of compliance with shoreland buffer standards on all land before a zoning permit for a structure is approved.)
        - Utilize, or encourage utilization of, the state public drainage regulation and code.
    - Administration and Coordination
        - The County will collaborate with partners to reach shared goals and objectives. Partners include Soil and Water Conservation District Federal Agencies, State Agencies, Local Governments, Joint Powers Boards, not for profit organizations, businesses, and individuals.
        - The county, when practical, will develop work plans for completing accessory actions and apply for grants to complete the work plans.

Fillmore County LWMP 2006-2015

Priority Concern: Soil Erosion and Runoff

Objective: Conduct annual education and information programs for county residents and local officials about land use practices that reduce runoff and erosion.

Actions:

- Promote the use and establishment of annual and perennial cover crops and living mulches in conjunction with traditional row crops through education and seeking cost-share funding for practice establishment and maintenance.
- Communicate with state and federal legislators regarding ways to improve state and federal conservation programs through better coordination and simplification of program policies.
- Pursue funding for a pilot project to develop binding but simplified farm plans that model "managed set aside" which utilizes sensitive areas as working lands that are profitable and environmentally-friendly.
- Action 1.D. Provide education about the safe use and storage of road salt and effective alternatives to salt use, such as ethanol by-products and living snow fences.
- Promote soil and water conservation in the schools by providing information, assistance, and educational tools that enhance coursework about natural resources.
- Provide information about practices that reduce runoff and increase water infiltration in urban areas, from construction sites, logging areas, and other land uses that disturb land cover or replace vegetation with impervious surfaces.

Objective: Increase watershed-based activities in cooperation with other local units of government for more effective management of water bodies targeted for improvement.

Actions:

- Provide representation from Fillmore County on the Upper Iowa River Alliance (UIRA) and other watershed groups working to improve water quality in the Upper Iowa and Root River watersheds.
- Work with DNR Fisheries to identify and implement management strategies for trout stream watersheds and springsheds that will maintain or improve stream conditions for sustaining a healthy fishery.
- Facilitate coordination with other local and state agencies to complete 319 grant projects and programs for the South Branch Root River watershed project as defined in project work plans.
- Work with transportation agencies and the DNR to investigate strategies for bridge and culvert replacements starting in the upper portions of watersheds where temporary water storage can be incorporated to reduce peak flows and allow size reduction of downstream bridges and culverts in those watersheds.

Objective: Gather information and data to more effectively identify areas in the county contributing pollutants to streams determined to be impaired for their intended uses and listed on the Clean Water Act Section 303(d) impaired waters list.

Actions:

- Support and expand volunteer monitoring through the MPCA Citizen Stream Monitoring Program, IOWATER, and other programs that add to the understanding of the condition of water resources in the county.
- Establish and maintain data management systems that allow for easy access and analysis of water related information utilizing GIS capabilities.
- Cooperate with local, state, and federal agencies in assessing water quality and quantity in county streams and rivers.
- Objective: Utilize local ordinances and permitting procedures to ensure that erosion and runoff control measures are implemented.
- Review, clarify and improve enforcement of the county's soil loss ordinance requirement for erosion control plans for activities that disturb more than one acre of land.
- Review, clarify and improve enforcement of the shoreland ordinance and bluffland protection ordinance and other zoning measures that establish and maintain buffers in sensitive areas and implement other BMPs that protect water resources.

Priority Concern: Drinking water quality and source water protection

Objective: Conduct annual education programs that increase awareness of the importance of protecting drinking water supplies and ground water resources.

Actions:

- Promote well water testing through the local media and other educational methods and by providing free and/or reduced cost water testing for county residents in cooperation with Fillmore County Public Health utilizing MDA nitrate testing equipment and funding resources as available, such as the South Branch Root River watershed project 319 grant, that reduce the cost to the homeowner.
- Promote BMPs through education and financial incentives, when available, that protect drinking water wells from potential contamination, such as abandoned wells, septic systems, methamphetamine lab wastes, and other pollution sources found on a home site.
- Assist public water suppliers with completing wellhead protection plans and DNR Emergency and Conservation Plans.
- Promote water conservation through education and incentives, as funding allows.
- Develop a county revolving fund for well sealing and replacement.
- Provide information to health care providers and caregivers about drinking water contaminants that pose a risk to children and other susceptible populations and how to test for them.

- Assist farm fuel tank owners with upgrading their tanks through information and incentives to implement preventive practices, such as secondary containment and automatic shutoff nozzles.
- Promote shared wells in subdivisions whenever feasible.

Objective: Maintain local data and information related to public and private water supplies and their protection.

Actions:

- Maintain and update well location, construction, and sealing information in the County Well Index utilizing GIS in cooperation with MDH and MGS.
- Support and encourage ground water monitoring efforts such as the volunteer nitrate monitoring network, with the SE MN Water Resources Board, the MPCA, MDH, MDA, and others to increase understanding of ground water quality and quantity in the county.

Priority Concern: Human Sewage Treatment

Objective: Bring 50% of noncompliant septic systems into compliance.

Actions:

- Implement financial assistance programs that encourage homeowners to upgrade noncompliant systems by expanding to the entire county the Clean Water Partnership loan program currently in place in the South Branch Root River watershed, which is administered by the county and allows repayment through property taxes, and by continuing the Ag BMP Loan Program.
- Inspect 100% of newly installed septic systems by county and SWCD staff to ensure compliance with Minnesota Rules Chapter 7080.
- Complete the MPCA Three-County ISTS Pilot Program by inventorying all septic systems that are an imminent threat to public health (ITPH) by 2007 and upgrading all ITPH systems by 2008. Utilize the results from the pilot program to develop future programs that encourage compliant ISTS.
- Work cooperatively with residents in the unsewered communities of Cherry Grove and Greenleafton or other interested communities to determine sewage treatment options for those communities in cooperation with the SE MN Wastewater Initiative and pursue funding to assist residents with improving their sewage treatment systems.
- Adopt a zoning ordinance amendment that requires an ISTS inspection at the time of property transfer.

Objective: Conduct annual education programs about the benefits of proper sewage treatment and proper operation and maintenance of septic systems.

Actions:

- Utilize a variety of tools and methods, i.e. workshops, models, demonstrations, displays, articles, etc., to educate various audiences about proper sewage treatment and upkeep of ISTS.
- Assist with promoting and staffing the county's annual Household Hazardous Waste collections as a practice that can protect ISTS from improper disposal of hazardous wastes.
- Promote water conservation to homeowners as a way to extend the life expectancy of their ISTS.
- Provide education to lenders and realtors regarding the benefits of requiring an ISTS inspection at the time of property transfer.

Priority Concern: Fertilizer and Pesticide Use

Objective: Conduct annual education programs that inform both ag and non-ag fertilizer and pesticide users about BMPs that ensure that negative impacts from fertilizers and pesticides to water resources are reduced.

Actions:

- As funding and opportunities become available, develop educational activities for the appropriate audiences to promote reduced use of fertilizers and pesticides for settings such as agricultural lands, lawns, public property, gardens, roadsides, golf courses, etc.
- Conduct an annual education campaign emphasizing the recommendation that there be no fall application of anhydrous ammonia.
- Provide assistance to the schools, as requested and as funding allows, to enhance their natural resources curriculum related to proper use of chemicals in the environment.
- Encourage nutrient management research and economic analyses to document the maximum benefits of utilizing manure, soil testing, and manure testing, and publicize these findings in comparison to University of Minnesota recommended rates.
- Provide information to producers and other audiences about the implications of the determination of the common detection of atrazine and metolachlor in ground water by the Common Detection Advisory Committee in 2002.

