

East Central Landscape Forest Policy Inventory Report

**A support document to the
2nd Generation MFRC East Central Landscape Plan**

January 2019



Minnesota Forest Resources Council (MFRC)

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Executive Summary

The Minnesota Forest Resources Council was established in 1995 by the Minnesota Legislature to provide advice to public and private organizations on forest sustainability issues through the Sustainable Forest Resources Act (SFRA). This legislation provided authorization for establishing regional landscape committees to foster landscape-based forest resource planning and coordination. These regional committees provide an opportunity to involve private citizens, forestry professionals and members of various interest groups in developing and implementing landscape-level plans that promote forest sustainability.

This report contains two sections: 1) a summary of the forest policies expressed across these plans; 2) individual plan summaries that contain extracted plan language organized by forest resource issues, visions, goals and strategies, as well as background information on the scope and planning process.

Twenty-one plans were analyzed for this report including two DNR SFRMP plans, one county forest management plan, nine county comprehensive plans, eight county water plans, and one One Watershed, One Plan. The goals within these plans were qualitatively analyzed for common themes. Twenty prominent themes were identified from the summaries and are presented with corresponding goal statements. This set of common themes can provide guidance to agencies and individuals utilizing this report and assist groups in coordinated landscape management of forest resources. The ideas presented are meant as a preliminary guide for developing specific goals and objectives to implement the landscape plan for the East Central Landscape region of Minnesota.

East Central Landscape common themes:

Regional Forest Management Plans

- Maintain and enhance vegetation diversity
- Maintain forest health
- Protect rare and significant features
- Manage forests and cover types towards a desired age-class structure
- Protect terrestrial and aquatic habitat
- Improve timber productivity
- Collaborate across ownership boundaries
- Involve and consider the public when planning and carrying out management activities

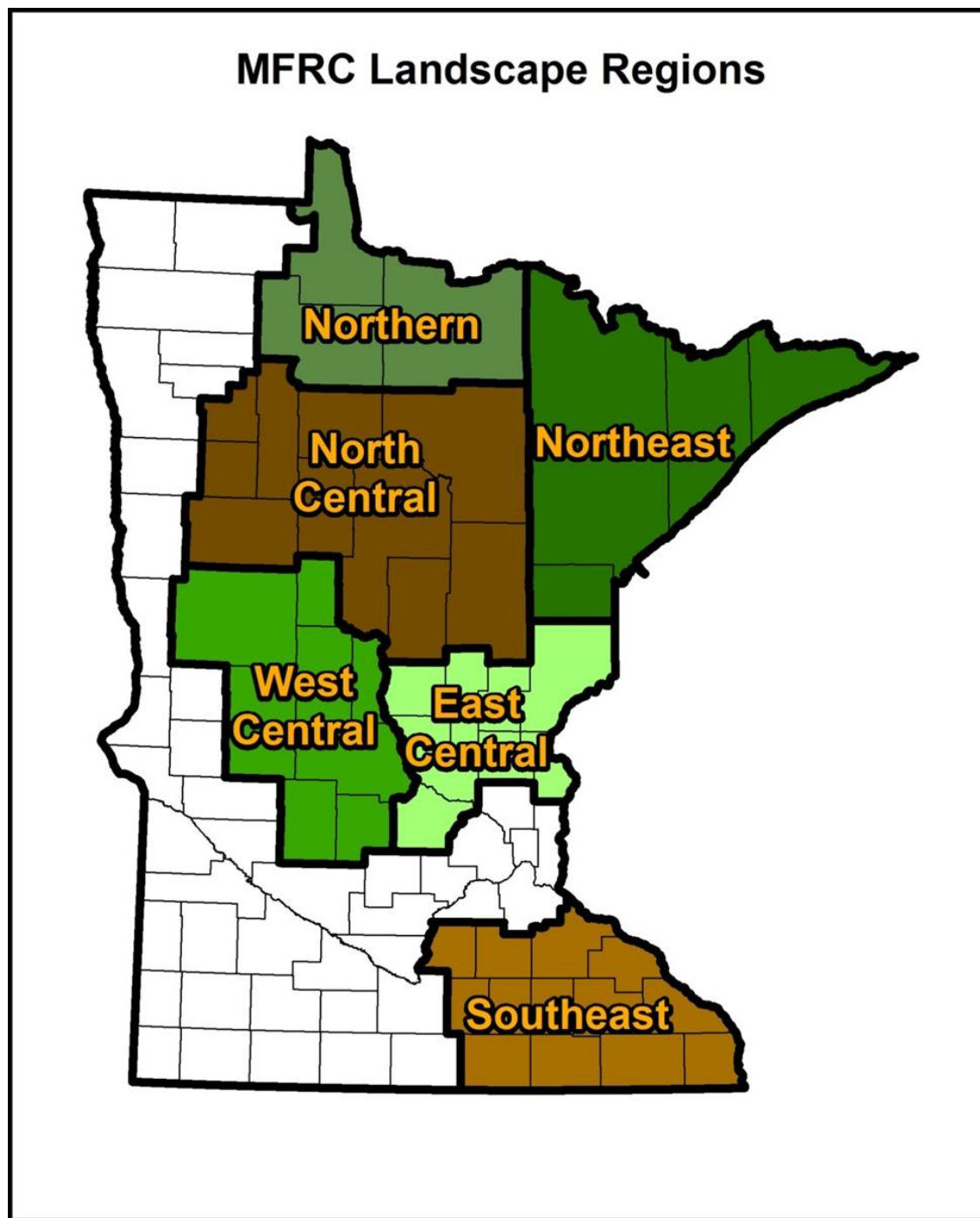
County Comprehensive Plans and Water Plans

- Protect and restore surface water quality
- Protect and restore ground water quality and quantity
- Preserve natural ecosystems and wildlife habitat
- Protect water resources from sedimentation and contamination
- Balance development and land use with natural resources
- Support recreation and tourism
- Educate the public about water resource issues
- Prevent and manage aquatic invasive species

- Protect and enhance shoreland and riparian corridors
- Sustainably manage the county's natural resources
- Monitor water quality
- Value the county's mineral resources

Setting

The Minnesota Forest Resources Council defines the East Central Landscape as the following nine county area: Benton, Chisago, Isanti, Kanabec, Mille Lacs, eastern half of Morrison, Pine, Sherburne, and Wright.



Source: Minnesota Forest Resources Council.



Introduction

The purpose of this document is to assess the most recent natural resource management plans created by stakeholder groups in the East Central Region and to identify common themes from the summaries of existing planning documents. These themes will help provide guidance to the creation of the second generation East Central Landscape Plan, which will be released in 2019.



Methods and Definitions

The main objective of this report is to highlight the landscape issues, visions, goals, and strategies presented in natural resource management and planning documents for East Central Minnesota. As this is a qualitative summary that involves a great deal of categorization, the author used the following definitions to minimize bias in classifying the data into these four components.

- **Issues:** An issue is a concern based on current information and peoples' values. It relates to a problem or focus area that the forest resources report addresses. It may be a general idea, "there is not enough wildlife", or very specific, "native tree species in this county are ten times below their historic range". Issues assist in developing a vision.
- **Visions:** A vision is a look into the future. In landscape planning, a vision refers to future conditions of an area in 100 years or greater. It often is very vague, yet helps managers and stakeholders come to agreement and begin to develop goals. To continue from the examples above, some visions might be to "conserve biodiversity" and "promote regeneration of forestlands."
- **Goals:** Goals are specific benchmarks that strive toward addressing the vision and resolving the issues. Goals often look in the near future, 10 to 20 years from now. Goals are detailed and assist in developing strategies that address the vision. Given the example above, some goals may be to "limit development within environmental corridors to promote biodiversity" and "increase occurrence of native tree species by 30 percent"
- **Strategies:** Strategies are methods to accomplish goals and move toward achieving a vision. They provide land managers with tools and techniques to accomplish goals. Landowners often use only strategies that apply to their land. Examples of strategies would be "use direct seeding methods on sites suitable for native plant species" and "reduce high grading of trees and if possible increase natural regeneration through appropriate silvicultural methods". It is important to note that not all strategies apply to all land managers because of their specific nature. Strategies may require particular site characteristics, resources, or land manager objectives in order for implementation to be successful.

In order to fulfill the objectives of the study, forest and related resource management and planning documents were gathered from stakeholder groups in the region. Twenty-one documents were reviewed and summarized according to the four categories defined above. These summaries are presented in the Management and Planning Report Summaries section. After all planning documents were reviewed and summarized they were examined for common themes. Nineteen themes were identified based on their presence in multiple reports.

It is important to note that the focus of this study was on forest resources. As defined in Minnesota Statute 89.001, Subdivision 8: forest resources are "those natural assets of forest lands, including timber and other forest crops; biological diversity; recreation; fish and wildlife habitat; wilderness; rare and distinctive flora and fauna; air; water; soil; and educational, aesthetic, and historic values." Other themes may have been present in the reviewed documents, but only those references relating to forest resources were used in developing this inventory.



Forest Policy Inventory Summary

The summarized management and planning documents are numbered below. Behind each theme in the next subsection documents are referenced based upon their number in this list. The theme statements are instructional phrases to provide guidance to agencies and individuals utilizing this report. The theme statements are merely examples based upon the authors' interpretations of the summarized reports.

Documents Summarized:

Regional Forest Management Plans

1. Anoka Sand Plain Subsection Forest Resources Management Plan (2012)
2. Mille Lacs Uplands Subsection Forest Resources Management Plan (2008)
3. Pine County Forest Resources Plan (1994)

County Comprehensive Plans

4. Benton County Comprehensive Plan (2006)
5. Chisago County Comprehensive Plan (2017)
6. Isanti County Comprehensive Plan (2009)
7. Kanabec County Comprehensive Plan (2002)
8. Mille Lacs County Comprehensive Plan (2013)
9. Morrison County Comprehensive Plan (2016)
10. Pine County Comprehensive Plan (2016)
11. Sherburne County Comprehensive Plan (2011)
12. Wright County Comprehensive Plan (2007 and 2009)

Water Plans

13. Benton County Water Plan (2008)
14. Chisago County Water Plan (2013)
15. Isanti County Water Plan (2018)
16. Kanabec County Water Plan (2006)
17. Mille Lacs County Water Plan (2006)
18. Morrison County Water Plan (2017)
19. Pine County Water Plan (2015)
20. Sherburne County Water Plan (2018)
21. North Fork Crow River One Watershed, One Plan County Water Plan (2018)

Common Themes

The following are the prominent themes identified from the regional planning documents, each followed by a listing of the goal statements that correspond to that theme. Please note that the themes of the regional forest management plans are notably different in focus and scope than the themes present in the county comprehensive plans and water plans, and are therefore presented separately. The themes are presented in order based upon the number of documents and goals which referenced the theme i.e. the first theme was referenced by the greatest number of documents and goal statements. The goals are listed in random order, with the documents that contained each specific goal referred to in parentheses.

Regional Forest Management Plans

[Note to the reader: the following themes only apply to the DNR SFRMP plans in the region. The Pine County Forest Resources Plan is nearly 25 years old and many of the plan goals have likely changed in the intervening years and therefore were not included in this analysis]

Maintain and enhance vegetation diversity [1, 2]

- Some stands on state lands will be managed to reflect the composition, structure, and function of native plant communities. [1]
- Species, age, and structural diversity within some stands will be maintained or increased. [1]
- Forest cover-type composition on state lands moves closer to the range of cover-type composition that historically occurred within the ecosystems found in the subsection. [1]
- State lands will include representation of each of the Native Plant Community growth stages that historically occurred in these subsections. [1]
- Native plant communities that were historically well represented in the planning area are well represented today. [2]
- The amount of white pine in the subsection has increased by 100 percent over 2002 levels. [2]
- The amount of white cedar in the subsection has increased over 2002 levels; an improved age-class structure indicates greatly improved regeneration success. [2]
- The birch cover type has increased by 50 percent over 2002 levels and shows a greatly improved age-class distribution. [2]
- The aspen cover type is reduced by 5 percent from 2002 levels by selective removal of aspen to favor an existing species, natural stand conversion through succession, replanting, or under planting with another species. [2]
- Specific areas are managed to maintain open landscapes needed to maintain populations of species of management concern. [2]
- State Nurseries have access to sources of seed and other propagation materials from a variety of environments. These sources are identified and protected in the course of forest management. [2]
- The oak type (red oak, bur oak, and white oak) has increased slightly (2 percent) over 2002 acreage. Oak stands are managed using even-aged or two-aged systems, with even-aged predominant. [2]

- Forests are managed for a variety of patch sizes. Large, contiguous patches of forest are maintained in designated areas, while other parts of the Mille Lacs uplands are managed for smaller or medium size patches. [2]

Maintain forest health [1, 2]

- Limit damage to forests from native and introduced insects and diseases to acceptable levels where feasible. [1]
- Reduce the negative impacts caused by exotic species on forest vegetation on state forest lands. [1]
- Reduce the negative impacts caused by wildlife species on forest vegetation on state forest lands. [1]
- Forest management on state lands attempts to mitigate global climate change effects on forest lands. Management is based on our current knowledge and will be adjusted based on future research findings. [1]
- Natural disturbance events that occur on state land within these subsections are promptly evaluated to determine the appropriate forest management needed to respond to impacts. [1]
- Continue to use prescribed fire as a forest vegetation management tool in the Anoka Sand Plain subsection. [1]
- New infestations of invasive exotic species on public forest land are rare, and the spread of existing populations is controlled. [2]
- Losses due to forest insects and diseases on private and state forest land are minimized, as are the effects of pest management on non-target species. [2]

Protect rare and significant features [1, 2]

- Species of Greatest Conservation Need and Key Habitats are maintained or enhanced in the subsection. [1]
- Managers of state lands in MCBS sites of statewide biodiversity significance implement measures to sustain or minimize the loss to the biodiversity significance factors on which these MCBS sites were ranked. [1]
- Rare plants and animals and their habitats are protected, maintained, or enhanced in these subsections. [1]
- Rare native plant communities are protected, maintained, or enhanced in these subsections. [1]
- Cultural Resources will be protected on state-administered lands. [1]
- Healthy butternut specimens on state and private lands are protected pending the development of trees resistant to butternut canker. [2]
- Areas of unusual ecological significance are valued and protected as areas for study and conservation of both plant and animal rare species, sources of biological diversity, and ecological benchmarks. [2]
- Forested rivers in the planning area have high water quality providing important habitat for fish, amphibians, and invertebrates, including a number of federally listed mussel species. [2]

Manage forests and cover types towards a desired age-class structure [1, 2]

- The SFRMP treatment level for each cover type moves toward the desired age-class structure of even-age managed cover types (both normal and extended rotation forest), and improves the age-structure of managed forest areas and Native Plant Communities of uneven-age managed cover types. [1]
- Old forest in this subsection is distributed across the landscape to account for timber products, wildlife habitat, and ecological diversity. [1]
- Even-age managed cover types will be managed to move toward a balanced age-class structure. [1]
- ERF stands in even-age managed cover types will be managed to achieve a declining age-class structure from the normal rotation age to the maximum rotation age. [1]
- Forests in the Mille Lacs Uplands, Glacial Lake Superior Plain, and St. Croix Moraines (planning area) are diverse in age and structure and there are both older and young, regenerating forests. [2]
- At least 10 percent of lands administered by the Divisions of Forestry and Wildlife in the planning area are managed as older forest. [2]
- ERF areas are located where they will provide the desired timber quality and old forest attributes. [2]
- Northern Hardwood stands average sixty to eighty years of age with representatives of all age classes. Stands have between eighty and one hundred forty sq. ft of basal area, with most being maintained between eighty and one hundred twenty sq. ft. After the year 2122, northern hardwood acres should be equally divided among basal area classes 80-100, 101-120, and 121-140 for perpetuity. [2]

Protect terrestrial and aquatic habitat [1, 2]

- Adequate habitat and habitat components exist, simultaneously at multiple scales, to provide for nongame species found in these subsections. [1]
- Adequate habitat and habitat elements exist, simultaneously at multiple scales, to provide for game species found in these subsections. [1]
- Riparian areas are managed to provide critical habitat for fish, wildlife, and plant species. [1]
- Forest management on state lands adequately protects wetlands and seasonal ponds. [1]
- State lands contribute important habitat and population support for the 439 permanent and regular resident wildlife species that exist in Minnesota. Populations for various species are monitored and habitats for game and nongame species are valued and protected. [2]
- Forested connections between existing large blocks of forested land and riparian areas are maintained and enhanced to provide for wildlife movement, protect water resources, and prevent habitat fragmentation and consequent isolation of native plants and animals. [2]
- Forest managers carefully consider forest road construction. There is a high level of collaboration with federal and private landowners and local units of government to identify opportunities to share and minimize road construction. [2]

Improve timber productivity [1, 2]

- Timber productivity and quality on state timber lands is increased. [1]
- Benefits derived from efforts to regenerate forests after harvest are maximized. [2]

- Timberlands in the planning area are highly productive. They produce good quality hardwood and softwood logs for manufacturing and export, as well as a good quantity of pulpwood to supply Minnesota's pulp and paper industries. [2]
- Ecosystem classification tools have helped DNR resource managers identify species most likely to be productive on a specific site, as indicated by soil and native plant community information. [2]
- Diverse, high-quality mixed hardwood stands are managed by skilled forest managers and selectively harvested by highly trained logging professionals for continuous quality improvement and production of timber, while maintaining forest cover and establishing regeneration. [2]

Collaborate across ownership boundaries [1, 2]

- Continue to cooperate and coordinate with adjacent land owners (public and private) supporting the overall multiple use and enjoyment concept that applies to state administered land. [1]
- Minnesota DNR resource managers routinely collaborate with other landowners to develop consistent goals and landscape-level strategic plans. [2]
- State forest lands are managed in a manner that minimizes conflicts among users, adjacent landowners, and in-holders, while maintaining management options. [2]
- Progress toward the vision for the subsection(s) forests (or DFFCs) is enhanced by engaging nonindustrial private forest landowners, providing a level of consistency across ownerships with regard to forest management in a given landscape unit. [2]

Involve and consider the public when planning and carrying out management activities [2]

- The public is involved in forest management planning during designated review periods. [2]
- DNR Forest managers minimize the visual and aural impact of forest management activities on users of state forests, thereby supporting and enhancing multiple-use values of state forest land. [2]
- Forest managers have stakeholder support for employment of a full suite of forest management options as appropriate to reach identified goals. [2]

Miscellaneous [1, 2]

- The harvest of nontimber forest products is managed to provide a sustainable supply for humans while providing for wildlife habitat and biodiversity. [1]
- The changing structural development and urbanization pattern will be considered as forest management is implemented in the subsection. [1]
- Utilization of species and grades of timber are optimized to maximize the benefits these resources provide. [2]
- Forest inventory data are detailed and current enough to be relied upon in a wide variety of planning and analysis projects. Forestry databases provide a link between generations of forest managers with respect to both strategic and operational decisions that have been made for a specific forested community. [2]

County Comprehensive Plans and Water Plans

Protect and restore surface water quality [5, 9, 11, 13, 15, 17, 18, 19, 20, 21]

- Protect surface waters, groundwater, ditches and wetlands to promote recreational and tourism opportunities, aesthetic qualities, natural habitats and groundwater recharge. [5]
- Recognize the Mississippi River as a crucial natural resource within Morrison County and work to preserve and improve the long-term water quality of the River. [9]
- Preserve and protect the quality of the County's groundwater and surface water resources to ensure its suitability for drinking water and/or recreations purposes. [9]
- It is the County's policy to protect surface waters as required by Federal and Minnesota regulations, and to promote restoration efforts. [11]
- Encourage Benton County local government units to adopt development related ordinances and policies to maintain and enhance the region's water resources. [13]
- Protect and restore lake and stream water quality in Isanti County focusing on actions identified in completed water quality studies and plans. [15]
- To seek the protection of surface and groundwater quality in Mille Lacs County. [17]
- Determine the status of TMDLs of the various water resources and protect those that currently support their designated uses, and where needed, improve those that do not. [17]
- To protect, enhance, and maintain the quality of the lakes, rivers, streams, and wetlands in Morrison County. [18]
- Participate in TMDL and WRAPS processes that include waters in the county. [19]
- Protect existing high quality resources and improve quality of impaired waters. [20]
- Increase stream and river length categorized as Above Average Quality, Potential Impairment Risk, and Threatened Impairment Risk for a water quality parameter. [21]
- Decrease stream and river length categorized as Low Restoration Effort (converted to Threatened Impairment Risk or better) and High Restoration Effort (converted to Low Restoration Effort or better) for a given water quality parameter. Use load allocation as whether a stream or river length achieves the goal. [21]
- Decrease stream and river length categorized as Low Restoration Effort (converted to Threatened Impairment Risk or better) and High Restoration Effort (converted to Low Restoration Effort or better) for a given water quality parameter. [21]
- Decrease the number of impaired lakes. Use TMDL load allocation as whether a lake achieves the goal. [21]

Protect and restore ground water quality and quantity [5, 9, 13, 14, 15, 17, 18, 20, 21]

- Protect surface waters, groundwater, ditches and wetlands to promote recreational and tourism opportunities, aesthetic qualities, natural habitats and groundwater recharge. [5]
- Preserve and protect the quality of the County's groundwater and surface water resources to ensure its suitability for drinking water and/or recreations purposes. [9]
- Encourage Benton County local government units to adopt development related ordinances and policies to maintain and enhance the region's water resources. [13]
- Protect and maintain groundwater quality resources in Benton County. [13]
- Protect and maintain groundwater quantity resources in Benton County. [13]
- Manage groundwater withdrawal to protect and conserve current and future uses including drinking water, recreation, ecological, agriculture, commercial, and industrial uses. [14]

- Make educated decisions to protect the quantity and quality of groundwater in Isanti County. [15]
- To seek the protection of surface and groundwater quality in Mille Lacs County. [17]
- Enhance surface and groundwater quality where degradation has already occurred. [17]
- Protect and provide high quality groundwater resources for the citizens and visitors of Morrison County. [18]
- Preserve and ensure adequate quantity of the groundwater resources for the citizens and visitors of Morrison County. [18]
- Reduce overall usage as well as groundwater contaminants / pollutants. [20]
- Sustain the groundwater basin, aquifer, or aquifer system without rendering groundwater supplies unreliable and causing a long-term progressive lowering of groundwater level. [21]

Preserve natural ecosystems and wildlife habitat [4, 5, 6, 8, 9, 11, 18, 19, 21]

- Identify, protect, and preserve the County's high quality natural areas and open space. [4]
- Protect surface waters, groundwater, ditches and wetlands to promote recreational and tourism opportunities, aesthetic qualities, natural habitats and groundwater recharge. [5]
- Recognize, preserve and enhance the significance of the St. Croix River, which has been identified as a national Wild and Scenic River. [5]
- Protect woodlands to promote recreational opportunities, natural habitat, aesthetic qualities, ground water recharge, screening, windbreaks, sound barriers and a source of wood products. [5]
- Preserve open space and wildlife habitat and protect natural resources. [6]
- To support the County's agricultural and forested areas and businesses through a balance of conservation and education. [8]
- Preserve natural resources identified as critical and sensitive including wildlife habitats, wetlands, forest lands, etc., within Morrison County. [9]
- Value the forest resources of Morrison County and encourage their management, use, and protection in a sustainable manner. [9]
- It is the County's Policy to promote native plant species, control noxious weeds as required by Minnesota laws, and to encourage the preservation of contiguous areas for the migration of native birds and animals. [11]
- To protect, enhance, and maintain the quality of the lakes, rivers, streams, and wetlands in Morrison County. [18]
- Improve habitat in lakes and streams. [19]
- No net loss of wetlands. [21]
- Maintain and increase the number of large wetland blocks with a minimum size (i.e., block size) and mixture of features (i.e., proportion of cropland, grassland, wetland, open space) necessary to sustain ecosystem services representative of a terrestrial landscape within the plan area. Block sizes of 4 square miles with approximately 60% cropland, 10% woodland and forest, 15% wetland, and 15% grassland are desired. [21]
- Maintain or increase acreage of protected land for public use and good habitat quality for recreational use. [21]
- Maintain or increase large areas of contiguous grassland (preferably native vegetation) with minimum block size of 300 acres; or adjacent to other existing terrestrial habitat blocks. Priority given to remnant prairie and oak savannah communities. [21]

- Maintain and increase the number of large terrestrial habitat blocks with a minimum size (i.e., block size) and mixture of features (i.e., proportion of cropland, grassland, wetland, open space) necessary to sustain ecosystem services representative of a terrestrial landscape within the plan area. Block sizes of 4 square miles with approximately 60% cropland, 10% woodland and forest, 15% wetland and 15% grassland are desired. [21]
- Maintain or increase the quality of existing terrestrial habitat, as measured through diversity index of terrestrial species and presence of rare species and native communities. [21]
- Maintain or increase the amount of area within the riparian corridor providing multiple ecosystem benefits (reduced erosion; increased wildlife habitat; presence of migration corridor; water quality improvement). The area includes land subject to MN Buffer Law, adjusted to meet landowner business needs. Priority given to habitat block sizes with a minimum of 300-feet in width and 1,500-feet in length with connections to other habitat blocks. [21]

Protect water resources from sedimentation and contamination [9, 13, 14, 15, 16, 19, 20, 21]

- Explore with the DNR, other state and local agencies and shoreland property owners the concept of regulations that are performance-based and tailored to the individual area rather than proscriptive “one size fits all” regulations wherever possible. Require implementation of mitigation practices during new development (whether by administrative permit, conditional use, variance or other approval process) to address the impacts of existing development and promote overall improvements to water quality as an integral part of the effort. [9]
- Recognize the importance of stormwater management to the preservation and enhancement of the County’s lakes and rivers and implement policies and regulations that effectively manage stormwater runoff. [9]
- Reduce or minimize the negative impact of animal manure and fertilizer on surface and groundwater. [13]
- Protect groundwater from human caused contamination to meet or exceed applicable drinking water standards. [14]
- Reduce phosphorus loading from Chisago County to the St. Croix River to help meet 20% basin wide reduction goal. [14]
- Protect surface water from human caused contamination to meet or exceed applicable water quality and environmental standards by implementing local water management plans. [14]
- Minimize the impacts of land use conversions on surface and ground water resources. [15]
- This will be addressed through on-going “Best Management Practices” established through forestry, shoreland, agriculture and SWCD plan development impact can be addressed through county and state regulations with shoreland regulations and MPCA storm water regulations. [16]
- Kanabec County Water plan has and will continue funding for well testing of homes with new babies. This helps to address issues and concerns for nitrates Kanabec County through the County septic ordinance will continue to bring no-compliant shoreland septic systems into compliance. Kanabec County SWCD through funding for well sealing will continue to provide for the sealing of wells. [16]
- Kanabec County sponsors a county household hazardous waste day and a county clean-up day. Both will continue in an effort to protect ground and surface waters from contamination. Through the solid waste plan, for Kanabec County, the education and promotion of recycling and disposing of solid waste properly will continue to reduce water contamination. [16]

- Improve forestry practices. [19]
- Reduce overall usage as well as groundwater contaminants / pollutants. [20]
- Apply structural BMPs or management practices to 80% of the high nitrogen infiltration risk areas (see Section 4) to minimize the likelihood of nitrate-nitrogen leaching to tile systems and groundwater. Priority for the implementation of practices is given to high nitrogen infiltration risk areas within DWSMAs. [21]
- Maintain a less than 10% exceedance rate of public and private drinking water supply wells exceeding a nitrate-nitrogen concentration of 10 mg/l per the MDA Nitrogen Fertilizer Management Plan. [21]
- Maintain unimpacted private and public drinking water supply wells with nitrate-nitrogen concentrations at or near a concentration representative of background and transitional levels (>3 mg/l). [21]
- Seal 150 unused and abandoned wells per year, with 20 being targeted to areas of high and moderately high nitrogen infiltration risk (see Section 4) and Drinking Water Supply Management Areas. [21]
- Reduce the number of public and private drinking water supplies which have nitrate - nitrogen concentrations considered moderately elevated above background concentrations. [21]
- Reduce the number of private and public drinking water supplies which have nitrate - nitrogen concentrations representing a possible future health concern. [21]
- Restore private and public drinking water supplies which have nitrate - nitrogen concentrations that currently represent a health concern. [21]
- Treat 10% of land in "high" recharge areas with low nitrogen infiltration risk (see Section 4) with recharge management practices, defined as practices which increase soil organic matter content or increase infiltration to the aquifer. Priority given to the Bonanza Valley Groundwater Management Area or areas covered by DWSMAs. [21]
- Meet TP target load reduction goals established by State agencies. [21]
- Maintain or decrease existing loads entering the lake, as estimated by PTMApp (Nondegradation). [21]
- Decrease annual total phosphorus loads entering the lake by 10% (as estimated by PTMApp). [21]
- Achieve the altered hydrology goals established using the historic period (1940 - 1975) for the USGS gage at Crow River at Rockford, MN as the desired benchmark condition by reducing and managing runoff volume. Interim volume reduction goal for the watershed is a 0.5 inch reduction in runoff depth on average across the watershed. Long-term goal for the watershed is to meet altered hydrology mitigation goal of reducing runoff depth 0.75 inches across the watershed. [21]
- Implement management practices (i.e. cover crops, conservation tillage to increase residue, permanent cover, etc.) in 40% of all cropland areas in the watershed to increase Soil Organic Matter (SOM) content 1%. Areas to be managed are cropland areas categorized as rural stewardship "Probability Low" and "Probability Depends on Practice Effectiveness" which have SOM content > 1% and =< 4 %. [21]
- Treat 40% of all cropland areas in in watershed with management practices (cover crops, conservation tillage to increase residue, permanent cover, etc.) to increase Soil Organic Matter (SOM) content 1%, thereby making progress toward surface runoff (altered hydrology) measurable goals. Areas to be treated are cropland areas categorized as rural

stewardship “Probability Low” and “Probability Depends on Practice Effectiveness” which have SOM content > 1% and =< 4 %. [21]

Balance development and land use with natural resources [5, 6, 8, 9, 11, 12, 13, 18]

- Development shall conform to natural limitations of topography and soil to create the least potential for soil erosion and development on slopes. [5]
- Establish land use patterns that preserve and protect the natural qualities and existing rural character of the landscape. [6]
- To balance human development with the natural environment, while protecting the County’s water, forest, energy and other natural resources. [8]
- To promote development with an eye to minimizing regulations; preserving private property rights, water, and other natural resources; and maintaining our quality of life in accordance with all applicable ordinances, laws, rules, and regulations. [8]
- Work to ensure that development occurring within the County’s watersheds is done in a thoughtful and deliberate manner so as to balance environmental, social and economic goals to the greatest extent possible. [9]
- Explore with the DNR, other state and local agencies and shoreland property owners the concept of regulations that are performance-based and tailored to the individual area rather than proscriptive “one size fits all” regulations wherever possible. Require implementation of mitigation practices during new development (whether by administrative permit, conditional use, variance or other approval process) to address the impacts of existing development and promote overall improvements to water quality as an integral part of the effort. [9]
- Work to better coordinate with federal, state and local government agencies and non-profits, lake associations and others with an interest in shoreland development to effectively balance the benefits that arise from development of shoreland areas with the need to protect, preserve and restore valuable natural resources. [9]
- Ensure that development protects natural areas as well as water quality and habitat. [10]
- Sherburne County’s natural resources (soil, water, and ecology) provide unique opportunities and constraints. It is the County’s policy to consider these opportunities and constraints when making land use decisions. [11]
- To protect, preserve and enhance the quality of the natural environment and require development to take place in a manner that makes wise use of Wright County’s resources without degradation. [12]
- Balance open space and development in Benton County in such a way as to maintain and/or improve the region’s water quality. [13]
- Pro-actively plan for future growth in order to protect water resources and minimize land use conflicts. [13]
- To ensure that land use decisions are compatible with natural resource protection. [18]

Support recreation and tourism [4, 5, 6, 8, 9, 10, 21]

- Develop, maintain and manage a County park, trail and open space system to meet the needs of the Community by utilizing various methods of fiscally responsible funding strategies. [4]
- Protect surface waters, groundwater, ditches and wetlands to promote recreational and tourism opportunities, aesthetic qualities, natural habitats and groundwater recharge. [5]

- Recognize, preserve and enhance the significance of the St. Croix River, which has been identified as a national Wild and Scenic River. [5]
- Prime scenic views and historic landscapes will be recognized as an important local amenity and a desirable local amenity drawing outside revenue from visitors that is vital to the local economy. [5]
- Work to provide recreational opportunities for county residents. [6]
- To support the tourism, recreational, and cultural assets within the County. [8]
- Preserve and protect the quality of the County's groundwater and surface water resources to ensure its suitability for drinking water and/or recreational purposes. [9]
- Ensure that the County's lakes and rivers remain a resource that is available for use and enjoyment by the general public. [9]
- Support and promote the development and maintenance of Parks, Open Spaces and other recreational facilities in the county. [9]
- Identify, support, and promote existing recreational assets for tourism development and resident education. [10]
- Develop and maintain trails for all user types. [10]
- Create recreation opportunities on county lands to maximize their potential. [10]
- Maintain or increase acreage of protected land for public use and good habitat quality for recreational use. [21]

Educate the public about water resource issues [9, 11, 13, 14, 19, 21]

- Seek opportunities to educate county staff, shoreland property owners and the general public as to the impacts on water quality from development and the various land uses in a watershed. [9]
- It is the County's policy to educate the public about the environment, and promote best management practices. [11]
- Provide information and education opportunities to the appropriate audience concerning development impacts on water resources through a coordinated local government effort. [13]
- Develop a civic engagement strategy. [14]
- Provide high quality information to citizens and decision makers. [14]
- Educate jurisdictions and the public on erosion and sediment control and LID practices. [19]
- Educate jurisdictions and public on conservation best management practices. [19]
- Increase the number of citizens reached during outreach events as part of the Public Knowledge Campaign within the Education and Outreach Initiative to increase annual public participation levels. Baseline participation levels across counties to be determined during creation of the Public Knowledge and Behavior Campaign. [21]
- Use field walk overs in rural areas, landowner visits along shoreland areas, and consultations within urban areas, for community outreach, as means of increasing use of cost share programs, delivering conservation, and gaining knowledge about proportion of the plan area achieving stewardship. Complete 125 field walkovers, city consultations, or shoreland owner visits over the duration of the plan. [21]

Prevent and manage aquatic invasive species [9, 14, 15, 20, 21]

- Work with Lake Associations, state and local government agencies, and tourism organizations to help prevent the spread of Aquatic Invasive Species (AIS). Study and

understand which lakes and rivers are most and least susceptible to this spreading so that prevention efforts can be developed and prioritized accordingly. [9]

- Monitor aquatic invasive species for current and new infestations. [14]
- Manage aquatic invasive species to maintain water quality, recreation, and fish and wildlife habitat. [14]
- Develop an aquatic invasive species management plan for up to 10 lakes in the County with public accesses. [14]
- Proactively use the legislatively granted AIS prevention funds (STATUTE 477A.19) to partner with local groups to implement the following actions. [15]
- Prevent the introduction and mitigate impact of AIS to Sherburne County waters. [20]
- Limit the spread of infested lakes, with containment of existing infested lakes. [21]
- Manage current infested lakes within the NFCR Watershed. [21]

Protect and enhance shoreland and riparian corridors [9, 16, 19, 21]

- Seek to amend and create shoreland land use regulations so that they can be easily understood and consistently enforced. [9]
- Develop an inventory and/or assemble a series of existing or new maps to identify factors relevant to making informed decisions in shoreland areas. Such information may include lake depths and types of aquatic vegetation along each section of shorelines, fish spawning areas, near-shore drainage patterns including the location of defined drain ways entering the waterbody, locations of lots with nonconforming lake or river setbacks, contiguous nonconforming lots under common ownership which must be considered combined by state or local law, areas of natural shorelines, or other information deemed useful. [9]
- Work to better coordinate with federal, state and local government agencies and non-profits, lake associations and others with an interest in shoreland development to effectively balance the benefits that arise from development of shoreland areas with the need to protect, preserve and restore valuable natural resources. [9]
- This will be addressed through on-going “Best Management Practices” established through forestry, shoreland, agriculture and SWCD plan development impact can be addressed through county and state regulations with shoreland regulations and MPCA storm water regulations. [16]
- Encourage jurisdictions to adopt stormwater and shoreland ordinances. [19]
- Educate and find funding for natural shoreline projects and projects in riparian areas. [19]
- Maintain or increase the amount of area within the riparian corridor providing multiple ecosystem benefits (reduced erosion; increased wildlife habitat; presence of migration corridor; water quality improvement). The area includes land subject to MN Buffer Law, adjusted to meet landowner business needs. Priority given to habitat block sizes with a minimum of 300-feet in width and 1,500-feet in length with connections to other habitat blocks. [21]
- Increase the proportion of land adjacent to lakes, streams, rivers and waterways achieving shoreland stewardship by 80% above current condition. [21]

Sustainably manage the county’s natural resources [4, 5, 7, 10]

- Promote environmental stewardship for the County’s long-term environmental benefit. [4]

- Encourage the conservation, enhancement, preservation and restoration of natural resources in the County for use and enjoyment of present and future generations and to serve as an economic development and tourism tool and asset for the County. [5]
- Kanabec County will maintain, and where necessary, improve the quality of the County's land, air and water resources. [7]
- Manage natural resources to optimize environmental and economic benefits in perpetuity. [10]

Monitor water quality [14, 19]

- Maintain a high quality monitoring and assessment program. [14]
- Use existing monitoring information and new information being collected to determine what waters are impaired and which are not. [19]

Value the county's mineral resources [5, 9]

- Sand and gravel will be recognized as an important local and an increasingly desirable export commodity that is vital to the local economy. [5]
- Value the gravel and mineral resources of Morrison County and encourage their management, use, and protection in a responsible manner. [9]

Miscellaneous [9, 10, 14, 16, 19, 21]

- Protect the air quality of Morrison County. [9]
- Recognize the character of established neighborhoods in the County's river and lakeshore areas so as to maintain and enhance the attractiveness of these neighborhoods. Consider adopting policies or regulations tailored to each unique type of neighborhood so as to preserve their individual character. [9]
- Reduce solid waste being landfilled by providing residents and businesses education and opportunities to reduce, reuse, and recycle. [10]
- Sufficiently fund Water Plan activities. [14]
- Maintain sufficient staff in place to implement Water Plan activities. [14]
- Maintain active participation of government, volunteer organizations, and citizens in Water Plan activities. [14]
- Kanabec County Highway Department has started an inventory of the ditches, within the County. Establishing existing ditches will set the ground work for the maintenance, abandonment and any future ditch projects. This project is being funded in part by the Water Plan Fund. [16]
- Apply for grant funds to implement projects. Utilize DNR Clean Water Amendment funded staff to assist implementation of successful grants. [19]
- Increase the number of cities meeting urban stewardship criteria. [21]



Management and Planning Report Summaries

1. Anoka Sand Plain Subsection Forest Resources Management Plan

Document Title	Source	Date	URL or Address
Anoka Sand Plain Subsection Forest Resources Management Plan	Minnesota Department of Natural Resources	April 2012	http://www.dnr.state.mn.us/forestry/subsection/anoka/index.html

Geographic Extent / Scope: (p. 1.9)

This Subsection Forest Resource Management Plan (SFRMP) process considers state forest lands administered by the Department of Natural Resources (DNR), Divisions of Forestry and Fish and Wildlife, Section of Wildlife in the Anoka Sand Plain subsection landscape unit. This landscape unit covers approximately 1.3 million acres in an area generally north of the Mississippi River from near Brainerd on the north trending southeastward to the confluence of the Mississippi and Minnesota Rivers. The subsection is generally located in east central Minnesota. Although the Ecological Classification System (ECS) subsection includes parts of twelve counties (Crow Wing, Morrison, Stearns, Benton, Wright, Sherburne, Mille Lacs, Isanti, Anoka, Chisago, Ramsey and Hennepin), the majority of timberlands subject to this SFRMP are located in: Morrison, Sherburne, Anoka, Isanti and Chisago counties.