Objective: Monitor surface water and ground water for the presence of nutrients and pesticides.

Actions:

- Conduct annual pesticide and nutrient monitoring of surface and ground waters in cooperation with the MDA, MPCA, the Upper Iowa River Alliance, the South Branch Root River watershed project, citizen stream monitoring volunteers, and others as opportunities arise.

- Support the establishment of a long-term volunteer nitrate well monitoring network in cooperation with the SE MN Water Resources Board and maintain the network beyond the end of the grant period.
- Objective 3: Provide opportunities or referrals for the proper disposal of waste pesticides and fertilizers.
- Negotiate contracts with Winona County to accept waste pesticides and fertilizers from Fillmore County households, farms, and commercial businesses for a minimal cost. Publicize these services to county residents.
- Assist with promoting and staffing the county's annual Household Hazardous Waste collections as an opportunity for county residents to properly dispose of household pesticides.

Objective: Assure that applications of pesticides and fertilizers are done at recommended rates.

Actions:

- Require fertilizer and pesticide use plans for golf courses and other land uses, when appropriate, that require a Conditional Use Permit.
- Provide technical assistance or referrals to ag and non-ag residents to assure proper applications of fertilizers and pesticides.

Priority Concern: Feedlots and Manure Management

Objective: Implement a county feedlot program that meets the farmers' needs and minimizes or eliminates water pollution hazards from feedlots to protect ground and surface waters.

Actions:

- Complete a Level III feedlot inventory for the entire county by 2015.
- Annually convene the Feedlot Advisory Group to review the county feedlot program and the feedlot ordinance.

Objective: Provide information and educational opportunities annually to raise public awareness about feedlot issues and the related water quality consequences in the associated watersheds.

Actions:

- Hold annual informational meetings on feedlot-related issues related to the program and its rules, financial and technical programs, current research, or demonstrations of BMPs, such as land application of manure, rotational grazing, hoop houses, composting, dead animal disposal, etc.
- Annually update the educational packet for new and expanding facilities outlining feedlot requirements in the state rules and local ordinance.
- Provide producers with information about overwintering practices at secondary feeding sites to improve soil and water quality.

Objective: Provide financial and technical assistance to feedlot operators to assure compliance with all pollution control requirements from feedlots and manure application in priority areas by 2010 and the rest of the county by 2015.

Actions:

- Make financial and technical assistance available to producers for development of their own nutrient management plans utilizing public and private assistance as needed.
- By 2015, achieve 100% control of all polluted runoff from feedlots and land application of manure by providing technical and financial assistance to producers.
- Leverage state and federal funding to increase the amount of technical and financial assistance available to producers in meeting state and local feedlot rules and regulations.

Houston County LWMP 2007-2017 amended 2012

Priority Concern: Changes in agriculture and effects on water resources

Priority Concern: Impact of development on the sensitive Karst topography

Priority Concern: Recreation uses of water and impact to the environment

Priority Concern: Education and awareness of resources and sensitivity

Priority Concern: Groundwater sensitivity in Karst topography

Goal: Protect groundwater in order to maintain an adequate supply of safe drinking water for current and future generations

Objective: Provide technical and financial assistance to land users to properly manage and utilize agriculture nutrients

Actions:

- Provide technical assistance on ag waste management on 20 per year
- Establish demonstration plot exploring manure application rate and nitrogen/phosphorus rates
- Manure application field day

Objective: Address non-conforming ISTS

Actions:

- Update 50 non-conforming ISTS
- Inspect all new & upgraded ISTS
- Administer AgBMP loan program
- Enter all new & upgraded ISTS inspections

Objective: Well Tests

Actions:

- Offer free infant well tests of 15 families/year
- Offer well water testing kit at low cost to landowners
- Participate in SE MN Domestic Well Network
- Provide annual free nitrate testing to Houston County residents
- Prepare two news articles annually on well testing
- Prepare posters on prenatal and infant care & place where appropriate

Goal: Improve surface water quality in rivers and streams in Houston County

Objective: Explore methods to slow decline in perennial vegetation

Actions:

- Promote existing programs which offer incentives to establish/maintain perennial vegetation
- Develop local/regional incentives to establish 1000/acres of perennial vegetation annually
- Information/education campaign on importance of hay land for erosion control and runoff reduction
- Assist with implementation/administration of programs that support/promote animal agriculture
- Promote perennial vegetation within the riparian zone through buffer initiatives the reduce sediment delivery and nutrient reduction. Goal of 20 acres annually

Objective: Provide incentives to adopt conservation practices which will offset the effects of current cropping trends on runoff and erosion in Houston County

Actions:

- Establish incentive program to plant 500 acres of fall cover crops
- Continue technical assistance to the NRCS through contribution agreements and other related programs to install approved EQIP conservation practices
- Seek federal, state, and local grants including but not limited to National Fish & Wildlife (NFWF), Emergency Defense Fund (CWF), and The Nature Conservancy to provide cost share and technical assistance to landowners for conservation practice implementation countywide
- Conduct one annual meeting with county commissioners and watershed groups to discuss funding mechanisms for BMP installation
- Continue partnership opportunities with The Nature Conservancy and NRCS to install 500 linear ft. of stream bank restoration and 30 acres of streambank buffers an 20 BMP's within priority areas of the Root River Watershed
- Provide technical and administrative assistance to the Crooked Creek Watershed to implement their watershed plan
- Contact ARS (Agriculture Research Station) to obtain cover crop data information for Houston County landowners and conduct one landowner workshop
- Assist Minnesota Board of Water and Soil Resources (BWSR) in the conservation practice and implementation and enhancement of the Hokah Wetland Bank Project. Plan/maintain 80 acres of native grass plantings
- Provide outreach to landowners/landlords throughout the county through two annual news articles on the importance of conservation planning and installation of recommended practices. Goal of 20 per year

- Provide guidance, cost share assistance and recommendations to 20 Bee/Duck Creek Watershed landowners using various programs (CRP, EQIP, State) for forest stewardship activities that reduce runoff, improve wildlife habitat and maintain, expand and improve perennial cover
- Continue prioritization and promote of BMPs using LiDAR and the Stream Power Index (SPI) as a way to target sensitive landscape features that contribute a disproportionate amount of sediment and nutrients

Objective: Provide technical and financial assistance on feedlots

Actions:

- Provide planning and financial assistance for low-cost feedlot fixes on 5 lots per year
- Provide technical assistance to Houston County to conduct inspections and provide maintenance recommendations on 7% of open lot agreements (OLA program) per year
- Promote residue management on 500 acres of highly erodible land annually
- Encourage wetland restoration on 2 sites in Houston County
- Plan and implement grazing plans on 250 acres of sensitive areas annually

Objective: Provide technical and financial assistance to land users to establish practices which will reduce discharge of pollutants from animal feedlots

Actions:

- Continue ongoing partnership with county feedlot officer to address open lot agreement workload
- Assist JPB with 2 large feedlot storage and runoff projects

Objective: Develop additional alternatives to promote non-traditional livestock operations

Actions:

- Prepare and submit an annual news article on information and opportunities for non-traditional livestock operations and agricultural operations that support the use of perennial vegetation
- Provide most updated information and material related to non-traditional livestock operation and provide guidance and contacts to interested residents

Goal: Manage stormwater runoff to minimize risk to human life, property, and the environment

Objective: Provide technical and financial assistance to establish practices that reduce sediment delivery

Actions:

- Provide financial incentives to establish 5 push-up ponds annually
- Develop program providing stormwater retention through road culvert or ditch size reduction on 2 township and county roads annually

Objective: Explore opportunities to reduce peak flow from rural and urban residential development

Action:

- Provide home site evaluations on average of 12 rural building sites per year

Objective: Explore opportunities for solutions to flooding concerns throughout the county, including prioritization of water retention/flood storage using LiDAR Terrain Analysis and solicitation of funding sources for project costs and technical assistance along with utilizing upstream jurisdiction and other partners

Action:

- Participate with US Fish and Wildlife Service, Root River Citizens Committee and other partners

Objective: Provide administrative and technical assistance to address issues related to existing wetland within Houston County

Action:

- Assist the county in administering the WCA

Objective: New Technology

Actions:

- Provide funding and in-kind contributions for improved technology using LiDAR, stream monitoring projects and computer design software in an effort to enhance natural resource protection
- Discuss and prepare staff training needs for both technical and administrative employees

Objective: Flood Retention

Actions:

- Complete 2007, 2008 flood workload (Staggemeyer site 2)
- Provide annual maintenance on existing Winnebago Watershed flood control structures
- Provide technical and planning assistance to the Bee/Duck Creek, Crooked Creek and Winnebago Watershed committees
- Seek funding opportunities for cost share assistance through the Clean Water Grant proposal to install flood retention structures within the Bee/Duck Creek, Crooked Creek and Winnebago watersheds

Goal: Review of local and regional plans and ordinances for compliance and compatibility

Objective: Administer all provisions of Houston County Water Plan

Actions:

- Staff part-time Water Plan Coordinator
- Continue participation on SE WRB
- Review local/regional plans to insure compliance with Water Plan

Mower County LWMP 2006-2015 amended 2010

Priority Concern: Soil Erosion

Goal: Protect our surface water and farmland from excessive soil erosion

Objective: Educate the public about soil erosion and enforce the Mower County Soil Erosion Ordinance

Actions:

- Develop an educational strategy for informing landowners/operators of the soil loss ordinance.
- Continue to work with farmers with implementing and enforcing the soil erosion ordinance program to achieve acceptable soil loss goals.

Objective: Educate the public of BMPs in controlling soil erosion

Actions:

- Implement a marketing/education initiative to inform landowners of best management practices for controlling erosion.
- Inform landowners of best management practices for controlling erosion, utilizing the MDA's Conservation Funding Guide. This is a "one stop" resource for information regarding agricultural and natural resource conservation practices and payments. Promotion of Conservation Funding Guide will be accomplished through website, educational booth and landowner discussions.
- Promote and track the MPCA Citizen Stream Monitoring Program. Provide education and oversight locally for participants.
- Collaborate with Cedar River Watershed District and Turtle Creek Watershed District on outreach and implementation initiatives to reduce soil erosion.

Objective: Recognize that water quality issues related to soil erosion come from watershed run-off. A "BMP Treatment Train" approach should be implemented on a watershed basis to reduce sedimentation to the County's water bodies due to soil erosion. Numerous practices will be needed to achieve water quality goals.

Actions:

- Achieve a reduction in soil erosion in agricultural areas through different tillage methods.
- Encourage conservation tillage through Conservation Planning. Fact sheets on CRP contracts and one on one with landowners in discussing needed earthmoving erosion control practices.
- Implement conservation practices that will reduce erosion and sediment loading to the streams and ditches.
- Develop and implement a 5-year action plan for increasing riparian buffer and filter strip enrollment through Continuous CRP.
- Identify best management practices for treating soil erosion on agricultural land.

- Promote State compliance on the agricultural shoreland buffers through education on the importance of buffers and promotion of programs to offset crop loss income.
- Determine all non-compliant landowners, using the GIS tool developed by Cannon River Watershed Partnership. Identify each individual that is out of compliance by 20' or more and target those individuals to work towards options that would bring them into compliance.
- Continue to educate and implement the MPCA Stormwater program to reduce erosion on construction sites in municipalities and rural areas.
- Create and enhance landscape with native vegetation plantings for soil stabilization and stormwater treatment. Local Ecotype plants will be used to the greatest extent possible.
- Administer the local Ag BMP loan program to provide producers with a means of obtaining equipment to apply conservation tillage practices.

Priority Concern: Flooding

Goal: Protect life and property from future flooding

Objective: Provide education, collaboration and leadership on flood damage reduction initiatives

Actions:

- Develop and promote a watershed-based approach to flood control planning and Implementation projects. Each tributary has different characteristics and various approaches needed to address high flows and flood damage. Incorporate planning, prioritization and implementation for specific sub watershed needs.
- Work with local elected officials to communicate the flood reduction needs for the County and provide input into legislation that will result in flood damage reduction.
- Coordinate with Cedar River Watershed, Turtle Creek Watershed and County officials to promote upland watershed management through best management practices.

Objective: Identify all potential properties that might be at risk for flooding.

Actions:

- Map all properties that have flooding risks and develop a warning system that will provide property owners awareness of risks.
- Develop and implement comprehensive stream gauging throughout the County.
- Complete a Hydraulic and Hydrology model that will provide an effective, efficient and essential tool for understanding flows in the Cedar River Watershed District.
- Develop aerial photography inventory of flooding events in the Cedar River, Turtle Creek, Root River, and Upper Iowa Watersheds

Objective: Develop a Comprehensive Surface Water Management Plan for the Upper Cedar River

Action:

- Watershed Coordinator

Objective: Develop and implement a Best Use Land Policy for Mower County that would promote the establishment of wetlands and buffer strips that would reduce flooding and improve water quality throughout Mower County

Action:

- Map all potential wetland projects Type 3-6 in watersheds that have flood characteristics and provide for preservation of existing wetlands.
- Pursue state and federal funding in the enactment of CCRP, WREP, RIM and WRP
- Continue to purse state funding for wetland restorations that will provide flood damage reduction benefits.
- Seek out and develop a Flood Plain reconnection pilot project for restoring and utilizing flood plain functions and values.

Objective: Develop Mower County wide standards for stormwater runoff management

Action:

- Develop best management practices and permit standards for City of Austin to comply with MPCA permit requirements.
- Support Rain Garden cost-share programs to establish 5 new rain gardens annually.

Objective: Develop a Strategic Plan and Team to pursue funding options for flood mitigation projects. These funding options would include federal state grants. Projects would include planning grants, acquisition programs and structural mitigation efforts

Action:

- Partner with Cedar River and Turtle Creek Watershed District's on education and implementation initiatives to reduce flood damage within the respective watersheds.

Priority Concern: TMDL

Goal: To work towards bringing Mower County rivers, streams and lakes into compliance with TMDL requirements

Objective: Educate the public and elected officials about the concerns and importance of TMDL requirements. Carry out the objectives and action implementations of the Soil Erosion, Flooding, Pollution Management and Groundwater sections of the Local Water Management Plan.