Organizations / Agencies involved in plan creation: (p. 1.13)

SFRMP team members include DNR forestry, wildlife, and ecological services staff. A list of SFRMP team members for the Anoka Sand Plain subsection is included at the beginning of this document. These teams have primary responsibility for the work and decision making involved with the subsection plans. Decision making by the team is through an informed consent process. In addition to routine daily coordination, managers of adjacent county and federal lands are invited to provide formal comments on the draft SFRMP.

Info on Planning Process: (p. 1.14)

This document is part of the DNR SFRMP process.

Process Overview:

- Step 1: Initiating the Planning Process
- Step 2: Preliminary Issues and Assessment Document
- Step 3: General Direction Statements, Strategies, and Stand Selection Criteria
- Step 5: Final Plan

Purpose of Plan: (p. 1.11-1.13)

A SFRMP is a DNR plan for vegetation management on forest lands administered by the DNR divisions of Forestry and Wildlife Section of the division of Wildlife. Vegetation management includes actions that affect the composition and structure of forest lands, such as timber

harvesting, thinning, prescribed burning, and reforestation. The geographic area covered by these plans is defined by Ecological Classification System (ECS) subsections. Previous forest management plans were based on administrative boundaries (e.g., DNR forestry areas). The SFRMPs will also consider the condition and management of forest lands not owned by the DNR, but will only propose forest management direction and actions for DNR lands. The amount of DNR-administered forest lands within forested subsections will vary across the state. Examples of forest resource management planning activities that are beyond the scope of SFRMPs are: OHV trail system planning, comprehensive road access plans, state park land management planning, old growth forest designation, SNA establishment, wilderness designation, wildlife population goals, cumulative effects analysis at the watershed-level, fire management, and recreation facilities/systems planning.

The end result of the planning process will be two key products:

- **Desired future forest composition (DFFC) goals.** The goals will include long-term (50 years or more) and short-term (10 years) desired changes in the structure and composition of DNR forest lands in the subsection.
- **List of DNR forest stands to be treated over the next 10-year period.** SFRMPs will identify forest stands on DNR Forestry- and Fish and Wildlife-administered lands that are proposed for treatment (e.g., harvest, thinning, regeneration, and re-inventory) over the 10-year plan implementation period.

VISION(S)

None identified.

ISSUES (Issues) / GOALS (General Direction Statements (GDS)) / STRATEGIES (Strategies) [The GDSs and associated Strategies are grouped under thirteen forest resource management issues, as listed in Chapter 3 of the SFRMP] (pp. 3.4-3.85)

Within Stand Composition and Structure

GDS-1A: Some stands on state lands will be managed to reflect the composition, structure, and function of native plant communities.

- a. Continue to use the Field Guide to the Native Plant Communities in Minnesota.
- b. Follow Strategies in GDS-3C and 3F.

GDS 1B: Species, age, and structural diversity within some stands will be maintained or increased.

- a. Use selective harvesting to encourage diversity of species, ages, and stand structures.
- b. Implement the Site-Level Guidelines designed to maintain a diversity of tree species within a stand.
- c. Use the NPC Field Guide, site index, soils data, and ECS Silvicultural Interpretations to aid in determining the species composition and structure most appropriate for the site.
- d. Retain tree species, stand structure, and ground layer diversity within stands when prescribing timber stand improvement and thinning activities.
- e. Reserve seed trees in harvest areas and site preparation areas, where possible.
- f. Use the least intensive site preparation methods possible to ensure success.

- g. Use harvest systems or methods that protect advance regeneration. Retain conditions that favor regeneration and understory initiation.
- h. Identify some stands where succession is allowed to occur to encourage development of within-stand diversity. Movement to the next successional stage may be achieved with or without harvest.
- i. Increase and/or maintain by reserving from harvest, target species including white pine, burr/white oak, yellow birch, tamarack, and butternut as a component within appropriate cover types. Silvicultural practices that may add or increase the presence of these target species will include planting, inter-planting, and artificial or natural seeding.
- j. Manage planted and seeded stands to represent the array of plant diversity.
- k. Use ERF in some even-age managed stands to encourage greater structural diversity.
- l. Encourage native fruit and mast-producing species.

Harvest Levels

GDS-2A: The SFRMP treatment level for each cover type moves toward the desired age-class structure of even-age managed cover types (both normal and extended rotation forest), and improves the age-structure of managed forest areas and Native Plant Communities of uneven-age managed cover types.

- a. follow Strategies in GDS 1B, 3C and 3F.

GDS-2B: The harvest of nontimber forest products is managed to provide a sustainable supply for humans while providing for wildlife habitat and biodiversity.

- a. Consider known traditional gathering areas when managing other forest resources.
- b. Consider the known locations of important wildlife habitats, rare native plant communities or species, and the possible impacts of nontimber forest products harvest practices before issuing special product permits.
- c. Forest managers should proceed judiciously when issuing special products permits for species where limited knowledge and understanding constrains our ability to know if we are managing these groups of species sustainably.

Biological Diversity, Forest Composition, and Spatial Distribution

GDS-3A: Old forest in this subsection is distributed across the landscape to account for timber products, wildlife habitat, and ecological diversity.

- a. Determine the desired level of effective extended rotation forest for even-age managed cover types.
- b. Prescribe ERF stands in even-age managed cover types so that adequate old forest is maintained at the end of the plan implementation period
- c. Manage some riparian management zones to reflect old forest conditions.
- d. Allow some stands to naturally succeed to long-lived cover types with, or without the use of harvest.
- e. Manage designated old-growth stands and old forest management complexes according to DNR policy.
- f. Manage ecologically important lowland conifers according to department direction.
- g. Follow the MFRC Voluntary Site-Level Forest Management Guidelines (Site-Level Guidelines) to retain components of old forest in even-age managed cover types.
- h. Use silvicultural treatments that retain old forest components in some stands.

- i. Consider the status of old forest within the subsection when making decisions to add and offer unplanned wood for harvest.

GDS-3B: Species of Greatest Conservation Need and Key Habitats are maintained or enhanced in the subsection.

- a. Provide current SGCN and Key Habitat data to DNR staff upon request.
- b. Incorporate new SGCN and Key Habitat locations and data as they are collected in these subsections.
- c. Select some ERF, OFMC, EILC, and SMA stands based on their association with SGCNs and Key Habitats.
- d. Stand-level management accounts for SGCN and Key Habitats.

GDS-3C: Forest cover-type composition on state lands moves closer to the range of cover-type composition that historically occurred within the ecosystems found in the subsection.

- a. Increase the acres of white pine oak savanna, and prairie.
- b. Increase mixed-forest conditions in some stands in all cover types.
- c. Forest composition goals and objectives are consistent with the MFRC Landscape plans.

GDS-3D: Managers of state lands in MCBS sites of statewide biodiversity significance implement measures to sustain or minimize the loss to the biodiversity significance factors on which these MCBS sites were ranked.

- a. Determine which MCBS sites are of greatest concern or importance for SFRMP over the 10-year plan implementation period.
- b. Consider the broader context and significance of the MCBS site as a whole when assigning management objectives and designing silvicultural prescriptions.
- c. Determine location and composition of stand conversions based on NPCs.
- d. Allow some stands to succeed to the next native plant community growth stage, with or without harvest.
- e. Emulate the within-stand composition, structure, and function of NPC growth stages when managing stands in MCBS sites.
- f. Apply variable density thinning during harvest or reforestation.
- g. Apply variable retention harvest techniques during harvest.
- h. Designate some stands as ERF to provide old forest conditions.
- i. Increase the use of prescribed fire as a silvicultural technique in managing fire-dependent NPCs.
- j. Locate roads to minimize impacts to MCBS sites.
- k. Emulate natural disturbance conditions of native plant communities in MCBS sites.
- l. Apply special management recommendations for known rare features, Species of Greatest Conservation Concern, and Key Habitats.
- m. Defer management of some stands that have been identified as having high conservation value for further assessment (e.g., EILC and nominated natural areas, and rare or representative ecosystems).
- n. Consider timber productivity, trust responsibilities, and other forest management priorities when managing stands in these MCBS sites.
- o. Forestry, Wildlife, and Ecological and Water Resources personnel will communicate with other landowners, as opportunities arise, to inform them of the significance of these MCBS sites and management options that could be implemented to address the biodiversity objectives of these MCBS sites.

GDS-3E: Rare plants and animals and their habitats are protected, maintained, or enhanced in these subsections.

- a. Provide current rare features database (Natural Heritage Information System) to DNR staff through the DNR Quick Layers Themes in ArcGIS.
- b. Select some ERF, OFMC, SMA and EILC stands based on their association with rare features.
- c. During the development of the 10-year stand examination list and annual stand examination lists, land managers check the rare features database and flag for follow-up consultation those stands proposed for treatment that includes a rare feature.
- d. Harvest prescriptions, and other management proposals identify and implement measures that protect rare features.

GDS-3F: Rare native plant communities are protected, maintained, or enhanced in these subsections.

- a. Manage known locations of critically imperiled (S1) or imperiled (S2) NPCs and those NPCs that are rare statewide or with limited occurrences in these subsections to maintain their ecological integrity.
- b. Ecological and Water Resources staff identified stands that are high quality examples of rare native plant communities. Those stands were removed from consideration for placement on the 10-year stand exam list.

GDS-3G: Even-age managed cover types will be managed to move toward a balanced age-class structure.

- a. Target the selection of stand treatment acres to the appropriate age classes.

GDS-3H: ERF stands in even-age managed cover types will be managed to achieve a declining age-class structure from the normal rotation age to the maximum rotation age.

- a. Prescribe ERF stands within even-age managed cover types so that each age class will be represented to produce a sustainable amount of old forest over time.
- b. Target ERF treatment acres to the appropriate age classes to move toward the declining age-class structure after normal rotation age.

GDS-3I: State lands will include representation of each of the Native Plant Community growth stages that historically occurred in these subsections.

- a. Determine the growth stage stands selected for treatment in these Subsection.
- b. Strive to emulate the within-stand composition, structure, and function of NPC growth stages when managing stands.
- c. Consider the contribution of non-timber land cover types (e.g., stagnant conifer types), inoperable stands, and reserved areas (e.g., old growth, SNAs, state parks, Sherburne National Wildlife Refuge, and Cedar Creek Ecosystem Science Reserve) in providing representations of growth stages when developing prescriptions.
- d. Consider the contribution of non-timber land cover types (e.g., stagnant conifer types), inoperable stands, and reserved areas (e.g., old growth, SNAs, state parks, Sherburne National Wildlife Refuge, and Cedar Creek Ecosystem Science Reserve) in providing representations of growth stages when developing prescriptions.
- e. Manage the Designated Representative Sample Areas (RSAs) and High Conservation Value Forests (HCVF) consistent with forthcoming DNR direction to achieve distributions of native plant communities.

- f. Apply ECS Silvicultural Interpretations when proposing stand management prescriptions.

Wildlife Habitat

GDS-4A: Adequate habitat and habitat components exist, simultaneously at multiple scales, to provide for nongame species found in these subsections.

- a. Provide old forest distributed across the landscape.
- b. Provide young forest distributed across the landscape.
- c. Provide a variety of cover types and age classes across the landscape that better reflect patterns produced by natural disturbances.
- d. Manage to retain the integrity of riparian areas and provide protection for seasonal and permanent wetlands.
- e. Provide for the needs of species that depend on perches, cavity trees, bark foraging sites, and downed-woody debris.
- f. Provide for the needs of species associated with important native plant communities in this subsection.
- g. Provide for creation and maintenance of within-stand diversity.
- h. Manage to favor native plant communities and retain elements of biodiversity significance.
- i. Consider Natural Heritage Program data and other rare species information during development of both the 10-year and annual stand examination lists.
- j. Apply the DNR management recommendations for habitats of nongame species as described in DNR guidelines and policies.
- k. Provide a range of habitats for short distance and long-distance(neo-tropical) migratory birds.

GDS-4B: Adequate habitat and habitat elements exist, simultaneously at multiple scales, to provide for game species found in these subsections.

- a. Provide young forest distributed across the landscape.
- b. Provide old forest distributed across the landscape.
- c. Provide a balanced age-class structure in cover types managed with even-age silvicultural systems.
- d. Increase the productivity and maintain the health of even-age managed cover-type stands.
- e. Provide for creation and maintenance of within-stand diversity.
- f. Continue to manage wildlife management areas for the benefit of game species.
- g. Manage priority open landscape areas (OLAs) for the benefit of wildlife species.

Riparian and Aquatic Areas

GDS-5A: Riparian areas are managed to provide critical habitat for fish, wildlife, and plant species.

- a. Apply the Site-Level Guidelines relating to riparian areas.
- b. Manage to maintain or increase old forest in riparian areas.
- c. Using the NPC Field Guide and associated ECS Silvicultural Interpretations, manage for a species appropriate for the site.
- d. Discourage reed canary grass where feasible.
- e. Follow recommendations in Tomorrow's Habitat for the Wild and Rare.

- f. Consider recommendations of local governments and water resource management agencies when applying stand treatments within areas subject to water related and land use management plans.

GDS-5B: Forest management on state lands adequately protects wetlands and seasonal ponds.

- a. Apply the Site-Level Guidelines when treating stands near wetlands and seasonal ponds.
- b. Consider landforms (e.g., end moraines) that have seasonal ponds and small open-water wetlands, and address those features in site-specific prescriptions that are developed during the stand examination field visit.

Timber Productivity

GDS-6A: Timber productivity and quality on state timber lands is increased.

- a. Move toward harvesting even-age managed non-ERF stands at their normal rotation age.
- b. Examine all stands over maximum rotation age in even-age managed cover types.
- c. Thin or selectively harvest in some stands.
- d. Include silvicultural treatments such as site preparation, inter-planting, release from competition (e.g., herbicide application or hand release), and timely thinning in plantation management, to increase productivity.
- e. Apply and supervise the implementation of the Site-Level Guidelines on treatment sites.
- f. Continue to implement, supervise, and enforce current DNR timber sale regulations to protect and minimize damages to sites or residual trees from treatment activities.
- g. Manage some ERF stands for large diameter, high-quality sawtimber products by retaining adequate stocking and basal area.
- h. Respond to insect and disease problems, as appropriate.

Forest Pest, Pathogens and Exotic Species

GDS-7A: Limit damage to forests from native and introduced insects and diseases to acceptable levels where feasible.

- a. Identify and monitor insect and disease species populations as part of the Forest Health Monitoring Program and document their occurrence on state-managed lands.
- b. Manage existing forest insect and disease problems, as appropriate within the constraints of budgets.
- c. Implement intervention plans developed by regional and statewide committees before pest outbreaks.
- d. Manage stands to reduce the potential impact of insects and diseases.
- e. In ERF stands, a higher level of impact from native insect and disease infestations may be accepted as long as it does not jeopardize the ability to regenerate the stand to the desired forest cover type or the management goals of the surrounding stands.

GDS-7B: Reduce the negative impacts caused by exotic species on forest vegetation on state forest lands.

- a. Identify and monitor harmful exotic species populations as part of the Forest Health Monitoring Program and document their occurrence on state-managed lands.
- b. Adhere to the Minnesota DNR 2010 Invasive Species Program Directive.
- c. Follow Minnesota DNR Operational Order 113 (Invasive Species) to minimize the spread of invasive exotic species during forest management activities.

- d. Manage exotic species, as appropriate, within the constraints of budgets.
- e. Manage nonnative invasive exotic species, as appropriate, within the constraints of budgets.

GDS-7C: Reduce the negative impacts caused by wildlife species on forest vegetation on state forest lands.

- a. Monitor state lands for damage caused by wildlife.
- b. During plantation establishment, control gophers as per current policy.

Climate Change

GDS-8A: Forest management on state lands attempts to mitigate global climate change effects on forest lands. Management is based on our current knowledge and will be adjusted based on future research findings.

- a. Maintain or increase species diversity across the subsection.
- b. Maintain or increase structural diversity across the subsection.
- c. Maintain connectivity that permits the migration of plants and animals as climate changes the landscape.
- d. Evaluate site conditions with respect to climate change when selecting tree species for regeneration.
- e. Use the concept of carbon sequestration to remove carbon dioxide (the most significant anthropogenic greenhouse gas) from the atmosphere.
- f. Apply the Site-Level Guidelines for tree species at the edge of their range.

Cultural Resources

GDS-9A: Cultural Resources will be protected on state-administered lands.

- a. Annual Stand Exam lists are reviewed by DNR archeologists; recommendations for mitigation are implemented as part of sale design.

Natural Disturbance Events

GDS-10A: Natural disturbance events that occur on state land within these subsections are promptly evaluated to determine the appropriate forest management needed to respond to impacts.

- a. The subsection planning team will evaluate large-scale (100's to 1000's of acres) disturbance events to determine appropriate action.
- b. Local land managers will evaluate and determine appropriate actions for small-scale (10s of acres) disturbance events.

Prescribed Fire as a Management Tool

GDS 11A: Continue to use prescribed fire as a forest vegetation management tool in the Anoka Sand Plain subsection.

- a. Work with local planning and zoning to encourage the use of “conservation development” adjacent to high quality native plant communities that are best maintained with prescribed fire.
- b. Work with adjacent landowners to reduce the risk to their property from wildfire or escaped prescribed fire. Implement “Fire Wise” concepts to prevent fire from coming

onto state lands and leaving state lands noted in the Structural Development and Urbanization section 3.13.

- c. When use of prescribed fire presents challenges, consider alternative techniques (e.g. herbicides, mechanical treatment, etc.) to accomplish resource management objectives where variables make prescribed fire inappropriate.
- d. Increase the understanding of the role of fire in fire dependent natural plant communities among resource managers and the public.
- e. Utilize the MN DNR prescribed fire forms and documents web page.
- f. Address smoke management concerns to allow continued use of prescribed fire to maintain fire dependent natural plant communities.
- g. Mimic historical pre-settlement fire frequency and intensity of forested, oak savanna, and open landscape fire dependent natural plant communities.
- h. When known rare plant and animal species are present in a fire dependent community, land managers will give consideration on how to minimize localized short term population declines caused by prescribed fire for specific listed species as much as practical. Consider alternative techniques to accomplish resource management objectives where variables make prescribed fire inappropriate.
- i. Recognize infrastructure needs to implement prescribed fires, include maintenance and creation of fire breaks, obtaining fire equipment, and staff funding needs.

Structural Development and Urbanization

GDS-12A: The changing structural development and urbanization pattern will be considered as forest management is implemented in the subsection.

- a. Inform adjacent landowners when management activities will occur on the state land next to them and, when feasible, mitigate management activities to address landowners concerns.
- b. Encourage private landowners, local governments and other land managers to implement compatible land uses adjacent to state land through land use management actions.
- c. Work with other divisions to mitigate the impacts of forest management on recreational users.
- d. Inform adjacent landowners, local governments and stakeholders of forest management planning processes.
- e. Implement “Fire Wise” concepts to prevent fire from migrating onto state lands, from adjacent lands, and from escaping state lands.

Limited Public Land Ownership

GDS 13A: Continue to cooperate and coordinate with adjacent land owners (public and private) supporting the overall multiple use and enjoyment concept that applies to state administered land.

1. Influence management on private lands through stewardship planning efforts.
2. Disseminate final plans to other land managers to use in their planning processes.
3. Strategically purchase lands with conservation values.