Action:

- Include a map of impaired waters within the County (see MPCA website).
- Reduce fecal impairments by addressing unsewered communities in the county and requiring proper wastewater treatment. County staff will work with staff of the SE Minnesota Wastewater Initiative to educate the public on problems associated with inadequate wastewater treatment and to design and facilitate a wastewater treatment project for each of these communities.
- Continue to address unsewered communities in the county and requiring proper wastewater treatment. Unsewered community on the MPCA list include: Andyville. County staff will work 17with staff of the SE Minnesota Wastewater Initiative to educate the public on problems associated with inadequate wastewater treatment and to design and facilitate a wastewater treatment project for each of the remaining communities.

Objective: Establish baseline water monitoring data for the TMDL areas

Action:

- Complete the water sample gathering from MPCA designated sites for water quality analysis.
- Record and track the sampling data. Share sampling data taken from outside the designated MPCA sampling area with state agencies who may wish to use that data as part of a comprehensive monitoring effort.

Objective: Develop a Hydrology and Hydraulic model in the Cedar River Basin to have a comprehensive and updated water flow dataset

Action:

- Work with MPCA and Cedar River Watershed District to bring all available data into a water quality model development and begin to build a model that will provide guidance for developing and implementing projects in the Cedar River Basin.
- Implement the Dobbins Creek Agricultural Watershed Restoration plan. Create temporary water storage areas, incorporate practices which will hold provide vegetated cover to cropland and develop streambank stabilization projects. The North Branch watershed has been identified as the most feasible stretch to reach measured goals. Practices and marketing will focus on that stretch for implementation
- Collaborate with Cedar River Watershed District and Red Rock Township to identify priority projects which may provide multiple benefits

Objective: Concentrate efforts to avoid, trap and control runoff in the Mississippi River Basin Initiative (MRBI) area

Actions:

- Identify areas with flood plain protection, wetland restoration and associated buffer for WREP enrollment in the MRBI focus Area.

- Market, Educate and enroll priority BMP's identified in the MRBI focus area.

Objective: Develop innovative ways of reducing and measuring nitrate levels in our agricultural landscape. Mower County is intensely farmed with corn and soybean rotations. Landowners and partners also have a strong tradition of looking at non-conventional practices to address water quality concerns. This has been an effective formula for engaging in pilot projects to plan, construct and measure innovative conservation practices. Projects will serve as a demonstration for partners and stakeholders.

Actions:

- Collect and tabulate data to provide baseline information for pilot controlled drainage site located in Root River watershed.
- Surge Pond Nitrogen Reduction: Collect and tabulate data for baseline tracking of 2 Surge Pond projects located in the Root River watershed. Provide oversight and collect water samples to build baseline data. Collect 30 samples in 2011.
- Provide oversight and analysis on the Two Stage Ditch project located in Adams Township.
- Monitor the site and collect water samples 20 times a year, for 3 years.
- Seek funding and support innovative Conservation Practices and Federal Cooperative Conservation Partnership Initiatives.
- Initiate Edge of Field Monitoring techniques to measure nitrate levels on corn stalks on agricultural land
- Partner with 25 producers to expand edge of field, Basal Nitrate Monitoring. Develop baseline data through 5 years of monitoring analysis

Priority Concern: Pollution Management

Goal: To protect surface and groundwater resources from pollution sources

Objective: To educate the public on the proper use and maintenance of individual sewage treatment systems.

Action:

- Conduct annual or semiannual homeowner sewage treatment workshops, targeting new owners resulting from new construction, property transfers and other interested septic system owners each year.

Objective: To eliminate direct discharges of sewage to surface or ground water by identifying and repairing or replacing violating sewage treatment/disposal systems.

Actions:

- Potential failing and Imminent Threat to Public Health and Safety (ITPHS) systems can be identified by comparing a list of all developed properties with the existing list of sewage

treatment systems installed in Mower County. If a name or property is not in the "data base" the system is likely to be an ITPHS. If the system was installed prior to 1996 it is likely to be failing and a possible ITPHS. Arrangements will then be made to inspect the properties for discharges to the ground surface or surface waters. When discharges are found property owners will be notified and corrective actions ordered as per county ordinance and state rule and statute.

- A priority will be placed on identifying direct discharges to surface waters. These will be identified by inspecting properties in the shore land areas of the county and testing tile outlets draining to waterways. After ownership is determined property owners will be notified and corrective actions ordered as per county ordinance and state rule and statute.
- Inventory every home in Udolpho, Lansing, Austin and Lyle Townships for ITPHS. Inventory will utilize existing database of septic systems through the County. Inventory will also involve landowner interviews and on site investigation.
- Seek funding to complete the Imminent Public Health Threat Inventory for the remaining townships of the County.
- Continue to support County policy of requiring point of sale compliant septic systems. Enforce state rules and county ordinance through response to public complaint of ITPHS.

Objective: Provide financial assistance to homeowners to annually upgrade 25 ISTS across the County

Action:

- Provide low-interest loan for homeowners to annually upgrade 25 individual sewage disposal systems across the County.

Objective: Prioritize an initiative to upgrade identify and upgrade septics in Suburban Estates development in Dobbins Creek Watershed

Actions:

- Identify systems which are not meeting compliance and creating public health threat
- Provide leadership and assistance with potential upgrades to Suburban Estate septic System

Objective: Educate landowners on the importance of a nutrient management plan and provide them with appropriate tools to create a manure management plan

Action:

- Annually assist 30 landowners with nutrient management plans when applying for permits and upon request.

Objective: Develop an inventory system for vacant feedlots

Action:

- Work with producers to properly abandon manure storage facilities

Priority Concern: Groundwater

Goal: To protect ground water resources by determining which hydrologic units are determined to be vulnerable due to geography or geology and implement protection strategies.

Objective: Identify sensitive groundwater areas in Mower County

Actions:

- Utilize the Mower County Geologic Atlas to identify geologic units and their location in the county that are susceptible to ground water contamination from surface or subsurface sources.
- Identify first limestone aquifers and regions of shallow drift that contain nitrates near or in excess of the MDH drinking water standard. This would be done by accessing state and county water test records and collecting water samples for testing for nitrate where necessary. MDH well records, the CWI and county water test results would be used.
- Explore funding opportunities to begin a marketing initiative to seal unused/unsealed wells
- Institute the Department of Agriculture's Well Replacement Program in the existing Ag BMP loan program. Replace one well system annually.
- Participate in volunteer nitrate monitoring network and coordinate efforts with Southeast Water
- Resources Board, MN Department of Health, MN Department of Agriculture and MN Pollution
- Control Agency. Conduct one sample a year from volunteer to maintain baseline data.
- Compile all private well locations and previous nitrate monitoring throughout the County.
- Coordinate effort with outside agencies to develop best possible data.

Objective: Develop, recognize and support needs of public water suppliers in their wellhead protection plan programs - effective Wellhead Protection Program for all public wells in Mower County.

Actions:

- Educate the general public on the importance of wellhead protection.
- Provide input, public education and outreach for Brownsdale, Dexter and Wellhead Protection plan development.

Olmsted County LWMP 2013-2023

Priority Concern: Drinking Water & Groundwater Protection

Objective: Continue and enhance groundwater monitoring programs in order to improve the regional understanding of how land cover and land use impact the interaction between the landscape, surface water, karst features and groundwater.