2. Mille Lacs Uplands Subsection Forest Resources Management Plan

Document Title	Source	Date	URL or Address
Mille Lacs Uplands Subsection Forest Resources Management Plan	Minnesota Department of Natural Resources	June 2008	http://www.dnr.state.mn.us/forestry/subsection/millelacs/index.html

Geographic Extent / Scope: (p. 1.1)

The Mille Lacs Uplands planning area covers approximately 3,498,533 acres. More than 357,000 acres of that area (about 10 percent) is administered by state agencies, mainly the Forestry and Wildlife Divisions of Minnesota Department of Natural Resources (DNR). Portions of three Ecological Classification System (ECS) Subsections are included. The majority of the land area is in the Mille Lacs Uplands, a small amount is in the Glacial Lake Superior Plain, and a tiny portion is in the St. Croix Moraines Subsection. Approximately 40 percent of the Mille Lacs Uplands and 66 percent of the GLSP is forested. Most of the St. Croix Moraines is included in Interstate State Park, and is therefore not affected by this planning process.

Organizations / Agencies involved in plan creation: (p. 1.3)

An interdisciplinary team comprised of DNR Forestry, Fish and Wildlife, Ecological Services, and other division staffs had primary responsibility for the work and decision-making involved with the subsection plan. Managers of adjacent county, federal, tribal, and industrial forestlands were invited to provide information about the condition of their forestlands and future management direction.

Info on Planning Process: (p. 1.4)

This document is part of the DNR SFRMP process.

Process Overview:

- Step 1: Initiating the Planning Process
- Step 2: Assessment and Issue Identification
- Step 3: Strategies, Desired Future Forest Composition, and Stand Selection Criteria
- Step 4: Draft List of Stands to be Treated and New Access Needs
- Step 5: Final Plan

Purpose of Plan: (p. 1.2)

A SFRMP is a DNR plan for vegetation management on forestlands administered by the DNR Forestry and Wildlife Divisions. Vegetation management includes actions that affect the composition and structure of forest and brush lands, such as timber harvesting, thinning, prescribed burning, and reforestation. The geographic area covered by this plan is a subsection rather than administrative boundary such as counties or DNR administrative areas. The SFRMP considers the condition and management of lands by other agencies, but only proposes forest management direction on DNR-administered lands.

The end result of the planning process will be two key products:

- **Desired future forest composition (DFFC) goals.** These goals include long-term (i.e., 50-100+ years) and short-term (i.e., 10 years) desired changes in the structure and composition of vegetation on DNR-administered lands in the subsection.
- **List of DNR forest stands to be treated over the next 10-year period.** SFRMPs will identify forest stands on DNR Forestry- and Fish and Wildlife-administered lands that are proposed for treatment (e.g., harvest, thinning, regeneration, and re-inventory) over the seven-year planning period.

VISION(S)

None identified.

ISSUES (Issues) / GOALS (Desired Future Forest Condition (DFFC)) / STRATEGIES (Strategies) [The DFFCs and associated Strategies are grouped under fourteen forest resource management issues, as listed in Chapter 3 of the SFRMP] (pp. 3.7-3.24)

Age-Class Structure

DFFC 1: Forests in the Mille Lacs Uplands, Glacial Lake Superior Plain, and St. Croix Moraines (planning area) are diverse in age and structure and there are both older and young, regenerating forests.

- a. Use harvest planning to improve the age class distribution of all forest types in the subsection.
- b. Designate stands as extended rotation forest (ERF) that include a variety of age classes.
- c. Include short-lived (early successional) species such as aspen, jack pine, and birch in ERF areas.
- d. Continue to harvest aspen stands that are classified as “high risk” due to age, and will be maintained as aspen, at an accelerated rate.
- e. Model current and future forest age-class distributions for the planning area, annually.
- f. Ensure that the oldest age classes are present on the landscape in adequate amounts.
- g. Continue to refine the list of old-growth forests by evaluating and prioritizing within existing old-growth teams.
- h. Coordinate with Minnesota County Biological Survey and other programs to identify additional old-growth forests.
- i. Use ERF designation to buffer impacts to designated old-growth forests.
- j. Plan timber sale access to minimize undesirable recreational impacts to designated old-growth forests and adjacent special management zones.

DFFC 2: At least 10 percent of lands administered by the Divisions of Forestry and Wildlife in the planning area are managed as older forest.

- a. Identify opportunities to locate ERF in specific riparian, corridor, and Wildlife Management Areas, and adjacent to designated old-growth forests.
- b. Identify some highly productive forest lands for management as ERF, for the production of high quality timber.
- c. Emphasize early successional species such as aspen, jack pine, and birch in these ERF areas, in addition to typically long-lived (later successional) species.

- d. Concentrate ERF in areas that have historically supported the oldest forests, and the highest proportion of older forests, in the planning area. Such areas provide site conditions and have experienced disturbance regimes that allow the development of old forests.
- e. Categorize each Landtype Association (LTA) (or LTA group) by its ability to develop and maintain older forests.
- f. Participate in the identification of LTAs that are appropriate for open landscape management; these LTAs may not be the best choices for ERF.
- g. Consider existing large patches and identified forested corridors as areas of ERF concentration.

DFFC 3: ERF areas are located where they will provide the desired timber quality and old forest attributes.

- a. Allocate ERF on two levels (or scales), both of which are below the subsection level:
 - At the unit or landscape level/LTA level -- at this level historical disturbance regimes are most important.
 - At the stand level -- at this level existing corridors, riparian zones, and oldgrowth special management zones are important.
- b. Concentrate ERF in areas of the subsection(s) that have historically supported the oldest forests and highest proportion of older forests. Such areas provide site conditions and have experienced disturbance regimes that allow the development of old forests.
 - Identify major disturbance regimes for the planning area.
 - Plot DNR releves classified by Native Plant Community System (i.e., fire-dependent vs. mesic hardwood) and native plant community class.
 - Use this releve map to help decide where to concentrate ERF.
 - Create a bearing tree cover for each Landtype Association (LTA) in the planning area and use that to estimate average tree age and age-class distributions for each LTA
 - Use tree age and age-class distribution information to help inform decisions about how much ERF is desirable and where it should be located.
 - Continue to work to achieve ERF goals during future planning periods.
- c. LTAs provide the best landscape unit for basing decisions on allocation of ERF; in general, these units are homogeneous enough in terms of environmental conditions that each can be categorized by its ability to develop and maintain older forests.
- d. The Division of Wildlife has identified certain LTAs that are appropriate for brushland management; these LTAs may not be the best choices for ERF.
- e. Large patches and corridors identified by the SFRMP team's spatial concerns work group should be considered as areas of ERF concentration.

Vegetation Diversity

DFFC 1: Native plant communities that were historically well represented in the planning area are well represented today.

- a. Identify those species that were historically more common and the native plant communities in which they thrived, and focus regeneration and reintroduction efforts in those areas.
- b. Place a high priority on efforts to map the occurrence of native plant communities and native plant community systems in the subsection(s).

- c. Continue to develop capability to use native plant community and soil data to make decisions about appropriate forest cover types for a site.
- d. Use native plant community keys to guide forest management decisions in the subsections; there will be a number of options from which to choose on any given site.
- e. Identify stands most appropriate for conversion to other types using site index, risk criteria, native plant community, and soils data.
- f. Work to achieve natural regeneration if possible, use artificial regeneration when necessary, and make a commitment to protect regeneration.

DFFC 2: Benefits derived from efforts to regenerate forests after harvest are maximized.

- a. Develop management plans specific to the needs of forest types that have been identified as lacking adequate regeneration (see specific cover-type notes in this document).
- b. Engage in routine monitoring and evaluation of regeneration efforts.
- c. Work closely with Division of Wildlife resource managers to ensure that population goals for wildlife and regeneration plans are not in conflict in a given area.
- d. Continue to experiment with regeneration strategies that appear less vulnerable to depredation.
- e. Take every precaution to avoid damage to the site during harvest; this is often at the root of regeneration problems, which are then compounded by faulty regeneration practices.
- f. Document successes and failures in regeneration efforts in order to avoid repeating errors.
- g. Protect soils and enhance regeneration by regulating season of harvest when necessary.
- h. Follow Forest Development Manual (Minnesota DNR, 1994-5) guidelines for harvesting, site preparation, and artificial regeneration to ensure greatest chance of success in artificial regeneration.
- i. Use Ecosystem Classification System (ECS) field guides to help ensure DNR resource managers make sound decisions in artificial regeneration projects.
- j. Completely document all species within the project area (all woody species that occupy a site, not just the species of interest).

DFFC 3: The amount of white pine in the subsection has increased by 100 percent over 2002 levels.

- a. Implement the guidelines provided by Minnesota DNR's White Pine Management Policy (Minnesota DNR, 1998).
- b. Focus regeneration efforts in areas where white pine was historically abundant in the planning area, where there is a low incidence of blister rust, and where slopes are adequate to permit air drainage.
- c. Make a commitment to protect natural and planted white pine regeneration in focus areas from depredation; enlist the support of other DNR divisions and volunteers, where possible.

DFFC 4: The amount of white cedar in the subsection has increased over 2002 levels; an improved age-class structure indicates greatly improved regeneration success.

- a. Identify native plant communities in the subsection that support the growth of upland and lowland white cedar.
- b. Focus regeneration efforts on areas that have existing white cedar, especially those surrounded by large contiguous patches of forest.

- c. Continue to refrain from harvesting upland white cedar in the subsection until adequate regeneration is identified or established in focus areas.

DFFC 5: The birch cover type has increased by 50 percent over 2002 levels and shows a greatly improved age-class distribution.

- a. Identify native plant communities in the planning area that support the growth of quality birch.
- b. Engage in regeneration efforts, including site preparation and planting, if needed to ensure adequate birch regeneration in selected areas, e.g., in gaps created in mixed hardwood stands.
- c. Ensure that birch inclusions are managed for regeneration.
- d. Ensure that harvest of decadent birch stands in the subsection be addressed as a high priority to maximize chances for natural regeneration.
- e. Combine Strategy (d) with post-harvest preparation techniques to improve regeneration.
- f. Implement the recommendations of current research into sustainable harvest of birch bark from live, standing trees.

DFFC 6: Healthy butternut specimens on state and private lands are protected pending the development of trees resistant to butternut canker.

- a. Continue to implement butternut harvest moratorium on state lands (Minnesota DNR, 1992).

DFFC 7: The aspen cover type is reduced by 5 percent from 2002 levels by selective removal of aspen to favor an existing species, natural stand conversion through succession, replanting, or under planting with another species.

- a. Identify stands that can be maintained as mixed aspen and conifers by retaining and enhancing advanced conifer regeneration.
- b. Identify aspen stands that are “high risk” due to disease and could be converted to another type.
- c. Use historical records, native plant community, soil, and wind firmness data to determine appropriate conversion, if natural conversion is not apparent.
- d. Reserve long-lived conifer types as clusters in hardwood stands for seed sources.
- e. Encourage and nurture natural succession to mixed hardwoods on appropriate sites.

DFFC 8: Specific areas are managed to maintain open landscapes needed to maintain populations of species of management concern.

- a. Collaborate with Divisions of Wildlife and Ecological Services to identify specific open landscapes that will provide the most benefit to associated wildlife species and maintain those areas as non-forest.
- b. Provide maps of critical open landscape habitat areas for use by those involved in land-use planning efforts.
- c. Collaborate with other divisions and other landowners to actively maintain open landscapes in designated areas using appropriate management techniques.

DFFC 9: State Nurseries have access to sources of seed and other propagation materials from a variety of environments. These sources are identified and protected in the course of forest management.

- a. Encourage field personnel to document location of specimens or populations appropriate for use as seed sources. Sugar maple, basswood, white pine, yellow birch, oak species, and bigtooth aspen are of particular interest for use in tree improvement programs.
- b. Identify and document pure stands of tree species that are easily accessible.
- c. Use locally adapted seed.
- d. Manage several stands of trees within a subsection for seed production as a way of maintaining sufficient diversity when the seed is deployed for regeneration.
- e. Use seed collected from several stands of trees to increase variation among planted or seeded stands.
- f. Mille Lacs Uplands falls within the Central Minnesota seed zone (Minnesota DNR, 1989). Using seed from this seed zone (even if the seed is from another subsection) has been determined to be appropriate and will further increase genetic diversity among planted or seeded stands.
- g. When establishing a seed production area, it is important to develop several acres with each acre retaining ten to fifteen trees. This will result in a sufficient number of trees providing ample genetic material to have a good “mix” and sufficient genetic variation. Establishing several seed production areas will increase genetic diversity.

DFFC 10: The oak type (red oak, bur oak, and white oak) has increased slightly (2 percent) over 2002 acreage. Oak stands are managed using even-aged or two-aged systems, with even-aged predominant.

- a. Avoid thinning and other management when oaks are under severe stress from drought and/or defoliation.
- b. Examine stands when basal area reaches 120 sq. ft per acre.
- c. Thin stands to produce seven to fifteen cords per acre before regeneration harvest.
- d. Accept other high quality species in wet-mesic communities.
- e. Regenerate by use of shelterwood harvests, post-harvest timber stand improvement, weeding, and possibly planting to retain oak.
- f. Evaluate sapling stands for precommercial release and thinning.
- g. Consider using prescribed fire to regenerate oak on dry-mesic communities.
- h. Re-examine stands on ten to fifteen year intervals.
- i. Initiate regeneration harvest on sites that meet criteria.
- j. Consider converting poor sites (SI less than 55) to a more appropriate cover type for the site.

DFFC 11: Northern Hardwood stands average sixty to eighty years of age with representatives of all age classes. Stands have between eighty and one hundred forty sq. ft of basal area, with most being maintained between eighty and one hundred twenty sq. ft. After the year 2122, northern hardwood acres should be equally divided among basal area classes 80-100, 101-120, and 121-140 for perpetuity.

- a. Thin stands to produce an average of seven cords per acre at harvest.
- b. Identify low-quality hardwood stands for conversion or rehabilitation using a clear-cut technique.
- c. Thin better quality northern hardwood stands for long-term stand improvement.
- d. Complete native plant community classification for each site to assess its potential for future management.

DFFC 12: New infestations of invasive exotic species on public forest land are rare, and the spread of existing populations is controlled.

- a. Continue to develop educational materials that help adjacent landowners recognize exotic species and understand appropriate control methods.
- b. Balance the need for recreational trails with the risk of introducing exotic species into all public forest areas.
- c. Understand and communicate the distinction between invasive and non-invasive exotic species.

Wildlife Habitat Diversity

DFFC 1: State lands contribute important habitat and population support for the 439 permanent and regular resident wildlife species that exist in Minnesota. Populations for various species are monitored and habitats for game and nongame species are valued and protected.

- a. Identify wildlife management species for the subsection that represent the various habitat and ecological processes necessary to ensure overall sustainability and viability of wildlife.
- b. Work with the Divisions of Wildlife and Ecological Services to define which wildlife species can be identified as representative wildlife management species.
- c. Use wildlife resource assessment information about representative wildlife management species to guide/support forest management decisions concerning: 1) species distribution and population estimates, 2) habitat associations, 3) landscape habitat elements, 4) site level habitat elements, 5) management practices, and 6) monitoring and adaptive management strategies.
- d. Participate in designation of open landscape complexes to be maintained as habitat for open-landscape-dependent wildlife species.
- e. Identify and maintain long-lived conifer secondary species in hardwood stands as winter cover.
- f. Identify and maintain mast species as leave trees on harvest sites.

Ecologically Significant Areas

DFFC 1: Areas of unusual ecological significance are valued and protected as areas for study and conservation of both plant and animal rare species, sources of biological diversity, and ecological benchmarks.

- a. Consult the most up-to-date rare features database layer available through the DNR Geographic Information Systems data library.
- b. Flag stands that include a rare feature element during stand selection.
- c. Following stand selection, DNR Ecological Services Division will confer with Forestry staff (on Forestry-administered lands) and Wildlife staff (on Wildlife administered lands) to determine adjustments (if needed) in proposed treatments to protect the element occurrence.
- d. Work with the Divisions of Ecological Services and Wildlife to identify areas of high biological diversity on State land that are not already protected by Scientific and Natural Areas, state Parks, or Wildlife Management Areas, and consider giving them special management to conserve their unique assets.
- e. Determine the kind of forest resource management that is required to conserve each high biological diversity area, if appropriate.

- f. Consider including high biological diversity areas in ERF management areas and/or in forested corridor areas, as appropriate.

DFFC 2: Forested rivers in the planning area have high water quality providing important habitat for fish, amphibians, and invertebrates, including a number of federally listed mussel species.

- b. Adhere to MFRC voluntary site-level guidelines for trout streams when conducting forest management activities in riparian areas of rivers and streams that contain trout or listed mussel species and MFRC standard riparian area voluntary site-level guidelines (Minnesota FRC, 1999) in other riparian areas

Connectivity

DFFC 1: Forested connections between existing large blocks of forested land and riparian areas are maintained and enhanced to provide for wildlife movement, protect water resources, and prevent habitat fragmentation and consequent isolation of native plants and animals.

- a. Identify and maintain existing connections between large blocks of forest land.
- b. Establish a corridor, a minimum of one-quarter mile (1320 feet) in width. This may or may not always be in the same location.
- c. Manage forests in the designated corridor for a minimum average basal area of 60 sq. ft per acre. Where the management goal within the corridor is to maintain an even-aged species (aspen, jack pine, red pine, etc.) no more than one-half the width of the corridor may be less than 60 sq. ft of basal area at any one time. Any Division of Forestry-approved management activity that maintains these stand characteristics is acceptable.
- d. Work with other land managers (federal, tribal, and county) to maintain forest land in the corridor in forested status. This will mean involving them and getting “buy-in” to the concept of establishing a forested corridor.

Patch Management

DFFC 1: Forests are managed for a variety of patch sizes. Large, contiguous patches of forest are maintained in designated areas, while other parts of the Mille Lacs uplands are managed for smaller or medium size patches.

- a. Plan subsection timber harvests taking into consideration the desired future distribution of patch sizes.
- b. Conserve existing large contiguous mature forest areas to provide critical habitat for multiple forest interior species, e.g., red-shouldered hawk nest sites.
- c. Manage existing large blocks of state forest land, and blocks of state forest land that are adjacent to large blocks on other ownerships, for large patches, giving priority to those areas in Strategy b, above.
- d. Continue to use information on historical disturbance regimes to help refine planning for management of large, medium, or small patches.
- e. Continue to increase the proportion of state forest land managed according to uneven-aged management regimes as a way of achieving a more desirable patch size distribution.
- f. Manage state forest lands in the planning area to achieve the following distribution of patch sizes (percent of Forestry and Wildlife lands):
 - Very large (640 acres +) 10%
 - Large (250-639 acres) 15%

- Medium (100-249 acres) 40%
 - Small (40-99 acres) 25%
 - Very small (< 40 acres) 10%
- g. Take care to maintain existing patches in the very large and large size categories.

Fragmentation

DFFC 1: Forest managers carefully consider forest road construction. There is a high level of collaboration with federal and private landowners and local units of government to identify opportunities to share and minimize road construction.

- a. Plan the fate of new roads and trails prior to construction so that appropriate action can be taken to either maintain them, or obliterate them from the forest. It is undesirable to have roads developing in an unplanned way as a result of recreational use of logging trails.
- b. Follow the DNR State Forest Road Manual (Minnesota DNR, 1994-6) for development of new roads.
- c. Adhere to Forestry-Wildlife Guidelines to Habitat Management (Minnesota DNR, 1985-2) Roads and Trails section.
- d. Contact county land departments and other appropriate land managers (e.g., Tribal governments, The Nature Conservancy) to arrange cooperative use of existing roads to keep new road construction to a minimum.
- e. Provide a draft of road access needs for public review as part of the forest resource planning process.

Identification and Management of Highly Productive Sites

DFFC 1: Timberlands in the planning area are highly productive. They produce good quality hardwood and softwood logs for manufacturing and export, as well as a good quantity of pulpwood to supply Minnesota's pulp and paper industries.

- a. Identify areas that are good examples of their type, occur on wind firm soils, can be managed for production of high quality hardwoods, and/or include large contiguous forested patches for wildlife habitat. Consider thinning healthy aspen types in ERF as well as dense hardwoods and conifers to produce quality timber for the future.
- b. Use Site-Level Guidelines for all activities to ensure that site quality is maintained.
- c. Increase hardwood-marking efforts as resources allow.
- d. Use ECS and local knowledge to identify aspen stands that would be appropriate for conversion to mixed hardwoods, and manage these for quality hardwoods using selective harvest and thinning techniques.
- e. Identify advance regeneration of long-lived conifers in less productive aspen stands, and plan for their conversion to pine, spruce, and fir types.
- f. Improve production of quality aspen by continuing to harvest high-risk aspen stands that are to be maintained in the aspen type at a high rate, to avoid conversion to other types.
- g. Investigate potential for thinning aspen to increase growth and produce high quality logs on selected sites.
- h. Use site-level ecosystem classification keys to identify the native plant community type on a given site and make decisions to manage for appropriate forest types. Sites that are managed for appropriate forest types, have good access, and where managers are committed to continuous improvement have the greatest potential for optimizing timber productivity for the present and the future.

- i. Focus management activities intended to help stands approach their full production potential on sites with fewest conflicting priorities (rare features, oldgrowth forest, poor access, etc.).

Utilization and Marketing of Forest Resources

DFFC 1: Utilization of species and grades of timber are optimized to maximize the benefits these resources provide.

- a. Promote the use of lesser-utilized species and identify potential markets for underutilized species to DNR resource managers.
- b. Communicate changes in wood and non-timber forest product markets to DNR resource managers.

Increase Site-Level Productivity

DFFC 1: Ecosystem classification tools have helped DNR resource managers identify species most likely to be productive on a specific site, as indicated by soil and native plant community information.

- a. Use ECS and local knowledge to identify stands that would be appropriate for conversion to mixed hardwoods, and manage these for quality hardwoods using selective harvest and thinning techniques.
- b. Use ECS keys and historical information to identify sites appropriate for introduction or enhancement of long-lived conifer species.
- c. Use ECS keys to help identify forest types that may be more productive than those currently on sites that are marginally productive.
- d. Use innovative silvicultural techniques appropriately to manage for structural diversity and improved timber quality.

DFFC 2: Diverse, high-quality mixed hardwood stands are managed by skilled forest managers and selectively harvested by highly trained logging professionals for continuous quality improvement and production of timber, while maintaining forest cover and establishing regeneration.

- a. Increase hardwood-marking efforts as resources allow.
- b. Identify thinning opportunities to enhance quality of all timber types.
- c. Continue to make use of contract hardwood marking crews to improve the growth and quality of hardwood stands.

Improved Forestry Data Management

DFFC 1: Forest inventory data are detailed and current enough to be relied upon in a wide variety of planning and analysis projects. Forestry databases provide a link between generations of forest managers with respect to both strategic and operational decisions that have been made for a specific forested community.

- a. Create a priority reinventory list each planning period.
- b. Support the development and use of databases that include planning elements in addition to inventory elements.

Forest Stewardship Planning

DFFC 1: Progress toward the vision for the subsection(s) forests (or DFFCs) is enhanced by engaging nonindustrial private forest landowners, providing a level of consistency across ownerships with regard to forest management in a given landscape unit.

- a. Consider the differences between private and public lands when developing DFFCs for the planning area. A one-size-fits-all future condition statement is not likely to be implemented or result in diverse and resilient ecosystems.
- b. Develop a concise summary of landscape-level ecological conditions that can be used by stewardship plan preparers to help private landowners understand past, present, and future ecosystems. This will help landowners select realistic management objectives that are compatible with ecological and economic conditions.
- c. Prepare or revise management prescriptions tailored to conditions in the planning area so that they can be incorporated into Forest Stewardship Plans.

Collaboration With Other Landowners

DFFC 1: Minnesota DNR resource managers routinely collaborate with other landowners to develop consistent goals and landscape-level strategic plans.

- a. Continue efforts to coordinate plans and management projects with federal and county land managers. Provide federal, tribal, and county managers the opportunity to participate in developing management plans for state lands. Review and comment on management plans for federal-, tribal-, and county managed natural resources.
- b. In counties that have land departments, send copies of annual vegetation management work plans to the county land commissioner to allow coordination of vegetation management and road access projects.
- c. In counties that do not have land departments, offer to assist county auditors or the county board to develop land management plans for tax-forfeit land that will be retained in county ownership, as time and resources permit.
- d. When feasible, develop joint contracts (e.g., site preparation, tree planting) on state and county lands to avoid duplication of effort and achieve economies of scale.
- e. Maintain contact with other resource managers in the planning area and monitor their strategic planning documents as a way of maintaining an awareness of their long and short-term forest management goals.
- f. Take advantage of opportunities to collaborate with other resource managers as resources allow.

DFFC 2: Losses due to forest insects and diseases on private and state forest land are minimized, as are the effects of pest management on non-target species.

- a. Inform adjacent landowners of insect or disease incidents on state land and assist them to make informed decisions about protecting their trees and property.
- b. When a private landowner adjacent to state land is actively suppressing a forest pest infestation and that pest also exists on adjacent state lands, the state should consider appropriately treating the pest also.
- c. Follow guidelines established by Division of Forestry forest health specialists with regard to insect and disease outbreaks.

DFFC 3: State forest lands are managed in a manner that minimizes conflicts among users, adjacent landowners, and in-holders, while maintaining management options.

- a. When planning management activities, always make adjacent landowners aware of the plan and the purpose.
- b. Maintain awareness of, and respect for, ownership boundaries.
- c. Clearly mark and post all boundaries with signs where possible.

Public Involvement and Review

DDFC 1: The public is involved in forest management planning during designated review periods.

- a. Encourage and actively solicit public input into forest management activities such as planning.

DDFC 2: DNR Forest managers minimize the visual and aural impact of forest management activities on users of state forests, thereby supporting and enhancing multiple-use values of state forest land.

- a. Apply visual quality management guidelines. Be particularly considerate of scenic values in areas classified as most sensitive (e.g., high-use recreational areas, adjacent to recreational lakes and streams, solitude areas).
- b. Manage expectations and perceptions by informing and educating stakeholders about the need for and expected impacts of management activities prior to, during, and after the activity.

DDFC 3: Forest managers have stakeholder support for employment of a full suite of forest management options as appropriate to reach identified goals.

- a. Use opportunities to communicate to the public about management options, risks, and benefits as they arise.
- b. Use historical disturbance regime and range of natural variation data as they become available to help determine appropriate management techniques for landscape areas.
- c. Document management prescriptions and choices as they are made, to facilitate communication and public education.
- d. Use pre-treatment monitoring and post-treatment monitoring as learning and communication tools to justify choices and outcomes.

3. Pine County Forest Resources Plan

Document Title	Source	Date	URL or Address
Plan for the Management of Pine County Tax-Forfeited Lands	Pine County Land Department	1994	http://www.co.pine.mn.us/index.asp?Type=B_BASI&SEC={E30DDEB6-267A-42FF-B2F9-CEC8A8604F26}

[Note to the reader: Since this plan was written much of Pine County's tax-forfeited land has been reclassified as Conservation/Memorial Forest. Furthermore, many goals and practices for the management of tax-forfeited land may have changed in the intervening years and are not reflected in this summary]

Geographic Extent / Scope:

(p. 2)

The scope of this plan for tax-forfeited lands includes all land and resource-based uses, including, but not limited to, timber production, recreation use, both game and non-game wildlife concerns, economic impacts, traditional values and traditional occupations, threatened and endangered plants and animals, historical and archaeological concerns, protection and maintenance of watershed values, soils and site capabilities, productions of biomass for energy sources, and the protection of aesthetic and environmental values. An objective of the planning process was to solicit the participation by all interested and affected publics in order to identify the public issues arising from the management and utilization of tax-forfeited lands and their resources.

Organizations / Agencies involved in plan creation:

(p. 2)

Input has been received from many varied groups including township officers, sportsmen, the Pine County Tourism Association, Directors of the Soil, Water and Conservation District, recreation interests, loggers, farmers, citizens, hunters, county office administrators, school superintendents and timber industry representatives.

Info on Planning Process:

(pp. 3-4)

In order to provide a foundation and direction for the project to proceed, certain assumptions and limitations were made which served as guidelines representing the nature and needs of Pine County. Those assumptions and limitations are:

1. The Minnesota State Legislature has recognized three distinct and separate levels of public land management, i.e.: federal, state and county; each with their own limitations and public benefits.
2. Pine County Tax Forfeited Lands are legally owned by the State of Minnesota, but the county government has the legal responsibility for its administration and management as a trust benefiting the local taxing districts; county general fund, township, cities and school districts. The Pine County Board of Commissioners establishes overall goals, objectives and policies for tax-forfeited land management within the limits of state law.

3. The planning process is an extensive effort to develop a resource management plan on tax-forfeited lands to facilitate decision making, which will support intensive management and/or disposition of tax-forfeited lands.
4. The planning effort is an on-going process which involves all interested and affected publics in Pine County, resulting in the formulation of a resource management and/or disposition plan to establish direction and goals as well as a base for decision making.
5. A county program directed at the retention and management of tax-forfeited lands should be economically self-sustaining and revenue producing. Disposition of tax-forfeited lands should be done in a manner that will provide present and future benefits to the citizens of Pine County.
6. The thrust of resource management and/or disposition decisions shall be dictated by the persistent natural conditions such as soils, water, climate, etc. and potential future long-term opportunities under multiple use considerations.
7. Priority consideration of planning and management activities shall be the enhancement, utilization and protection of the natural environment of Pine County.
8. The Pine County Tax-Forfeited Land Management Plan and/or disposition of lands must be sensitive to the needs of existing socio-economic conditions.

Purpose of Plan:

(p. 2)

This resource management plan is intended to identify resource management opportunities and provide direction in the management of tax-forfeited lands. This includes the establishment of a systematic method of determining which lands should be retained and which lands should be disposed of in some manner. The plan benefits evolve primarily out of the public input process to identify the pertinent issues arising out of resource management and/or disposition of remaining tax-forfeited lands. The continuation of the planning process is also important in responding to changing needs, identifying resource opportunities, and in refining management technique.

VISION(S)

(p. 25)

Because the forest is a dynamic entity, the status of the forest will change over time. The change will be most affected by the management goals and harvesting regimes adopted by Pine County. Even though the final decision of stand treatment will be made after intense on-the-ground examination, it is likely that the future forest will approach or respond to the conditions which we recognize today. For example, by trying to recapture the potential aspen type in the hardwood, birch and oak types, the future aspen type acreage may approach 25,000 acres or 50% of the total. The quality hardwood, oak and birch types will increase in area and value. The conifer forests may double in area and eventually occupy up to 3,500 acres with the increase due to reforestation efforts for thermal cover and edge effect for wildlife habitat, as well as reclaiming once valued conifer sites and improvement of visual and aesthetic qualities.

Due to lack of technology to efficiently and cost effectively reforest the lowland types, no prediction is made for those types at this time. However, the lowland types will be important for wildlife management.

GOALS

None identified.

ISSUES (Issues) / STRATEGIES (Recommended Actions) [The issues and recommended actions are grouped underneath three topic areas, as listed in Part III of the Plan] (pp. 44-48)

Administration

Issue A: Public Involvement

1. Maintain the open door policy for informal conversation and conduct an annual meeting with loggers to communicate policy changes, discuss problems and to obtain their input.
2. Township or city officials must be informed and involved in proposed land sales, as dictated by M.S. 282.01 Subd. 1, as well as they should be informed about other concerns such as roads, access construction and timber harvest.
3. Timber harvest offerings should be prepared and distributed to township officials, loggers and interested groups.
4. Scheduling of timber and auction sales should be made to coincide with seasonal stumpage needs and market demands.
5. Maintain and develop cooperative relations with local school systems, conservation organizations and resource agencies to enhance educational opportunities.
6. Investigate the feasibility of entering into cooperative agreements with adjacent land owners in relation to property line location to facilitate management programs and activities.
7. Maintain the County Board appointed a Tax-Forfeited Land Advisory Committee to advise the County Board on forestry concerns and policy matters and to facilitate public input on resource management. At least 11 members, including representatives of resource agencies, loggers, forest industry, township officials, County Board and general public. The county personnel serve as ex-officio members for current status input.
8. The Resource Management Plan for Pine County should be made available to all interested parties. An annual report of progress should also be prepared. This plan should be revised and rewritten in ten years reflecting current resource inventory data.

Issue B: Administrative Organization

1. Maintain the professional staffing of the Land Department. Current permanent staffing is: Land Commissioner, County Forester and Secretary.
2. Maintain centralized Land Department in Sandstone, Minnesota. Continue the administration of Pine County's Tax-Forfeited Lands through the Land Department, which through the Land Commissioner, will report to, and be accountable to the County Board of Commissioners.
3. Adequate bookkeeping and records should be maintained so that reports and accountability can be shown to the County Board.
4. The County Board should investigate the sources of outside funds for financing project work and should establish funds in capital improvement projects so as to improve the future value and potential income from tax-forfeited lands and the overall economic benefits to the people of Pine County now and in the future.

5. The County Board should examine the possibility of protecting investments in capital improvements through the dedication of lands in county controlled memorial forest lands. (MN Stat. 459.06)

Issue C: Legal

1. All legal jurisdiction, liabilities and interpretations should be resolved by the County Board and County Attorney involving the objectives and operations on the management of the tax-forfeited lands.

Issue D: Transportation

1. Cooperative relations should be maintained with the State and County Highway Departments, as well as township officials.
2. Establish dialog between the loggers, timber industry and timber management agencies on road issues and safety factors related to timber harvesting operations during adverse seasonal and weather conditions.
3. Develop timber harvesting specifications for on-site log landings and road design and usage which consider and promote safety for other public uses.
4. Participate in County Forest Road Committee: Per Forest Road Act of 1988.

Resource Management

Issue A: Timber

- Manage the forest resources of Pine County according to the principles of multiple use and sustained yield.
- County officials should seek and promote expansion of existing and additional markets of wood products and examine the feasibility of utilizing more economical energy sources.
- Develop a road plan detailing long-range access needs for good resource management perpetuation.
- Cooperative relations should be maintained between the county and DNR divisions for the protection and management of the resource whether forests, wildlife, water and soil, whereas, a unified effort is made to accomplish the same objectives.
- Comprehensive timber sales guidelines and procedure should be maintained to insure continuity of service with loggers and the timber industry.
- Develop and maintain an inventory of field operations which record site specific treatment of unique visual qualities, landmarks, wildlife habitat, historical or archaeological features, along with normal timber assessments, sales, boundary line control points and survey markers.
- Cooperate with federal, state and private research organizations in the development of technology to increase the productivity of all forest ecosystems.
- Provide that all forest management practices and procedures be within prescribed techniques to assure safety, health and protection of people and natural resources.

Issue B: Wildlife

- Develop and maintain working relations with Wildlife Resource Specialists to assist in developing and implementing goals and plans of specific projects and activities to benefit wildlife considerations.

Issue C: Recreation

- Continue to develop working relationships with local trail clubs.
- Notify public through news releases, signing and maps about availability of and access to tax-forfeited lands as timber harvesting operations and wildlife projects are completed.

Issue D: Other

- Continue cooperative wetland mitigation projects with the Highway Department.
- Cooperative efforts with programs such as the natural heritage, non-game, scientific and natural areas, historic and archaeological concerns, and other interested persons could be established to maintain unique areas, wildlife, plant communities of special concern and historic sites.
- Develop cooperative or joint powers agreements with resource management agencies.

Lands

Issue A: Disposal & Retention

- Continue to use the guidelines for the classification of tax-forfeited lands and refine them as necessary. (Appendix I)
- Dispose of county lands within state parks or state forests with preference for exchange.

Issue B: Leases and Easements

- Review and update the county lease policies and rate schedules.
- Enter into easements when allowed by statute and in the counties' best interest.

Issue C: Other

- Pine County should inventory and identify to capture the value of all gravel deposits of usable quantity on tax-forfeited lands and where feasible make these materials available to townships, county highway department and local contractors through the gravel lease program.
- Pine County should identify and dedicate one site or sites for solitude area which is undisturbed by management practices.

4. Benton County Comprehensive Plan

Document Title	Source	Date	URL or Address
Benton County Comprehensive Plan	Benton County Planning and Zoning	2006	https://www.co.benton.mn.us/560/Comprehensive-Plan

Geographic Extent / Scope:

Benton County.

Organizations / Agencies involved in plan creation:

Nothing listed.

Info on Planning Process:

Nothing listed.

Purpose of Plan:

Nothing listed.

VISION(S)

(p. 1.2)

Benton County is a growing, balanced community of rural and urban residential environments. It is a healthy, vibrant place to live that welcomes pro-active human services and promotes responsible agricultural and business practices. We have an integrated transportation network, an interconnected park system, an excellent education system and affordable housing opportunities. Government has listened to the people, respected the rights of individuals and implemented a comprehensive plan that has created the quality of life we all wanted for Benton County.

ISSUES

Nothing listed.

GOALS (Goals) / STRATEGIES (Policies) [Only goals and policies relevant to natural resources are summarized here] (pp. 4.1-4.9)

Land Use Goal #4: Identify, protect, and preserve the County's high quality natural areas and open space.

1. County Biological Survey: Develop strategies for the conservation of the County's environmentally sensitive natural areas identified on County Biological Survey.
2. Development Review: Protect the integrity of major natural resources through development review and regulation.
3. Master Plan for Parks Trails and Open Space: Utilize the Master Plan to identify potential trail corridors and resource based parkland.
4. Scenic Resources: Protect scenic values by controlling billboards and regulating signs, auto junkyards, and other potentially unsightly land uses and practices.

Public Facilities Goal #3: Develop, maintain and manage a County park, trail and open space system to meet the needs of the Community by utilizing various methods of fiscally responsible funding strategies.

1. County Park System: Develop, enhance and maintain the existing County park system that is safe and meets the intergenerational needs of the community.
2. Connectivity: Ensure that there is a balance within the County Park System that creates connections between the rural and urbanizing areas of the County.
3. New Park Development: Take advantage of opportunities to acquire new park and open space areas in those locations identified for both natural beauty, and the existence of unique environmental, plant, animal, social, or historical features (County Biological Survey and Master Plan for Parks Trails and Open Space).
4. Trails: Promote the development of an interconnected trail system utilizing public participation and trail advocacy groups.
5. Shared Facilities: Promote the sharing of recreational facilities among area communities.
6. Funding: Consider various funding options in the acquisition of parkland and development of recreational and/or community education activities.

Environmental Goal #1: Promote environmental stewardship for the County's long-term environmental benefit.

1. Wildlife Habitat: Protect the integrity of wildlife habitat by acquiring prime tracts of land for public open space, by regulating rural land use for a very low intensity of development, enforcing regulations on wetlands and shorelines, and by designing new development and roads to keep major woodlands intact.
2. Best Management Practices: Protect water quality by enforcing the use of "Best Management Practices" and other features of the County's Water Plan in private development and public improvements.
3. Wetlands: Continue to enforce wetland regulations. Support individual landowners' efforts to reestablish pre-existing wetlands by using a wetland banking system.
4. Watershed Management Organizations: Implement through zoning and public works the policies of the watershed management organizations consistent with the County's Water Plan.
5. Individual Treatment Systems: Continue careful consideration and review of soil suitability for the placement of individual sewer treatment systems before the issuance of a permit.
6. Hazardous Waste: Continue to work to promote the proper handling, disposal and recycling of hazardous waste.

5. Chisago County Comprehensive Plan

Document Title	Source	Date	URL or Address
Chisago County Comprehensive Plan	Chisago County Environmental Services/Zoning & Parks Department	2017	http://www.co.chisago.mn.us/1041/Comprehensive-Plan

Geographic Extent / Scope:

Chisago County.