Actions:

- Support upgrading the Olmsted County Environmental Laboratory's data management system to a regional system, incorporating E911 addressing and property record investments.
- Support and provide administrative assistance to the Southeast Minnesota Volunteer Nitrate Monitoring Network and the Volunteer Targeted Nitrate Monitoring Network. Maintain the County's network of citizen volunteers.
- Support state, federal and academic water quality monitoring programs and hydrogeologic studies conducted in Olmsted County.

Objective: Support implementation of Wellhead Protection Area Plans.

Actions:

- Provide support and assistance on Wellhead Protection Area planning committees for public water suppliers. Assist public water suppliers with completing Wellhead Protection Area plans and implementation efforts, including water demand management programs.
- Seek funding for Source Water Protection programming with a focus on Wellhead Protection Areas and implementation of Wellhead Protection Plans. Included in this process is the sealing of abandoned wells located within wellhead protection areas of each city as well as writing and administering grants.
- Cooperate with public water suppliers in inventorying and mapping potential contaminant sources within the Drinking Water Supply Management Areas for each city. Particularly support the Class V Injection Well implementation plan.
- Support MDH and non-community public water suppliers to achieve WHPA goals and objectives (land development controls).
- Support the implementation of conservation and best management practices within the highly sensitive portions of the wellhead protection areas identified for each city in their wellhead protection plan. The coordination of programs will be for land management practices focused on:
    - use and storage of agricultural fertilizer and pesticides;
    - urban use of fertilizer and pesticides;
    - feedlot and manure management and feedlot management plans;
    - protective measures for aggregate mining

- funding for incentive programs for application of agricultural and urban/suburban best management practices that enhance groundwater protection; and
- educational programs related to the bullets above.

Objective: Support community water supply and sewer system projects and appropriate installation and management of private systems.

Actions:

- Pursue funding opportunities to create a cost-share program for sealing abandoned and non-conforming contaminated wells.
- Implement financial assistance and incentive programs that encourage homeowners to improve non-compliant and failing SSTS.
- Assist Cascade Township and the City of Rochester in a study to determine the potential for connecting the Hallmark Terrace and Zumbro Ridge manufactured home parks to the City of Rochester sanitary sewer system.
- Assist the City of Oronoco in the development of citywide sanitary sewer and water system plans and implementation of Phase II water system plans.
- Inventory and study existing development areas in the county that may contain concentrations of nonconforming SSTS and wells, including development along Lake Zumbro, rural service centers, and rural/suburban subdivisions and manufactured home parks. This analysis should include identification of possible funding sources for replacing non-compliant systems, including the Minnesota Public Facilities
- Authority's Small Community Wastewater Treatment Program and other MPCA programs.
- Complete the update of and adopt the County's SSTS ordinance. New provisions could include:
    - requiring countywide inspection of all new and reconstructed septic systems,
    - requiring submittal of all applications and related design information into a central county database, and
    - developing and implementing a point of sale requirement for all properties in the county served by an SSTS.

Objective: Design and maintain groundwater resource-related GIS databases.

Actions:

- Map county springsheds to identify Source Water Areas for springs in order to identify contribution areas in the event of leaks and spills (e.g., fuel spills).
- Improve the water quality data reporting system and expand it to include an annual report on water quality including results from the private drinking water well testing and the county's water monitoring networks (Decorah Edge, stream, lake, and reservoir), and the MPCA's Citizen Stream and Lake Monitoring Programs.

Objective: Protect sensitive geologic areas, features, and formations.

Actions:

- Evaluate the need for a countywide sinkhole ordinance.
- Contact and educate landowners that have sinkholes on their property about sinkhole BMPs. Provide incentives to implement BMPs that reduce the potential for groundwater pollution in karst terrain.
- Develop a program to incentivize protection of sensitive Decorah Edge features identified by the criteria in the Olmsted County Wetland Conservation Ordinance. The program should include landowner education and contact, cost share for BMPs, and utilization of RIM and similar programs.

Objective: Increase public awareness of the importance of protecting drinking water supplies, groundwater resources, and sensitive geologic areas from potential pollutants.

Actions:

- Produce new educational materials that update the general public understanding of groundwater resources, source water protection, pollutant impacts, and best management practices.
- Develop educational materials and programs, based on the most recent findings of ongoing research in southeast Minnesota, that focus on landowner implementation of best management practices in karst terrain.
- Educate private well owners about the well code, proper well construction and maintenance, testing, sealing, and related best management practices and requirements. Educate SSTS owners about the construction and maintenance of such systems. Design education programs for use in multiple venues.
- Provide copies of “Septic System Owners Guide” (U of M Extension) to the owners of newly installed or reconstructed systems.

Priority Concern: Agricultural Erosion and Sediment Control, Nutrient Management and Chemical Use

Objective: Apply conservation and best management practices on rural land in the county.

Actions:

- Develop a program to inspect, maintain, and oversee maintenance of conservation structures (grade stabilization structures, farm ponds, and similar BMPs) according to BWSR and NRCS guidelines.
- Actively market existing agricultural cost share, loans, and other incentives to landowners and operators.

- Increase the amount of planted woodland on marginal row crop areas on highly erodible soils and those overlying focused groundwater recharge areas (Decorah Edge and sandy soils).
- Develop a field tile map for land in the county that can be used for land development reviews, to coordinate drainage improvements, and to understand ground and surface water flow dynamics.
- Research the impact of agricultural tiling and identify management and design improvements that will reduce impacts on individual properties and watersheds. Consider alternative measures to minimize downstream impacts of tile installation.
- Restore the Decorah Edge in the agricultural areas of the county. Submit a Legacy grant that will provide the incentives to effectively conserve the critical portions of the Decorah Edge.
- Expand the Zumbro Watershed Partnership Critical Restoration Sites (digital terrain analysis for TMDL implementation) project funded by the LCCMR beyond the initial 50 "critical source areas" identified in the initial study to each subwatershed within the Zumbro River watershed in Olmsted County and also to the Root River and Whitewater River. Pursue grant funding for bank stabilization for the sites identified in the current study and any future inventories.

Objective: Coordinate plans and programs within the county, and with other counties and state and federal agencies, and non-governmental organizations.

Actions:

- Establish the necessary county resources to market, coordinate, provide technical expertise, and administer the new Minnesota Agriculture Water Quality Certification program (a program involving the USDA, USEPA, and the State of MN).
- Establish and maintain an electronic data management system that allows for easy access and analysis of conservation practices and other water related information utilizing GIS capabilities.
- Conduct a study of the existing county feedlot administration program. The purpose of the study will be to provide guidance to the County Board on the feasibility of County delegation of feedlot regulations from the MPCA and the capacity of the County to carry out a more comprehensive program.
- Establish farmer-led watershed councils for high priority watersheds in the county.
- Synchronize conservation implementation and evaluation into the 10-year MPCA watershed schedule. On a two to four year schedule, determine priority watersheds to focus conservation program work and application of Clean Water Fund grants.
- Populate and routinely maintain the County's water–related websites with resources needed by landowners and water partners.

Objective: Support continued programming for planning, research, and education by local, state and federal agencies.