Organizations / Agencies involved in plan creation: (pp. 1.2-1.3)

Chisago County has authority to plan under Minnesota Statutes 394.21-394.37. The County is governed by an elected Board of Commissioners, consisting of five members. The County Administrator undertakes many of the administrative responsibilities on behalf of the County Board. The Planning Commission, which consists of seven members, advises the Board about planning and zoning activities within the County.

Info on Planning Process: (pp. 1.5-1.6)

2016-2017 Comprehensive Plan Update Process

In the spring of 2016, County staff and the Planning Commission identified the need to update the County's Comprehensive Plan, including adding goals, desired outcomes, references to several important recent County planning activities and studies and updating demographic information. Recent County-wide planning studies include an update to County Local Water Management Plan (2013), an update to the County Transportation Plan (2014), an update to the County Comprehensive Parks and Plan (2016) and the adoption of Master Plans for the Swedish Immigrant and Sunrise Prairie Regional Trails in 2015.

On May 18, 2016, the Chisago County Board authorized County staff and the County Planning Commission to update the Comprehensive Plan. The update process will include several meetings with the Planning Commission, input from the County's Environmental Services staff and other County departments and research about the latest trends in planning for the County to consider as part of the plan update.

2016-2017 Plan Update Public Involvement Process

The 2016-2017 Plan update included a public involvement process. The County expects to have several meetings with the County Planning Commission, possibly open houses with the townships and public hearings with the Planning Commission and County Board. These steps and actions evolved as staff and Planning Commission proceed with the plan update.

Purpose of Plan: (p. 1.2)

The policies of this Plan will provide specific direction about future decisions on physical development and growth while allowing flexibility for the County to adapt to changing

conditions. Chisago County continues to be at a critical point in terms of growth and must continue to identify and implement ways in which the growth can best be managed in the future.

VISION(S) [Shown below are overarching goals set by Chisago County for managing natural resources] (p. 2.3)

1. Use land in a manner that minimizes the impact on the County's natural resources.
2. Surface and ground water quality and quantity in Chisago County is preserved, protected, restored and enhanced for current and future generations.
3. Preserve, manage and use resources to promote a healthy environment for present and future generations.

ISSUES

None listed.

GOALS (Goals) / STRATEGIES (Policies) [Only goals and policies relevant to natural resources are summarized here] (pp. 2.39-2.43)

Goal: Encourage the conservation, enhancement, preservation and restoration of natural resources in the County for use and enjoyment of present and future generations and to serve as an economic development and tourism tool and asset for the County.

1. Establish minimum lot sizes, development densities and standards to protect environmentally sensitive areas (ESA's). ESA's shall be defined as higher quality terrestrial and wetland habitats (including ephemeral wetlands); aquatic habitat such as trout streams, natural environment lakes, floodplains, and wild and scenic rivers; slopes over 18% and areas with high surface and ground water mixing rates.
2. Prohibit or severely restrict development on floodplains, steep slopes (18% or greater), wetlands, riparian corridors and other environmentally sensitive areas.
3. Identify and protect sand and gravel deposits for future use.
4. The County should identify tension points between natural resource protections and development pressures and adopt land use, planning and zoning strategies for protecting natural resources and for lessening the impacts of development on natural resources.
5. The County will encourage local governments to incorporate sustainable principles (including renewable energy) into local plans, ordinances, contracts, purchasing, construction projects and review processes.
6. The County will encourage local governments to design and locate new development in a way that preserves and benefits from the natural environment and reduces development pressures that endanger natural resources.
7. Chisago County will lead by example in county operations to conserve energy and the use of renewable energy sources in a cost effective manner. This will include incorporating energy conservation into existing and new buildings.
8. The County will manage waste through an integrated waste management system in accordance with the state hierarchy of waste reduction, reuse, recycling and resource recovery in order to minimize land filling. Chisago County will use coordination, cooperation and collaboration to educate about sound environmental practices related to waste management activities.

9. The County will lead by example in county operations and develop and implement innovative waste management solutions and will encourage other entities to do the same.

Goal: Development shall conform to natural limitations of topography and soil to create the least potential for soil erosion and development on slopes.

1. Plats will require dedication of drainage easements and ponding areas.
2. Plats will require minimum buildable areas in addition to minimum lot sizes.
3. Regulations will be established restricting development on steep slopes and unstable soils.
4. Development of specific sites shall incorporate appropriate water management practices that minimize runoff and transport of sediments and nutrients, including, but not limited to, the use of temporary and permanent sediment/retention ponds, avoidance of steep slopes, vegetated buffers, natural infiltration areas and vegetated stream corridors. The use of newly constructed ponds will be required to meet the current design standards of best management practices of the State and the County for storm water management. Individual site plans shall be designed and constructed to reduce post development runoff to meet or exceed pre-development conditions.
5. Encourage and promote the use of vegetated buffers and rain gardens to help control storm water and to improve water quality.
6. The County will consider natural resource conservation in all land planning decisions. This should include avoiding environmentally sensitive natural areas when approving new subdivisions and using best management practices to lessen the damage to native plant communities and other important natural areas when developments are reviewed by the county.

Goal: Protect surface waters, groundwater, ditches and wetlands to promote recreational and tourism opportunities, aesthetic qualities, natural habitats and groundwater recharge.

1. Delineate wetlands.
2. Achieve no-net-loss of the quantity and quality of wetlands in accordance with the Minnesota Wetland Conservation Act. This will include avoiding wetland impacts, where feasible, in accordance with the Minnesota Wetland Conservation Act and County standards. If avoidance is not possible, mitigate wetland impacts in accordance with the Minnesota Wetland Conservation Act and by County standards.
3. Density increases shall be allocated based on use of clustering of building sites that preserve natural features (mature woodlands, wetlands, natural prairie, steep slopes, native plant communities); maintain a percentage of common open spaces; minimize grading and filling of natural topography; utilize best management stormwater management practices that protect lakes, streams and wetlands; and minimize fragmentation of wildlife corridors by integrating open space of adjacent developments/property.
4. Enforce Minnesota Rules Chapter 7080 relating to Individual Sewage Treatment Systems and Minnesota Rules Chapter 8420 relating to wetlands.
5. Continue to support a coordinated, multifaceted approach to managing subsurface sewage treatment systems (SSTS); including:
 - Research, education and regulation in accordance with state rules.
 - The County continuing to regulate the location, design, installation, use and maintenance of SSTS and community treatment systems to prevent contamination of surface and groundwater.

- The County amending its SSTS ordinance as may be necessary to be consistent with changes in state rules.
6. Lakes should be protected by measures such as increased setbacks for buildings and other structures.
 7. The County will protect shoreland areas in order to maintain natural habitat and water quality. This means continuing to regulate land use within the designated shoreland areas of lakes and rivers in the unincorporated areas of the County in accordance with the standards in the County Zoning and Shoreland Ordinances.
 8. As a condition of issuance of certain permits, conditional uses and variances, measures shall be required to mitigate the effects of development, nonconforming structures or uses in shoreland areas. (i.e. ISTS evaluation and upgrade, restoration of native vegetation buffer in shoreland impact zone and bluff impact zone, removal of nonconforming accessory structures, and/or consolidation of docks and mooring facilities if applicable).
 9. Establish regulations requiring structure and sewage treatment system setback from wetlands.
 10. Natural drainage will be used to the extent possible for storage and flow of runoff. Wetlands should be used as natural discharge areas. Presettling of runoff will be required prior to discharge to wetlands.
 11. The County will require developers and contractors to follow an erosion control plan that provides preventive measures for erosion and sedimentation for proposed development and follow-up that those plans are being implemented.
 12. Activities on wet soils and high water table areas will be regulated through the County Zoning Ordinance.
 13. The county will protect, land, structures and natural communities from flooding that substantially exceeds natural water level fluctuations. This will occur by following or exceeding the standards and requirements in the County Floodplain regulations including preventing new building and limit the expansion of existing structures located in floodplains.
 14. The county will amend its Floodplain Management regulations as may be required by the Federal Emergency Management Agency (FEMA) and Minnesota Rules.
 15. Identify incentives to be offered for increasing awareness and utilization of low impact development methods to aid in reducing non-point source pollution.
 16. The County will maintain, update and implement the goals and objectives of the Chisago County Local Water Management Plan to promote water sustainability, the preservation and protection of water resources.
 17. The County will consider implementing the recommendations of the Chisago County Ditch work group, the objectives for drainage ditches as outlined in the Local Water Management Plan and those in the drainage ditch inventory report.
 18. The County will promote the wise use of water through optimizing surface water and groundwater use, expanding water conservation and reuse, aquifer recharge and other best practices.
 19. The County should incorporate water sustainability designs and standards in areas of County policy and actions, including overall development patterns, water management, transportation, housing and parks.
 20. The County should work with regional and local partners to identify and plan County and local solutions to long-term water sustainability (resources and supply) that balance County and regional needs and local objectives.

21. The County will continue to encourage and support activities and programs to reduce nutrient loading to lakes, streams, rivers and the St. Croix River basin.

Goal: Sand and gravel will be recognized as an important local and an increasingly desirable export commodity that is vital to the local economy.

1. Sand and gravel deposits shall be identified and protected for future use.
2. Educational information will be provided to raise public awareness of the fact that gravel is a natural resource that is essential for construction activities.
3. Provide incentives for preserving sand and gravel deposits from development in order to protect and utilize this essential construction material.
4. Require mining operators to restore depleted mining areas to an approved topography, a natural state or built environment.
5. The County will continue to enforce performance standards for mineral extraction operations within the County Zoning Ordinance to preserve the materials for extraction and to lessen impacts to the environment and adjacent land uses.

Goal: Recognize, preserve and enhance the significance of the St. Croix River, which has been identified as a national Wild and Scenic River.

1. The County will continue to include the Upper and Lower St. Croix Overlay District regulations as required by State Statute.
2. Determine incentives for promoting the transfer of development rights in sending areas adjacent to the St. Croix Riverway Valley.
3. The County will support the goals identified in the St. Croix River Total Maximum Daily Load study and Water Resource Protection and Restoration Plan.

Goal: Prime scenic views and historic landscapes will be recognized as an important local amenity and a desirable local amenity drawing outside revenue from visitors that is vital to the local economy.

1. Identify and protect the quality of visitor experience of prime scenic features, areas of exceptional rural ambience, important historic sites and their surrounding settings and prime areas for flora study and wildlife viewing and public spaces open to low-impact outdoors recreation.

Goal: Protect woodlands to promote recreational opportunities, natural habitat, aesthetic qualities, ground water recharge, screening, windbreaks, sound barriers and a source of wood products.

1. Continue to support woodland preservation standards of: 1) structures shall be located in a manner that preserves the maximum number of quality trees; 2) forestation, reforestation or landscaping shall utilize a variety of tree species and shall not utilize any species susceptible to disease; and 3) Land development, including grading and contouring, shall take place in such a manner that remaining trees are minimally affected.
2. Development shall be required to be conducted in such a manner as to cause the least disturbance to woodland ecosystems.

6. Isanti County Comprehensive Plan

Document Title	Source	Date	URL or Address
Isanti County Comprehensive Plan	Isanti County Zoning Department	2009	http://www.co.isanti.mn.us/isanti/departments/zoning/zoning-resources/?cat=Zoning

Geographic Extent / Scope:

Isanti County.

Organizations / Agencies involved in plan creation:

(p. 8)

This Update was prepared through a public process with a committee comprised of 5 County Commissioners, 5 County Planning Commission members and 5 citizens selected from each of the 5 Commissioner Districts. This Citizen Advisory Committee (CAC), lead by a member Chair, conducted the business of reviewing input, crafting alternatives and making final recommendations to the County Board. The CAC met monthly beginning in October 2006 and completed work in March 2008.

Info on Planning Process:

(p. 11)

In preparing this update to the 1998 Isanti County Comprehensive Plan, a kick-off meeting was held with County Commissioners and staff. This meeting on August 29, 2006 set in motion the Comprehensive Plan process including the guidelines for the formation of a Citizens Advisory Committee (CAC). The CAC was to be comprised of Commissioners, Planning Commission members, citizen representatives from each commissioner district and County Staff. The first CAC meeting was held on October 24, 2006. Major issues included residential density in agricultural districts, the main reason for this Plan update and the options for public involvement. Another first step was conducting one-on-one interviews with County Commissioners.

The planning process consisted of three phases, Getting Started, Alternatives Development, and Refinement.

Phase 1, Getting Started included:

- Establishing a Steering Committee
- Collecting background data
- Conducting interviews with stakeholders
- Conducting a physical reconnaissance of the county
- Establishing a series of public meetings to learn first-hand those issues and concerns of county residents
- Facilitating five public meetings, one in each commissioner district, and one county-wide public meeting where planning issues were identified through a prepared questionnaire (the questionnaire summary is included as a appendix)

Phase 2, Alternatives Development, was conducted after background research was completed on the county's demography and socio-economics trends (population, household, and income data

taken from the US Census), existing land use patterns, transportation system, park and open space systems, community facilities and infrastructure, and economic and business development trends. Findings from the research provided a foundation for the identification of goals and strategies for future County policies.

Phase 3, Refinement began with a review of land use and zoning alternatives presented during committee meetings beginning in May 2007. The Committee deliberated options for land use directions and impacts on the established 2 dwelling units per quarter/quarter. This housing density requirement has served the County and its residents well in terms of protecting open space and agricultural operations while still allowing growth to occur in planned zones including the USA Tier 1 and USA Tier 2 zones.

Comments from the Steering Committee's review influenced development of the draft comprehensive plan, which was made available for community review during the months of December 2008 and January 2009. A public hearing on the draft plan was held on January 26, 2009.

Purpose of Plan: (p. 10)

A comprehensive plan is a document that provides a policy framework to guide land use planning and development activities, typically over a 20-year period. Unplanned development often results in conflicting, incompatible land uses and undesirable impacts on natural resources. A comprehensive plan, which is based on community identified goals, objectives, and visions for the future, articulates policies that address issues such as: a) type of land use, b) location of land use, and c) intensity (amount) of land use that can be supported by natural systems and human-made infrastructure systems.

The Isanti County Comprehensive Plan reflects priorities and decisions made by citizens, residents, business owners, and other Isanti County stakeholders over a 12- month planning process. The Comprehensive Plan identifies a vision for how development and programs will shape Isanti County 20 years hence. One key goal is the modification of the Agricultural District housing density formulas. The goals are further defined by policies; intermediate steps that guide the day-to-day decisions of elected and appointed officials charged with overseeing programs, land use regulations, and management of public and private resources. Finally, the plan provides a series of recommended strategies with which County officials and staff can bring the vision closer to reality. The strategies identify the priority actions, programs, regulations, ordinances, and cooperative efforts that can be implemented to achieve the policies, goals, and the vision.

VISION(S) (p. 29)

Isanti County is envisioned to be a community where both lifestyles and economies will largely be based on assets derived from rural environments in proximity to a major metropolitan area. It is envisioned that Isanti County will be a single community where both the "time-proven and traditional" and the "new, innovative, and advanced" are encouraged, facilitated, and allowed to flourish. This is relevant to lifestyles, recreation and relaxation, housing choices, and economic development including industrial development and agriculture.

Isanti County is envisioned to be a community where natural resources are cherished and valued and utilized in a sustainable manner to support a growing economy. Over the long-term, it is envisioned that some traditional approaches to economic development and the utilization of resources will give way to new, innovative approaches that are more conscious of waste streams, more harmonious with the environment, and more sustainable.

Recognizing the challenges it will face as traditional approaches are replaced with new, innovative approaches, it is envisioned that Isanti County will facilitate these shifts through the provision of:

- An incremental adaptation of the current Ag District housing density formulas
- Striking a balance between preserving Ag and open space lands with new residential, commercial and industrial development
- Increased cooperation at the county, city and township levels to ensure complementary development
- Facilitating a merger of county, city and township plans for growth areas especially where cities are proposing expanded growth and along highway corridors
- A major emphasis on blending environmental protection with growth trends and development areas
- Channel new growth to established cities and rural service centers
- Provide for the recreational, parks and trail needs of residents
- Empowerment of residents to engage in the oversight and governing process to help ensure a successful outcome of this plan.
- Foster cooperation at all levels of government and open forums of communication to ensure current and future decision-making processes achieve the highest level of understanding and acceptance.

ISSUES [Only issues relevant to natural resources are summarized here, as listed in Chapter 5 of the Plan] (p. 26)

- There is a need to balance the demand for growth with the preservation of open space and natural resources.
- Continue to provide park, trail, recreational and open space systems for the enjoyment of all county residents and visitors

GOALS (Objectives) / STRATEGIES [Only objectives relevant to natural resources are summarized here] (pp. 41-44)

Objective 5: Establish land use patterns that preserve and protect the natural qualities and existing rural character of the landscape.

- Encourage and explore land use options related to the preservation of unique landscapes.
- Encourage the clustering of residential uses to ensure the efficient use of natural resources and economic efficiency in the extension of public services.
- Enforce development standards that govern the permitting, design, installation, expansion, and maintenance of individual septic treatment systems.
- Develop a plan to identify failing septic systems and to assist property owners in upgrading such systems.

- Ensure and enforce development standards that require development to be suited to site-specific soil conditions and existing drainage patterns, in order to minimize runoff and maximize absorption of water.
- Promote natural erosion control over structural methods.
- Continue working to educate residents about best management practices for agricultural production, and the residential use of fertilizers, and water quality and quantity concerns.
- Require erosion and sediment control prior, during and after site construction.
- Protect the natural environment along the Rum River.
- Encourage and promote the policies and goals of the Isanti County Local Water Management Plan 2007.
- Encourage and promote the policies and goals of the Isanti County All Hazard Mitigation Plan.
- Continue local commitment to promoting resource conservation through sound waste prevention, reuse, recycling, composting, and purchasing practices.
- Encourage local businesses and residents to explore and implement alternative energy techniques such as small wind turbines, solar collectors, and other energy saving devices.
- Promote energy conservation and consumption reduction through design techniques on new home and commercial construction sites (geothermal, biofuels, etc.)

Objective 6: Preserve open space and wildlife habitat and protect natural resources.

- Restrict or prohibit development on shoreland and flood plain areas, wetlands, and other natural features that serve important environmental functions.
- Develop and enforce development standards that are consistent with soil suitability, steep slopes and ground water sensitivity.
- Enforce development standards that are consistent with the Wetlands Conservation Act (WCA).
- Encourage the preservation and restoration of native vegetation in areas not used for agricultural purposes.
- Encourage the preservation and restoration of natural vegetation in shoreland buffer areas.

Objective 7: Work to provide recreational opportunities for county residents.

- Work cooperatively with other entities to identify potential trails.
- Encourage use of county, city and township parks.
- Maintain County parks.
- Identify and accept park or open space land with natural features and habitat qualities.
- Encourage developers to provide trails or sidewalks and access to such.

7. Kanabec County Comprehensive Plan

Document Title	Source	Date	URL or Address
Kanabec County Comprehensive Plan	Kanabec County	2002	http://www.kanabecounty.org/document_center/Departments/Coordinator/Ordinances/22%20Comp%20Plan.pdf

Geographic Extent / Scope:

Kanabec County.

Organizations / Agencies involved in plan creation:

None listed.

Info on Planning Process:

(pp. 6-7)

The process followed in Kanabec County to develop this Plan revolved primarily around working sessions carried out by the Kanabec County Planning Commission. This Commission consists of members appointed by the County Board. These members represent general geographical areas of the County, township boards, and interested citizens of the County.

In addition to their ongoing administrative responsibilities dealing with shorelands, flood plain and subdivision regulations, the Planning Commission serves as the primary arena for discussion, evaluation and development of the Kanabec County Comprehensive Plan. Following a process of review and development of land use issues, goals and policies and plan recommendations, the Planning Commission recommended a draft Kanabec County Comprehensive Plan for presentation to the Kanabec County Board of Commissioners.

At specific points during the planning process, key elements of the draft plan were distributed to the townships, cities and resource people in Kanabec County. Distributing these elements at key points in the process served to keep the local governments informed concerning the planning sequence and also sought recommendations concerning the issues addressed, draft land use policies and draft plan recommendations.

The Comprehensive Plan, as discussed and evaluated by the Planning Commission, consists of these key elements:

- A statement of land use issues, followed by land use goals and policies to address those issues; and,
- A series of plan recommendations, which translate the land use goals and policies into more specific recommendations on land use management.

Following development of each key element by the Planning Commission, it was distributed as a draft document open for comment and revision, to local governments and interested citizens. The final document was adopted by resolution of the Kanabec County Board of Commissioners.

Purpose of Plan:

(p. 6)

The primary role played by the comprehensive plan is to serve as a statement reflecting the desired direction for future development occurring in Kanabec County. The Comprehensive Plan achieves this goal by:

- Identifying through policies the County's attitude toward past, current and future development;
- Providing a reference to review and evaluate changing development patterns;
- Serving as a document to promote discussion concerning how to manage growth and development in the County;
- Presenting statements which establish a framework that defines the desired direction of growth and development in Kanabec County; and,
- Provides Growth Management Recommendations, which identify provisions and direction in adopting official controls.

VISION(S)

None listed.

ISSUES (Issues) / GOALS (Goals) / STRATEGIES (Policies) [Only issues, goals, and policies relevant to natural resources are summarized here] (p. 38)

Development impacts on the County's environment

Goal: Kanabec County will maintain, and where necessary, improve the quality of the County's land, air and water resources.

1. Kanabec County will maintain Shore land Management Regulations consistent with State of Minnesota statutes.
2. The County will continue to implement on-site sewage treatment system design standards consistent with State of Minnesota rules and statutes.
3. The County will continue to maintain a County Solid Waste Management Plan.
4. The County will continue to Implement a flood plain management program consistent with the State of Minnesota statutes.
5. The County will continue to Implement the Minnesota Wetlands Conservations Act consistent with the State of Minnesota statutes.
6. Kanabec County will continue to cooperate with and coordinate its land use planning activities with the Kanabec County Water Plan planning process.

8. Mille Lacs County Comprehensive Plan

Document Title	Source	Date	URL or Address
Mille Lacs County Comprehensive Plan	Mille Lacs County Land Services Department	2013	http://www.co.mille-lacs.mn.us/comprehensive-plan

Geographic Extent / Scope:

Mille Lacs County

Organizations / Agencies involved in plan creation:

None listed.

Info on Planning Process:

(pp. 6-8)

In late 2011, the Mille Lacs County Board of Commissioners voted to create a Comprehensive Plan, meant to be a strategic long-term plan encompassing the nine topics listed above. Once adopted, this new plan will replace the existing Land Use plan that was last updated in 1990. The Comprehensive Plan is meant to provide guidance for decision making going forward in Mille Lacs County.

In developing the updated Comprehensive Plan, the Mille Lacs County Board of Commissioners felt that involvement and participation of County residents in each step of the process would be paramount to its success. Throughout the planning effort, every attempt was made to engage residents and encourage their participation. The steering committee and all task forces were made up of residents of Mille Lacs County.

The first step in the process was notifying residents and local units of government about the planned project, and asking residents to volunteer to serve on one or more of the many committees and task forces this project would require. Presentations on the upcoming Comprehensive Plan project were made in late 2011 and early 2012 to the Mille Lacs County Township Association, and to the City Councils of all eight cities in the County.

Drawing from those who volunteered to assist with the planning process, the Mille Lacs County Board of Commissioners appointed a Steering Committee tasked with overseeing all phases of the project, including: garnering public input on the selected topic areas; recruiting volunteers to serve on ad-hoc citizen task forces; appointing people to the task forces; presenting the products of these task forces for public review and comment; and preparing a draft Comprehensive Plan for consideration by the County's residents, Planning Commission, and Board of Commissioners.

Along with the Steering Committee, a community survey was undertaken in late winter of 2012 to secure input and feedback from the County's residents on the previously mentioned Comprehensive Plan topic areas and other subjects.

Ad-hoc citizen task forces were assembled to work on each of the Comprehensive Plan's topic areas. Members were provided with survey input and comments received at community

meetings; they were asked to use this information, in combination with their own experiences, to create draft goals and objectives in each topic area.

Community meetings were held approximately quarterly, at multiple locations across the County, to provide updates to residents on the plan's progress. These meetings also provided an opportunity to garner citizen input on topic areas, and to solicit feedback on the draft goals and objectives created by the task force members.

Each topic area's goals and objectives were reviewed and commented on several times by the public, and revised accordingly by the Steering Committee, Planning Commission, and County Board of Commissioners. These goals and objectives will be used to guide decision making for the County in the future.

Ultimately, the County Board of Commissioners voted to approve the 2013 Mille Lacs County Comprehensive Plan on November 19, 2013.

Purpose of Plan:

(p. 5)

Development and adoption of an updated Comprehensive Plan is intended to promote and support the public health, safety, and welfare of the residents of the County. Mille Lacs County will advocate the rights of property ownership, recognizing the primacy of property rights and the sanctity of private property ownership as enunciated in the Fifth Amendment of the U.S. Constitution and Article 1, Sections 7 and 13 of the Minnesota Constitution. Mille Lacs County will uphold the rights of private property ownership. The right to obtain private property and enjoy its uses is priority one in Mille Lacs County. Along with this right is the responsibility to ensure that the individual activities of one property owner do not adversely affect another property owner's rights. This plan establishes a unified group of basic goals, policies, and general plans which will enable the County Board of Commissioners, advisory committees, and citizens to review issues and proposals, both current and future, in light of what has been determined to be most beneficial for Mille Lacs County. This plan is intended to give guidance to the County's decision makers, based on the residents' input and goals.

ISSUES

None listed.

VISION(S)

None listed.

GOALS (Goals) / STRATEGIES (Objectives) [Only goals and objectives relevant to natural resources are summarized here] (pp. 16-17, 33-35, 44, 59-60)

Goal: To support the County's agricultural and forested areas and businesses through a balance of conservation and education.

Objective: Maintain and encourage the efficiency, viability, and productivity of the County's agricultural and forested areas for current and future generations.

- Encourage cities and townships to ensure the viability of agriculture and forestry.

- Encourage non-traditional farming practices such as agri-tourism, which retain the agricultural character of the land.
- Encourage development of an infrastructure to support a local and regional food system.

Objective: Balance development of land with conservation.

- Allow concentrated development in order to preserve farm and forest land, open spaces, and ecological connectivity.
- Balance environmental concerns with property use and regulations.
- Encourage the control and management of invasive species within these industries.
- Streamline the permitting process to make agriculture and forestry development user-friendly, efficient, and consistent.
- Keep agriculture and forestry industries viable for future generations.

Objective: Promote educational opportunities for residents and private land owners pertaining to forestry and farm management practices.

- Encourage and support private forestry and farming businesses by providing information related to these industries.
- Promote and encourage private forest inventory/management plans.
- Make forestry and farming resources available to residents in all formats including print, video, internet, etc.

Objective: Recognize agriculture and forestry as part of the County's business community.

- Include a focus on the agriculture and forestry industries within the County's economic development work plan.
- Encourage all value added industries that use locally grown inputs, including forestry, farming, renewable energy, biomass and others.
- Encourage the creation of a one-stop clearinghouse for the business development process.

Goal: To balance human development with the natural environment, while protecting the County's water, forest, energy and other natural resources.

Objective: Balance human activity and property use with preserving and protecting the natural environment within Mille Lacs County.

- Create a variety of opportunities for human activity in a healthful and cost efficient manner.
 - Provide amenities that are in balance with the natural environment.
 - Consider development of a plan to identify amenities needed for use in the future.
 - Promote the County's natural resources as a driver for the local economy, working with tourism, environmental, hunting, farming, nonprofit, property owners, residents, and advocacy groups; local governmental units; and educational institutions.
 - Strive to maintain the beauty of the natural environment.
- Balance human activity with the protection of our natural resources.

- Review the wild and scenic boundaries of the Rum River and make recommendations to state and federal regulating agencies.
 - Partner with the private business community to determine the best use for shoreline property, while maintaining its environmental integrity.
 - Work with citizens, regulatory agencies, property owners, residents, government agencies, and businesses to review existing codes and regulations to achieve minimal regulation while conserving our natural resources.
 - Consider connectivity between wildlife areas and open spaces in decision making.
- Maintain viability of wildlife habitat.
 - Work to ensure impact to wildlife is considered when planning future development.
 - Maintain viability of wetlands.
- Manage forest resources for economic benefit, wildlife habitat, and recreation.
- Review land use controls and update as necessary, in relation to the Comprehensive Plan goals and objectives.
- Establish a Natural Resources Task Force composed of elected officials, residents, and key strategic partners.
 - Develop a natural resources protection plan that encompasses and ties together other natural resource and land use plans to promote parks and other resources.

Objective: Preserve and protect the water supply and water quality within the County.

- Support the control of aquatic invasive species.
 - Work with local and state partners to develop best management practices, education, and implementation plans.
 - Initiate mitigation activities, and look for ways to stop further infestation.
- Protect drinking water supplies from contamination and depletion.
 - Promote well head protection planning.
 - Review land use regulations regarding the withdrawal of water from aquifers for development.
- Preserve surface water from pollution, runoff, and other sources of contamination.
 - Review and evaluate County ordinances for setbacks and other requirements related to property use and property development.
 - Collaborate with residents, businesses, state agencies, elected officials, and staff on a natural resource protection education program.

Objective: Protect and support agricultural food supply opportunities, and work to ensure their long-term viability.

- Support all agricultural businesses and marketing opportunities for locally produced foods.
 - Develop plan working with local growers and markets for long-term sustainability of small agricultural businesses.
 - Research and provide information about grant opportunities related to the local food supply.
- Protect top soil from erosion and degradation.

- Promote educational opportunities on local agriculture, including locally produced foods.

Objective: Promote and further study existing and alternative energy sources.

- Review viability and encourage growth of all alternative renewable energy sources within the County.
- Promote energy efficiency and energy conservation.

Objective: Protect Mille Lacs County's air from pollution, to maintain air quality for future generations.

- Work with local, state, and federal partners to develop plans for mitigating existing pollution and preventing future pollution threats in the County.
- Mitigate sources of air pollution, such as contaminants from open burning of plastic and garbage.
- Educate residents about restrictions on open burning.

Objective: Encourage the proper disposal of solid and hazardous wastes.

- Promote recycling and reuse.
 - Provide education and information for residents.
 - Encourage private haulers to implement recycling programs.
 - Work with the private sector to explore private enterprise opportunities related to re-use and recycling.
- Promote solid waste disposal options in place of open burning.
- Provide and promote a variety of options for hazardous waste disposal.
 - Develop ongoing educational programs and disposal options for residents.
 - Work with the private sector to explore private enterprise opportunities for hazardous waste disposal.

Goal: To promote development with an eye to minimizing regulations; preserving private property rights, water, and other natural resources; and maintaining our quality of life in accordance with all applicable ordinances, laws, rules, and regulations.

Objective: Consider water quality and quantity when making land use decisions.

- Continue to work with local and state agencies, local units of government, and other agencies with regards to water quality and volume issues, both above and below ground, utilizing the County Local Water Management Plan when making related decisions.

Goal: To support the tourism, recreational, and cultural assets within the County.

Objective: Promote and support tourism in Mille Lacs County.

- Increase revenues by promoting tourism within the County.
- Develop partnerships with private businesses, non-profit agencies, and governmental units to promote tourism and recreation.
- Work with and educate state legislators, departments, and the general public on topics pertaining to recreation and tourism as it relates to the County.

Objective: Maintain public hunting and fishing access within the County.

- Work with citizens, state and local commissioners, and residents to improve and maintain public hunting and fishing locations.
- Help promote public recreation opportunities.
- Encourage better methods of defining public accesses to hunting and fishing areas.

Objective: Promote and support recreational opportunities within the County.

- Encourage establishment/expansion of privately owned recreational businesses.
- Continue partnership with state and local agencies, citizens, and businesses, to preserve our County's natural resources.
- Promote and help to preserve the County's historical and cultural assets.
- Support the creation of a historical and cultural asset inventory, and use it as a tourism driver.
- Consider the development of a park and trails plan, including a cost/benefit analysis.
- Explore opportunities for creating or expanding County parks and trails.
- Explore incentives for private natural resource protection.

Objective: Responsibly utilize the Wild and Scenic Rum River corridor within the County.

- Explore the creation of primitive camping sites.
- Encourage establishment/expansion of privately owned recreational businesses.
- Work with citizens, businesses, and local government on developing recreational uses that will have a minimal impact on the river.

Objective: Improve connections between people and destinations in the County.

- Assess and promote regional trail systems, and consider possible connections with proposed County trails.

Objective: Promote and support Mille Lacs Lake as a recreation and tourism destination in the County.

- Promote and support tourism in the County.
- Promote natural resources in the County.
- Promote cultural resources in the County.

Objective: Develop a working relationship with governmental agencies to protect state anglers' allocation of fish harvest on affected lakes within the County to promote recreation, tourism, and economic development.

9. Morrison County Comprehensive Plan

Document Title	Source	Date	URL or Address
Morrison County Comprehensive Land Use Plan 2016-2036	Morrison County Planning and Zoning	2016	http://www.co.morrison.mn.us/index.asp?SEC=A64328BA-9CE8-4CCA-BBE2-9478DAB8D294&DE=7EBA2B74-F232-4D91-9AEE-6E39A5968833&Type=BASIC

Geographic Extent / Scope:

Morrison County.

Organizations / Agencies involved in plan creation:

(p. 6)

The 2015-2016 update involved the creation of a citizen advisory group of 34 persons who were asked for their input on updating the goals and policies contained within Part Three of the 2005 Plan. This group consisted of citizens, and local business leaders as well as representatives of the county's cities and townships, Camp Ripley, lake associations, the agricultural industry, local agencies and citizens of the County with additional representation from the County Board and various county staff. Facilitation was provided by Hometown Planning of Alexandria, MN.

Info on Planning Process:

(p. 15)

The 2016 Plan Update was initiated for the purpose of reviewing the demographic data summarized in Part Two (Morrison County Assessment) as well as an update to the goals, objectives and policies outlined in Part Three (The Future of Morrison County). A Committee was formed of elected and appointed officials, County staff and representatives from interested organizations and the general public. The Task Force held five separate meetings to review the various issues within Part Three of the 2005 Plan and provide input as to how the goals, objectives and policies of the County should change. Subsequent drafts of the Plan were then presented to and discussed with the County Board of Commissioners over the course of several work sessions. A final draft of the updated Plan was then reviewed and recommended for approval by the Planning Commission. The final updated version of the Comprehensive Plan was adopted in the late summer of 2016.

Purpose of Plan:

(p. 6)

The Morrison County Comprehensive Plan is intended to serve as a guide for future development, redevelopment, and preservation of Morrison County. Developed through vast public participation during the 2005 plan rewrite and citizen involvement in the 2016 update, the plan is an extension of the needs and wants of the citizen of Morrison County.

VISION(S)

None listed.

ISSUES

None listed.

GOALS (Goals) / STRATEGIES (Objectives) [Only goals and objectives relevant to natural resources are summarized here] (pp. 83-87)

Goal C1: Recognize the Mississippi River as a crucial natural resource within Morrison County and work to preserve and improve the long-term water quality of the River.

1. Implement the goals, objectives, policies and programs of the Mississippi Headwaters Board when required by law or otherwise deemed appropriate and consistent with the County's Comprehensive Plan.

Goal C2: Preserve natural resources identified as critical and sensitive including wildlife habitats, wetlands, forest lands, etc., within Morrison County.

1. Identify and map all critical and sensitive natural resources within Morrison County.
2. Continually identify, study and monitor strategies intended to preserve and manage natural resources.

Goal C3: Preserve and protect the quality of the County's groundwater and surface water resources to ensure its suitability for drinking water and/or recreations purposes.

1. Implement the goals, objectives, policies and programs of the Morrison County Water Plan when deemed appropriate and consistent with the County's Comprehensive Plan.
2. Continue to support the efforts of public and private organizations such as the Minnesota DNR and state and local lakes associations working to enhance surface water quality when deemed appropriate and consistent with the County's Comprehensive Plan.
3. Continue to study and understand the dynamics of the County's groundwater resources and how various users of those resources affect its quantity and quality.
4. Identify areas of the County that have significant risks for groundwater and surface water pollution or which have already been polluted and study ways in which to protect or restore these resources. Consider soil types, depth to groundwater, demand for drinking water and other relevant factors in identifying the most susceptible areas.
5. Make use of the Geologic Atlas of Morrison County (2014) so as to amend or create land use policies that take into account the unique aspects of each aquifer.
6. Consider amendments, where necessary, to the County's Emergency Management Plan and additional training for emergency responders regarding potential spills or other disasters involving toxic or other significant pollutants. Such planning should focus in particular on areas near railroad tracks, airports and major transportation corridors.

Goal C4: Protect the air quality of Morrison County.

1. Implement air, dust, odor, and noise regulations contained within the Morrison County Land Use Ordinance.
2. Consider the effect on air quality in review of any new development within the County.

Goal C5: Value the forest resources of Morrison County and encourage their management, use, and protection in a sustainable manner.

1. Preserve, to the extent possible, trees within new proposed developments and define appropriate clearing of trees for normal construction and view.
2. Support the forestry management practices, programs, and policies of the Minnesota DNR, the Morrison County Soil & Water Conservation District and the Camp Ripley Military Reservation.
3. Support public education programs related to forestry management and protection.

Coal C6: Value the gravel and mineral resources of Morrison County and encourage their management, use, and protection in a responsible manner.

1. Preserve, to the extent possible, areas of gravel or mineral deposits as land is converted to other uses.
2. Identify areas where uses of land other than gravel or mineral extraction may be of higher value and work with landowners to help them make informed decisions regarding the use of these lands.

Goal D1: Work to ensure that development occurring within the County's watersheds is done in a thoughtful and deliberate manner so as to balance environmental, social and economic goals to the greatest extent possible.

Goal D2: Seek opportunities to educate county staff, shoreland property owners and the general public as to the impacts on water quality from development and the various land uses in a watershed.

Goal D3: Ensure that the County's lakes and rivers remain a resource that is available for use and enjoyment by the general public.

Goal D4: Recognize the character of established neighborhoods in the County's river and lakeshore areas so as to maintain and enhance the attractiveness of these neighborhoods. Consider adopting policies or regulations tailored to each unique type of neighborhood so as to preserve their individual character.

Goal D5: Explore with the DNR, other state and local agencies and shoreland property owners the concept of regulations that are performance-based and tailored to the individual area rather than proscriptive "one size fits all" regulations wherever possible. Require implementation of mitigation practices during new development (whether by administrative permit, conditional use, variance or other approval process) to address the impacts of existing development and promote overall improvements to water quality as an integral part of the effort.

Goal D6: Seek to amend and create shoreland land use regulations so that they can be easily understood and consistently enforced.

Goal D7: Develop an inventory and/or assemble a series of existing or new maps to identify factors relevant to making informed decisions in shoreland areas. Such information may include lake depths and types of aquatic vegetation along each section of shorelines, fish spawning areas, near-shore drainage patterns including the location of defined drain ways entering the waterbody, locations of lots with nonconforming lake or river setbacks, contiguous nonconforming lots under common ownership which must be considered combined by state or local law, areas of natural shorelines, or other information deemed useful.

Goal D8: Work with Lake Associations, state and local government agencies, and tourism organizations to help prevent the spread of Aquatic Invasive Species (AIS). Study and understand which lakes and rivers are most and least susceptible to this spreading so that prevention efforts can be developed and prioritized accordingly.

Goal D9: Recognize the importance of stormwater management to the preservation and enhancement of the County's lakes and rivers and implement policies and regulations that effectively manage stormwater runoff.