Actions:

- Encourage ongoing monitoring of surface and groundwater for agricultural pesticides and nutrients and cooperate with regional, state, and federal agencies in the collection, analysis, and application of the data. Support continued monitoring of area surface waters.
    - Coordinate research findings such that it is useful to field staff.
    - Support the continued collaboration of state agencies and local units of government in reviewing river segments and watersheds.
    - Develop summaries of data and provide the data/summaries to field personnel in the SWCD's and NRCS offices.
    - Ensure that locally collected data meets minimum standards and is provided to the MPCA for TMDL planning.
    - Review water quality data with the SWCD board and Environmental Commission on an annual basis.
    - Utilize the data collected annually for the TMDL studies/ listing decisions for review and decisions made on proposed pollutant source proposals for establishment or expansion, i.e., feedlots, mining sites, and other point sources of water pollution.
- Continue the flood control reservoir trophic state study and improve it by collecting additional data on reservoir characteristics and water resource data (chemical, temperature, biologic). Consider expanding the program to other impoundments and secure funding to do so. Develop an index of soils information to supplement the existing Soil Survey and the eventual updated Survey. Request that the NRCS update the Soil Survey.
- Update the Olmsted County MLCCS (land cover) dataset on a biennial basis and populate the land use attribute.

Priority Concern: Impaired Waters, TMDLs & Watershed Management

Objective: Contribute all pertinent county data to state, regional and local water quality databases. Support continued long term monitoring of surface waters in the county.

Actions:

- Coordinate, track, and analyze water monitoring projects and programs for the entire county. Annually review a priority list of waterbody monitoring data. Create a GIS geodatabase with updated County water body linework and data.
- Expand the County's stream and reservoir water monitoring networks to include more frequent sampling and a wider range of parameters.
- Promote volunteer monitoring through development and support of volunteer workshops. Increase school and citizen participation in the MPCA Citizen Stream Monitoring Program, MPCA Citizen Lake Monitoring Program, and macro-invertebrate community monitoring projects.

- Annually submit ongoing and historic surface water quality data to the MPCA to be entered into the STORET database.
- Identify the primary sources and rates of stream sediment in Olmsted County. Provide support and encourage the continued study of stream sediment in regional watersheds. As part of the study, identify and evaluate historic water mill sites and associated sediment deposits and restore stable stream channels.
- Expand the testing capabilities of the County's Water Testing Lab to include Total Maximum Daily Load parameters and stream health indicators.

Objective: Support the development and implementation of TMDL plans for each major watershed.

Actions:

- Support and cooperate with watershed organizations and the MPCA on the ongoing and planned TMDL technical studies and implementation plans for each watershed.
- Support the completion of the Root River TMDL for Turbidity. Support the preparation of the TMDL plan for the watershed.
- Implement the TMDL plans and watershed plans for each watershed – Root, Whitewater, and Zumbro Rivers. The County will need to work with each watershed organization and county to coordinate activities, find funding for implementation measures, and carry out the identified implementation measures.

Objective: Identify and prioritize opportunities to leverage skill sets and project funds through collaborative partnerships within watersheds and subwatersheds.

Actions:

- Track and report the schedule for state, federal, and non-profit grant processes. Integrate the information into the County's monthly Environmental Management Team meetings.
- Develop a water resources improvement program process that:
    - develops a document identifying county and other jurisdiction and organization annual investments and projects similar to the Transportation Improvement Program,
    - meets biennially to discuss and coordinate efforts with the SWCD, county and state agencies, cities, the surrounding counties, SEMWRB staff, SZJPB, WWJPB and ZWP to identify priority projects and programs to submit in the BWSR Biennial Budget Request,
    - develops an understanding of all Clean Water Fund and other funding sources, and
    - coordinates annual meetings with County agencies, townships, cities, NGOs, watershed organizations, other counties, SEMNWRB, and JPBs to discuss, prioritize, and jointly determine possible Clean Water Fund applications.

Objective: Support the formation of and long term funding for community-based watershed organizations for the Root, Whitewater, and Zumbro watersheds. Support watershed planning activities carried out by each watershed organization.

Actions:

- Work with adjacent counties to determine organizational structures for the Root, Zumbro, and Whitewater Rivers to implement watershed/TMDL plans. Support and assist established watershed organizations and their partners in the Whitewater and Zumbro River watersheds. Support the formation of a watershed group for the Root River watershed.
- Initiate and complete a study of long term financing options and sources for the existing watershed organizations covering the Zumbro and Whitewater watersheds and for the newly developing Root River watershed organization.

Objective: Support planning/implementation projects for waterbodies in Olmsted County.

Actions:

- Continue to pursue organizational and funding resources for the following projects: Lake Zumbro Restoration, Zumbro River Restoration (in the former Lake Shady lakebed), Cascade Creek/Lake Project, Logan Creek Priority Watershed Project, and Bear Creek Priority Watershed Project.
- Work with the South Zumbro Joint Powers Board to identify major sources of sediment and nutrients impacting the reservoirs managed by the JPB. Develop programs to address these impacts.

Objective: Educate and involve the public in watershed and TMDL studies and programs.

Actions:

- Coordinate public educational programs on water resources for adults and children in Olmsted County. Develop public understanding and support for watershed-based management through education, information sharing, park informational kiosks and exhibits, and volunteer projects. Provide the general public an annual summary of surface water quality monitoring data through the County or watershed organizations websites.
- Make annual presentations to the Olmsted County Environmental Commission, County Board, Olmsted SWCD, and in other forums about county water resource management efforts and the condition of water resources. Collaborate with other local, state, and federal agencies in developing an annual status report on county water resources. Data and analyses should be presented on a watershed basis.

Priority Concern: Urban/Suburban Stormwater Quality and Quantity

Objective: Support existing storm water management programs, including construction site erosion and sediment control activities.

Actions:

- Assist small cities and townships (non-MS4 communities) and MS4 permittees in developing and implementing illicit discharge ordinances.
- Develop and implement an urban forest master plan for Rochester.
- Review and update the Olmsted County regulations that address storm water erosion and runoff control, grading plan approval, and grading and drainage standards.
    - Use the LiDAR dataset to update the Olmsted County Soil Erosion model and ordinance.
    - Work with the townships on ordinance improvements and implementation (plan reviews, administration, inspections, and enforcement)
    - Determine if a coordinated effort with shared resources can be organized and implemented.
- Develop additional resources for the County and townships to adequately regulate storm water in new residential subdivision and commercial/industrial development under County/township jurisdiction. Train County field staff to identify erosion problems, monitors compliance with grading/storm water plans, and perform other management activities.
- Coordinate an annual MS4 report review process among all permittees in Olmsted County, at which time the Olmsted County MS4 program manager will assess the reports in order to identify program components that could benefit from further cooperation and coordination, if any. If there are opportunities for additional countywide collaboration, the County's MS4 program manager will prepare recommendations and facilitate a meeting to address those concepts.
- Pursue funding to support retrofit activities in previously developed areas, such as construction of new BMPs and enhancement of existing BMPs to expand storm water management capacity.
- Conduct an inventory of ravines and other highly eroded areas to identify sites for stabilization. Develop an implementation program to prioritize the upland sites and impacted stream channels, applicable best management practices, and costs. Pursue funding for stabilization of priority sites and for sediment/debris removal projects to restore in-channel morphology and habitat.

Objective: Provide information and educational opportunities for cities and townships on storm water management, including erosion and sediment control standards and best management practices.

Actions:

- Encourage all of the non-MS4 cities in the county to meet the principles of the EPA Phase II storm water requirements.
- Minimize compaction on construction sites and restore soils where it occurs, using education programs, revised models, and BMP's.
- Promote Olmsted County and other LGU projects that demonstrate Low Impact Design or Minimum Impact Design technologies.

- Develop a community-wide survey to assess baseline awareness about local water issues, the water protection behaviors already adopted by citizens, and citizen readiness to adopt new water quality behaviors.

Objective: Apply low impact or minimal impact design practices to development in the County.

Actions:

- Continue to support and apply the Peak Flow Reduction Opportunities in the Cascade Creek Tributaries Final Report and the related Cascade Turbidity Reduction through Rural Retention and Stream Restoration Program implementation project. Pursue funding for implementation projects.
- Encourage development proposals to incorporate Low Impact Design strategies (and Minimal Impact Design strategies when made available by MPCA) to manage storm water runoff. Research how to incorporate the concepts into the existing zoning ordinances and land development manuals in the county.

Priority Concern: Wetland Resources & Natural Corridors

Objective: Buffer all sensitive land and water interfaces.

Actions:

- Assist landowners and managers with shoreland and riparian best management practices and funding options.
- Work with the Minnesota Department of Natural Resources to identify and implement management strategies for trout stream watersheds and the areas contributing groundwater to springs associated with trout streams.
- Pursue funding to conduct a countywide inventory of streambank stability on all perennial streams. Identify high priority sites for in-stream habitat improvement and streambank stabilization and develop an implementation program. Develop a demonstration project(s) for cost-effective streambank stabilization.
- Conduct a study of Olmsted County's surface water system to determine best management practices and if there is a need for buffer requirements for croplands adjacent to non-public stream reaches. At a minimum, the study will consist of the following:
    - Identification/mapping of public waters for each watershed;
    - Identification/mapping of the watershed and subwatershed boundaries;
    - Identification/mapping of the surface water system within each subwatershed above the public water designation;
    - Describe the surface water channels and designate on the surface waters map;
    - Conduct an assessment of each subwatershed to determine the extent of surface flow and best management practices; and
    - Submit the information and analysis to the County Board.

    - If warranted by the study results, develop programs to address water quality in non-public waters.
- Evaluate adopting and applying the proposed model shoreland standards developed by the Minnesota Department of Natural Resources. Consider amending land use regulations to require subdivisions to provide for shoreland buffers through easements or dedication.

Objective: Promote and protect forest resources and grassland resources, including pasture.

Actions:

- Provide and promote technical assistance for best management practices in pasture management plans. Continue funding for the pasture management specialists available in the Root, Whitewater, and Zumbro River watersheds.
- Encourage the Minnesota Department of Natural Resources to maintain the forest stewardship plan program. Encourage the MN DNR to provide adequate staffing for plan preparation and sustainable forestry practices on private lands.
- Increase the amount of forestland managed under best management practices.
- Utilize the plans of the Minnesota Forest Resource Council – Landscape Committee for Southeast Minnesota to conserve and expand forest resources. Work with the landscape committee and the Minnesota Forest Resource Council to implement the approved plans. The plans include the updated landscape plan and landscape stewardship plans being developed for the Root River and Whitewater watersheds.
- Study the concept and develop a forest resources element to the County's land use plan.

Objective: Develop strategies to better utilize the natural water quality functions provided by wetland systems.

Actions:

- Develop a countywide plan to identify "high priority areas" that meet the requirements of MR 8420.0835. High priority areas should be
    - designated by minor watershed or subwatershed;
    - in watersheds that contain high value wetlands that are at risk of degradation and are integral to maintaining the ecology and condition of the watershed;
    - located on the Decorah Edge,
    - based on criteria that can be used to identify individual wetlands and on criteria established in MR 8420.
- Conduct an inventory of drained wetlands and identify high priority areas for restoration for the purposes of wetland banking for development and agricultural needs. Encourage wetland replacement to be located within Olmsted County.
- Develop an Agricultural Wetland Bank program for Olmsted County.
- Organize annual meetings to identify wetland replacement needs for public projects and create cooperative plans for replacement.

- Encourage the use of the “exceptional natural resource value” provisions of the Wetland Conservation Act rules on lands that are located within the Decorah Edge district, or within the watershed of designated trout waters, shorelands, or lands identified by the County’s open space plan (when adopted).
- Implement a countywide system to record wetland boundaries, impacts, and wetland establishment. The system should be organized in a GIS database. (This program has been initiated within the City of Rochester.)

Objective: Promote and market wetland preservation and restoration programs.

Actions:

- Promote and market wetland preservation and restoration programs such as CRP, WRP, RIM, and BWSR wetland banks each year.
- Promote and educate landowners/managers about wetland preservation programs such as the Wetland Preserve Area Program and the Rural Preserve Property Tax Program in order to minimize property taxes on wetlands. Prepare a summary tax sheet that explains the wetland and rural preserve programs for landowners and managers.

Winona County LWMP 2011-2015

Priority Concern: Water Quality

Goal: All Winona County residents have access to safe drinking water.

Objective: Assess the condition of groundwater and the interconnection of land use and associated pollution risks.

Actions:

- Provide updated information to Minnesota Geological Survey and Minnesota Department of Health for Minnesota County Well Index (CWI) records where needed.
- Utilize the ACCESS well water chemistry database for tracking private wells chemistry data.
- Participate as a sub-grantee for the continuation of the Southeast Minnesota Volunteer Nitrate Monitoring Network.
- Participate as a sub-grantee for the Southeast Minnesota Volunteer Targeted Nitrate Monitoring Network.

Objective: Assist public water suppliers (PWS) in developing Wellhead Protection Plans and/or managing their 200 foot inner wellhead management zone.

Actions:

- Provide representation on the Wellhead Protection Planning Committee for public water suppliers.
- Provide information from County records on potential contaminant sources and GIS assistance in mapping and completing potential contaminant source inventory information for public water suppliers.
- Provide land use and parcel maps to public water suppliers.
- Provide support to the cities of Winona, Goodview, Lewiston, and Utica to carry out their Wellhead Protection Plans.
- Target pollution prevention programs in wellhead protection areas.

Objective: Assist private well users in protecting and/or improving their drinking water supplies.

Actions:

- Educate private well owners on the well code, the Water Quality Ordinance and proper well construction, maintenance and sealing, and well setbacks.
- Host two nitrate clinics a year.

- Provide information to health clinics and hospitals concerning the need to test private wells for common contaminants such as nitrates and coliform and the services of the Environmental Services Department regarding testing.
- Subsidize the cost of water test kits for low-income residents through programs such as the Women, Infants and Children program.
- Publish and distribute grant and loan program information for new well construction and well repair such as the USDA, Rural Development, Section 504 Loan and Grant Program, and the Ag Best Management Program.
- Provide private well owners with abandoned wells cost share money to properly seal their wells and pursue funding opportunities that will allow the development of a grant and/or County revolving loan program fund for well sealing and well replacement.

Objective: Provide educational opportunities to the public and schools on drinking water issues, land use planning, groundwater quality, and the significance of karst geology.

Action:

- Provide the public with groundwater educational materials in print and mixed media

Goal: Winona County surface waters support their beneficial uses for recreation, aquatic life, and as sources of drinking water - where applicable.

Objective: Reduce fecal coliform impairments by further implementation of TMDL activities.

Actions:

- Continue efforts with Whitewater River Watershed Project in addressing TMDL fecal coliform impairments in the watershed through the Bacteria Reduction Project.
- Host yearly meetings with the MPCA and the public to explain ongoing implementation activities in the Garvin Brook Watershed in addressing TMDL fecal coliform impairments.
- Implement 10 rotational grazing plans.

Objective: The development of turbidity TMDL(s) for streams in the Garvin Brook, Whitewater River, and Root River Watersheds.

Actions:

- Host yearly meetings with the MPCA and the public to explain ongoing implementation activities in the Garvin Brook Watershed in addressing TMDL turbidity impairments.
- Participate with the Whitewater River Watershed Project in hosting yearly meetings with the MPCA and the public to explain ongoing Turbidity TMDL activities in the Whitewater River watersheds.
- Participate in writing an Implementation Plan based on the TMDL study and assist in executing the plan.

- Participate in the Root River Turbidity TMDL by attending Technical Advisory Committee and Stakeholder meeting and providing information upon request.

Objective: The promotion and support of aquatic life assessments for all trout streams in the Buffalo-Whitewater and Root River Watersheds incorporating biological monitoring and biological criteria.

Action:

- Host meetings for local government officials and the public regarding monitoring results and assessments from MPCA intensive watershed monitoring activities of 2008 and 2010.

Goal: Buffer all sensitive water/land interfaces.

Objective: Increase compliance with 50 foot buffer Shoreland Ordinance requirement in agricultural areas along protected waters.

Actions:

- Make presentations to the County Board and Township Officers Association regarding the general results of the Whitewater Watershed Project's Environment and Natural Resources Trust Fund project and discuss the importance of stream side buffers.
- Field verify those areas where the GIS land cover information indicates that the 50-foot buffer is not present.
- Contact those landowners out of compliance with the 50-foot buffer and explain the requirements.
- Distribute educational materials regarding Shoreland buffer requirement and government programs that provide assistance to establish and maintain buffers.
- Establish a hay-able buffer program.

Objective: Promote buffers around sinkholes.

Actions:

- Provide resource support to the Minnesota Geological Survey and the University of Minnesota Department of Geology and Geophysics for field assistance and verification in updating the Karst Feature database utilizing LiDAR.
- Inventory surrounding land use around sinkholes.
- Inform landowners owning land with sinkholes of buffer options and setback requirements.
- Support the regional ENRTF MN DNR springshed mapping for trout stream management by identifying targeted landowners and making contacts to them regarding the project.

Priority Concern: Soil Erosion, Sediment Control and Stormwater Management

Goal: Minimize the erosion of agricultural soils.

Objective: Promote programs that encourage soil conservation.

Action:

- Promote projects and activities that educate and encourage cropping practices that minimize soil erosion. Cover cropping, contour farming, crop rotation, conservation cropping systems (No-till, strip-till and ridge-till management)

Goal: Eliminate gully erosion.

Objective: Install grass waterways and grade stabilization structures.

Actions:

- Identify hot spots for gullies and other sources of erosion. Contact landowners with options for cost share and technical assistance to address erosion concerns.
- Install 40 grade stabilization structures in high-prioritized areas.
- Install 5,000 feet of waterways and diversions per year in high-prioritized areas.
- Inspect, maintain, and oversee maintenance of conservation structures according to BWSR guidelines

Goal: Maintain or increase the percentage of perennial vegetation.

Objective: Promote and protect forest resources.

Action:

- Maintain and assist with Forest Stewardship Plans.

Objective: Promote grass-based agriculture.

Action:

- Increase the adoption of rotational grazing by writing 25 grazing plans

Goal: Reduce stormwater runoff from impervious surfaces through site design principles.

Objective: All municipal areas meet the principles of the EPA Phase II Stormwater Requirements.

Action:

- Assist small cities on stormwater retention/infiltration projects.

Priority Concern: Nutrient, Manure, and Human Waste Management

Goal: Treat manure wastes or manage wastes as fertilizer and / or energy source in order to prevent the contamination of ground and surface waters.

Objective: Correct open lot runoff from noncompliant feedlots.

Action:

- Provide technical assistance for design, installation and implementation of feedlot plans.
- Provide maintenance suggestions and inspections of implemented feedlot projects in accordance with State Standards.
- Provide administrative and technical assistance for correcting manure runoff problems.
- Implement a County Feedlot and Inspection Program

Objective: Increase the usage of manure management plans among livestock producers.

Actions:

- Promote and educate landowners on the benefits of manure/nutrient management plans.
- Make the AgBMP Loans available for landowners to purchase manure/nutrient management equipment to meet their manure management plans.
- Assist feedlot operators with development and implementation of Manure Management Plans.
- Provide livestock producers maps of sensitive features.

Objective: Promote pasture management throughout the County.

Action:

- Design, implement, and provide technical assistance for pasture management plans.

Goal: Treat human waste to prevent the contamination of ground or surface waters.

Objective: Address Imminent Threats to Public Health from septic systems.

Actions:

- Incorporate revisions to the SSTS Ordinance to identify and fix ITPH and systems failing to protect ground water.
- Follow up on all with ITPH to insure compliance is achieved in required time frames.

Objective: Update septic system database and GIS to show all septic systems within Winona County.

Actions:

- Participate as a sub-grantee to develop a comprehensive SSTS database through the Southeast
- Minnesota Water Resources Board 2010 Clean Water Fund SSTS Program Enhancement Grant.
- Work with all SSTS professionals to insure that they utilize the electronic based system for submitting Compliance Inspection Reports and other information.

Objective: Initiate projects with small communities with significant wastewater needs.

Actions:

- Based on updated septic system information, review and update the list of small communities with wastewater needs.
- Make contact with two communities of greatest need and start task forces.

Objective: Provide operational and maintenance information to homeowners having septic systems.

Actions:

- Host yearly Operation and Maintenance Workshop
- Provide copies of Septic System Owners Guide to owners of newly installed systems or upon request.

Objective: Provide financial assistance to individuals needing replacement systems.

Actions:

- Participate as a lender of last resort in the MDA AgBMP program.
- Determine income eligibility of ITPH and noncompliant septic system owners and seek Clean Water Fund grant funds for these individuals.

Priority Concern: Watershed Management Approach

Goal: Compose watershed assessments and plans for all 68 minor watersheds.

Objective: Promote and utilize a watershed planning approach in dealing with nonpoint source pollution, soil erosion and hydrologic problems.

Actions:

- Promote the formation of community-based watershed groups and watershed planning activities in the watersheds of Big Trout, Gilmore Creek, Pleasant Valley Creek and Rush Pine.
- Support and assist established watershed organizations, Whitewater Watershed Project and the Stockton-Rollingstone-Minnesota City Watershed District, in conducting outreach activities and using Winona County and SWCD programs to address watershed problems.
- Supply additional support for the Rush-Pine Creek Watershed

Objective: Educate residents and local units of government regarding watersheds and water resources.

Actions:

- Make routine presentation to the County Board and in other forums about County Water Management efforts and the condition of the water resources.

- Increase school and citizen participation in the MPCA Citizen Stream Monitoring Program, MPCA Citizen Lake Monitoring Program, and macroinvertebrate community monitoring projects.

Objective: Promote GIS data sharing and modeling for assessing watersheds and water resource quality.

Actions:

- Initiate a project to develop GIS data sharing capability among those groups that monitor water and land uses in Winona County and the region.
- Evaluate and utilize existing GIS tools for determining the impact of proposed land use activities on watershed hydrology, soil erosion potential, nonpoint pollution runoff potential, and natural resource quality