Goal D10: Work to better coordinate with federal, state and local government agencies and non-profits, lake associations and others with an interest in shoreland development to effectively balance the benefits that arise from development of shoreland areas with the need to protect, preserve and restore valuable natural resources.

1. Continue to maintain and develop relationships with local, state and federal agencies so as to avoid duplication of efforts.
2. Work with lake associations, Lake Improvement Districts, SWCD and others to identify existing non-compliant subsurface sewage treatment systems (SSTS) and identify both voluntary and regulatory methods for ensuring they are inspected and updated as necessary.
3. In areas with small lots or other limitations to effective long-term sewage treatment, seek to encourage the acquisition or preservation of nearby land suitable for community sewage treatment systems.
4. Work with Lake Associations, Lake Improvement Districts, local farm operators, SWCD, the Mississippi Headwaters Board, the MN Department of Natural Resources, the M:N Pollution Control Agency and other interested parties to promote the installation and enhancement of vegetative buffers and other Best Management Practices (BMPs) for surface water protection along residential and commercial shoreland properties. Prioritize these efforts in areas particularly susceptible to erosion or surface water pollution.
5. Continue to enforce state shoreland regulations limiting new feedlots in shoreland areas.
6. Work with pasture farm operators and existing feedlot operators in shoreland areas to ensure proper manure management and prevent pollution of surface and groundwaters.
7. Develop educational materials or programs for Board of Adjustment and Planning commission members, as well as applicants for variances, conditional use permits and other similar approvals regarding the legal requirements, limitations and other factors involved in rendering decisions on such applications. Such decisions should be based on the clear presence of a practice difficulty based on the property itself rather than the individual needs or desires of the applicant.
8. Assemble, develop and distribute clear and informative materials to educate the public regarding shoreland best management practices, the County's shoreland regulations, and the necessary procedures for ensuring compliance with these regulations.
9. Review the impact of back lot development and access lots on surface water use, and quality and make ordinance revisions necessary to minimize these impacts.
10. Study and consider the development of clear policies relating to existing and new issues relating to shoreland areas, including vacation rental of homes in residential settings, the creation or expansion of resorts and campgrounds, the conversion, expansion or replacement of seasonal lakeshore cabins into year-round homes and the spread of invasive species.

11. Support the Objectives and Implementation Methods outlined in the Mississippi Headwaters Board's Comprehensive Management Plan and ensure that their "Standards for Land Use" are properly incorporated into the County's Land Use Ordinances when deemed appropriate and consistent with the County's Comprehensive Plan.
12. Ensure that efforts to protect surface waters consider activities and land uses throughout the entire watershed.
13. Work with the MPCA, DNR, SWCD, Mississippi Headwaters Board, Lake Associations, Lake Improvement Districts, agricultural producers and others to develop educational materials and regulations, when appropriate, to address impacts to water quality coming from areas not regulated under DNR shoreland rules. Consider the adoption of regulations to address these concerns when and where deemed appropriate.
14. Review existing floodplain regulations to ensure consistency with state and federal requirements as well as to address the potential for expanded flood risks from more frequent and intense storm events.
15. Implement the action items identified within the Aquatic Invasive Species Prevention Plan for Morrison County, originally adopted in 2014.
16. Update the Aquatic Invasive Species Prevention Plan for Morrison County on an annual basis to assess the effectiveness of the action items and determine the need for amendments.
17. Recognize efforts by local and regional organizations to protect and enhance water quality in the County and take action to implement their recommendations when deemed appropriate and consistent with the County's Comprehensive Plan.

Goal E5: Support and promote the development and maintenance of Parks, Open Spaces and other recreational facilities in the county.

1. Encourage the development and expansion of recreational areas in the county that provide for rest, relaxation and enjoyment for the residents of Morrison County.
2. Coordinate with other local jurisdictions, where appropriate, to enhance the variety of park lands, recreational equipment and facilities and recreational programs available to the public.
3. Consider improvements to County park lands to enhance their accessibility by the disabled, elderly and young children when designing and constructing improvements.
4. Promote the county's parks and recreational facilities to local citizens as well as to visitors and tourism organizations.
5. Explore the acquisition of corridors of land to provide additional recreational opportunities, connections between public parklands, wildlife habitat and migration corridors, and/or protection of sensitive environmental features.
6. Seek to create recreational opportunities connecting public park lands and public waters throughout the County.
7. Monitor grant and other funding opportunities from both public and private organizations related to the acquisition, expansion, and enhancement of County park lands and recreational facilities. Apply for such funding when appropriate.

10. Pine County Comprehensive Plan

Document Title	Source	Date	URL or Address
Pine County Comprehensive Plan 2017-2030 (DRAFT)	Pine County Planning and Zoning	2016	http://www.co.pine.mn.us/index.asp?Type=B_BASIC&SEC=%7BF4A01798-E640-4A81-BCDA-AA3404063C6C%7D

[Note to the reader: This Comprehensive Plan is in the draft stage and therefore this summary may be subject to change]

Geographic Extent / Scope:

Pine County.

Organizations / Agencies involved in plan creation:

See 'Info on Planning Process' below.

Info on Planning Process:

(pp. 3-4)

This plan was created by a steering committee of local residents, Planning Commissioners, and County Commissioners. Assistance was offered by Pine County staff and consultation from the Great Plains Institute. Resident and stakeholder input is of utmost importance in the creation of comprehensive plan, therefore, the steering committee sought as much public input as possible within the confines of budget and timeline. In January 2016 a survey was distributed throughout the community. A majority of the 521 survey responses were completed electronically. In March 2016 public meetings were held in Sandstone, Rutledge, and Pine City. In both the survey and the public meetings the public was invited to share what they value about the community, what challenges they feel the community has, and which challenges they would like to see addressed in coming years. The results are provided in Appendix D.

Once the community input was summarized, the steering committee began to draft concerns and facts, as well as recommendations for the comprehensive plan. In that process two topics emerged as needing more information: mental health and housing. To gather more information focus group meetings were held in October 2016: one invited public and private mental health professionals, the other invited housing stakeholders. Both groups were tasked to identify facts and concerns as well as draft recommendations. The complete results are shown in appendices E and G respectively.

Purpose of Plan:

(p. 3)

A comprehensive plan is an expression of the community's vision for the future and a strategic map to reach that vision. The plan guides future development of land to ensure a safe, pleasant, and economical environment for residential, commercial, industrial, and public activities. The plan, which is recognized under State law (MN 393.24), is to serve as the County's primary policy document, guiding County programs, regulations, investments, and practices. The

comprehensive plan is meant to be broad and creates a framework to guide County Commissioners and staff in making decisions and does not make decisions in itself.

VISION(S) [Only visions relevant to natural resources are summarized here] (p. 1)

- Develop and maintain trails for all user types.
- Create recreational opportunities on county lands to maximize their potential.
- Manage natural resources to optimize environmental and economic benefits in perpetuity.
- Ensure that development protects natural areas as well as water quality and habitat.

ISSUES [Only issues relevant to natural resources are summarized here] (pp. 16-20)

- Emerald ash borer has infested portions of Chisago and St. Louis counties, putting Pine County ash stands at risk of infestation.
- As of December 2016 Oak Wilt has been confirmed in twelve locations in Pine County.
- The Minnesota DNR's General Andrews Nursery historically housed a robust program in Willow River, contributing average annual wages of \$350,000, and growing numerous nursery trees. The program has since closed.
- There is a significant amount of speculative aggregate resources identified within Pine County (Map 5, Appendix A). The County does not monitor aggregate mine development or reclamation, which poses a threat to groundwater quality and resource longevity.
- In the survey of the community, 248 out of the 430 responding stated protecting natural areas and water quality should be a primary goal over the next 20 years (Question 6, Appendix D).
- A great deal of Pine County's residential development is adjacent to lakes and rivers, which poses water quality risks.
- New construction of transportation right-of-ways (roads, rail, trails) fragments wildlife habitat and may suppress biodiversity.
- ATV travel in road ditches has been demonstrated to cause soil erosion, impacting water quality and ecosystem health.

GOALS (Goals) [Only goals relevant to natural resources are summarized here] (pp. 13-16)

- **Recreation Goal 1:** Identify, support, and promote existing recreational assets for tourism development and resident education.
- **Recreation Goal 2:** Develop and maintain trails for all user types.
- **Recreation Goal 3:** Create recreation opportunities on county lands to maximize their potential.
- **Natural Resources Goal 1:** Manage natural resources to optimize environmental and economic benefits in perpetuity.
- **Natural Resources Goal 2:** Ensure that development protects natural areas as well as water quality and habitat.
- **Natural Resources Goal 3:** Reduce solid waste being landfilled by providing residents and businesses education and opportunities to reduce, reuse, and recycle.

STRATEGIES (Recommendations) [Only recommendations relevant to natural resources are summarized here] (pp. 14-17)

- **Recreation, Economic Recommendation 1:** Consider adoption of a countywide zoning ordinance to address scattered residential development, incompatible uses, and orderly development supported by existing infrastructure to ensure opportunities for tourism and recreation.
- **Recreation, Economic Recommendation 2:** Develop a Countywide recreational (parks and trails) plan.
- **Recreation, Economic Recommendation 3:** Support development of the Oberstar segment of the Munger Trail, which is the missing segment from the Twin Cities to the Twin Ports.
- **Recreation, Economic Recommendation 4:** Increase information on the County website about existing recreational opportunities.
- **Natural Resources, Economic Recommendation 1:** Explore objectives with the industries which rely on natural resources (timber, mining, etc)
- **Natural Resources, Economic Recommendation 2:** Support reforestation programs such as reviving the General Andrews Nursery.
- **Natural Resources, Economic Recommendation 3:** Support education of rural land owners on management considerations including invasive species such as Oak Wilt, Emerald Ash Borer, European Buckthorn and noxious weeds.
- **Natural Resources, Economic Recommendation 4:** Adopt countywide zoning ordinance to facilitate wise development of renewable energy production sites.
- **Natural Resources, Economic Recommendation 5:** Analyze gravel deposit inventory to forecast resource availability into future.
- **Natural Resources, Economic Recommendation 6:** Limit development in floodplain areas to minimize risk of safety and property loss (Future Land Use Map, Appendix B).
- **Natural Resources, Environmental Recommendation 1:** Consider adoption of a countywide zoning ordinance to address scattered residential development, incompatible uses, preservation of natural resources, and orderly development supported by existing infrastructure.
- **Natural Resources, Environmental Recommendation 2:** Ensure the current Pine County Water Plan is implemented.
- **Natural Resources, Environmental Recommendation 3:** Explore changing the County Water Plan to "One Watershed One Plan" in order to position the County water resources for greater state grant funding eligibility.
- **Natural Resources, Environmental Recommendation 4:** Adopt gravel pit permitting program via countywide zoning to guide safe site locations, best practices for reclamation, and preserve resource availability into the future.
- **Natural Resources, Environmental Recommendation 5:** Pursue opportunities to increase residential and commercial recycling convenience and accessibility in order to reduce landfill pressure.
- **Natural Resources, Environmental Recommendation 6:** Ensure that property development in shoreland and natural areas do not produce negative environmental outcomes.

11. Sherburne County Comprehensive Plan

Document Title	Source	Date	URL or Address
Sherburne County Comprehensive Land Use Plan 2010-2030	Sherburne County Planning and Zoning	2011	https://www.co.sherburne.mn.us/zoning/pz/compplan.php

Geographic Extent / Scope: (p. 8)

Sherburne County administers planning & zoning authority in townships, excluding Becker Township, and the Haven Township Orderly Annexation area, except the County does regulate Shoreland, Floodplain, and Wild & Scenic River zoning districts within both townships.

Organizations / Agencies involved in plan creation: (p. 6)

The 2010-2030 Comprehensive Land Use Plan was completed by the Sherburne County Planning & Zoning Department. The Department includes four divisions; Zoning, Building, Solid Waste, and Parks & Trails.

Info on Planning Process: (pp. 16-17)

Comprehensive plan update timeline:

1. October 2008: Planning and Zoning Staff Review Committee outlines Comp Plan.
2. January-April 2009: Planning and Zoning Staff meet with each Town Board to discuss survey re: preferences for zoning ordinance changes.
3. September 2009: County Board Workshop, review Township preference survey, Goals & Objectives.
4. October 2009: Staff update at Association of Townships Quarterly Meeting.
5. November 2009-January 2010: Draft Comp Plan maps issued to each Town Board for comments.
6. March 2011: Draft Comp Plan issued to County Commissioners, Planning Commissioners, Town Board members, published on County webpage with notice given to surrounding communities and agencies.
7. April 2011: Public Hearing. Feature articles in Sherburne County Citizen and West Sherburne Tribune.
8. May 2011: County Board Workshop.
9. May 2011: Open House at Palmer Town Hall (2 attended), and Livonia Town Hall (4 attended).
10. May 2011: Public Hearing (continued). Feature article in the Environmental Educator (summer 2011) distributed to every county household.
11. July 2011: Public Hearing (continued).
12. September 2011: County Board Adoption.

Purpose of Plan: (p. 8)

The purpose of the Comprehensive Plan (Comp Plan) is to guide future land use through the year 2030 in areas within the County's zoning authority. The Comp Plan is the legal basis for establishing Zoning and Subdivision ordinances which regulate current land use. Additionally,

the intent of this update of the Comp Plan is to integrate when applicable, township planning efforts into the County's plan that have occurred since it was last updated in 2004.

ISSUES

None listed.

VISION(S) (Goals) / GOALS (Policies) / STRATEGIES (Implementation strategies) [Only goals, policies, and implementation strategies relevant to natural resources are summarized here] (pp. 140-143)

Protect and preserve the County's natural resources for the benefit of County residents and the natural ecology.

Natural Resources Policy 1: Sherburne County's natural resources (soil, water, and ecology) provide unique opportunities and constraints. It is the County's policy to consider these opportunities and constraints when making land use decisions.

1. Complete the Sherburne County Geological Atlas to provide a better understanding of local aquifers and their relationship to surface waters. The geological atlas will map bedrock and surficial geology, stratigraphy (layers), bedrock topography, depth-to-bedrock, subsurface geology, and mineral resources. The geological atlas will assist in identifying areas not appropriate for water intensive land uses, and those uses which may contaminate soil and groundwater.
2. When a change of land use is proposed requiring a public hearing for a property within a Wellhead Protection Area within the County's zoning authority, the County will notify the applicable agency.
3. Heavy Industrial facilities shall be designed and constructed to prevent contamination of soils, surface water and ground water.
4. The County will continue to require that a property's Subsurface Sewage Treatment System (SSTS) meet minimum standards when the property is sold or transferred by mortgage, contract for deed, or other transfer of ownership, and when a building permit is obtained from the County.
5. The County will continue to provide well water testing kits to County residents.

Natural Resources Policy 2: Sherburne County includes 125 lakes, 493 miles of rivers & streams, and about 52,898 acres of wetlands (excluding lakes). Surface waters provide a significant scenic and recreational amenity to County residents in addition to filtering pollutants prior to reaching aquifers. Surface waters also provide habitat for birds, fish, and animals. It is the County's policy to protect surface waters as required by Federal and Minnesota regulations, and to promote restoration efforts.

1. Within the County's zoning jurisdiction, continue to enforce applicable sections of the Federal Clean Water Act and State regulations, including but not limited to administration and enforcement of Shoreland regulations, the Wetland Conservation Act, and the National Pollutant Discharge Elimination System (NPDES).
2. Collaborate with the Federal Emergency Management Agency (FEMA) through the National Flood Insurance Program (NFIP) as a Cooperating Technical Partner (CTP), and amend and enforce the Floodplain Ordinance, as required by FEMA.

3. Consider amending the Scenic and Recreational River ordinance in cooperation with the DNR, so that it is consistent with the Zoning and Subdivision ordinances. Continue to enforce ordinances to protect the environment.

Natural Resources Policy 3: Sherburne County is located in the Anoka Sand Plain, which is a unique ecological environment in Minnesota. It is the County's Policy to promote native plant species, control noxious weeds as required by Minnesota laws, and to encourage the preservation of contiguous areas for the migration of native birds and animals.

1. Consider requiring that new developments containing rare biological species and natural plant communities preserve these features through a conservation easement, land dedication, or by other approved means. These features have been identified by the MN DNR on the "Natural Communities and Rare Species of Sherburne County, Minnesota" map, completed in 1993. Field verification would be necessary as part of the County's development review process.
2. Consider Natural Resource Inventory (NRI) data when reviewing land use applications (when available). An NRI is an inventory of plant ecology (i.e. forest, woodland, shrubland, etc.). An NRI may include a more detailed inventory called a Minnesota Land Cover Classification System (MLCCS). An MLCCS grades the quality of ecological areas on an A-D scale. An NRI and MLCCS can identify key ecological areas for preservation. The County will continue to pursue grants to fund additional studies and conservation efforts.
3. Continue to control and prevent the proliferation of noxious weeds as required under MN Statute 18.81. The County Agricultural Inspector will continue to work with the public, township and city weed inspectors, and the Minnesota Department of Agriculture to implement this task.
4. Support efforts to manage the spread of Oak Wilt, and other tree diseases and infestations.

Natural Resources Policy 4: Sherburne County's waterways and aquifers are susceptible to pollution because of the County's sandy permeable soils. It is the County's policy to educate the public about the environment, and promote best management practices.

1. Continue to provide public information on the County's website, such as information about floodplains, shorelands, domestic water and wells, and wetlands.
2. Continue to publish articles in the Environmental Educator (distributed county-wide).
3. Continue to facilitate educational workshops to inform residents of conservation efforts, including; the value of waterways and wetlands; promote careful application of surface chemicals such as lawn fertilizers; and the status of impaired waterways.
4. Promote the Priorities, Goals and Objectives of the Sherburne County Local Water Management Plan.

12. Wright County Comprehensive Plan

Document Title	Source	Date	URL or Address
Wright County Land Use Plan	Wright County Planning and Zoning	2007 and 2009	https://www.co.wright.mn.us/184/Wright-County-Land-Use-Plan

Geographic Extent / Scope:

Northeast and Northwest quadrants of Wright County.

Organizations / Agencies involved in plan creation:

None listed.

Info on Planning Process:

Purpose of Plan:

This Land Use Plan serves the following purposes:

- Articulates a long-range vision that can serve Wright County through the future, and also provides specific policies that address current issues.
- Addresses physical planning issues such as land use and resource protection.
- Identifies key issues, sets goals, and defines policies to achieve the goals. This provides the legal basis for land use control and a link to Wright County's zoning and subdivision ordinances.
- Guides Wright County Staff, the Planning Commission, the County Board, Town Boards, private property owners, and developers in decisions related to land use planning in the NEQ and NWQ.

VISION(S)

None listed.

ISSUES

None listed.

GOALS (Major Goals) / STRATEGIES (Policies) [Only goals and policies relevant to natural resources are summarized here]

Major Goal 4: To protect, preserve and enhance the quality of the natural environment and require development to take place in a manner that makes wise use of Wright County's resources without degradation.

- The County will promote the use of soil conservation management principles by all landowners. Farmers who obtain tax benefits under the Farmland Preservation program

and all development proposals will be required to abide by sound soil conservation principles.

- Residential development in rural areas will only be allowed where onsite hydrologic and soil tests substantiate the suitability of the land for sewage treatment systems over the long term. Where tests indicate that only nonstandard systems will function properly, larger lot sizes may be required or, in severe cases, proposals may be denied.
- Steep slopes, wetlands, unstable soils and other sensitive environmental features will be protected, as far as practical, in their natural, stable state. Development on or near such areas may be required to provide larger lot sizes, enhanced setbacks or other conditions to protect the sensitive features.
- Unless otherwise provided in the Land Use Plan map, only single – tier riparian development will be permitted on lakes determined to be suited to residential development.
- Development of lakeshore property shall abide by State Shoreland Management rules to maintain, as far as practical, a natural shoreline and natural views of shoreland areas from the lake's surface.
- The intensity of development in rural areas shall be restricted so as not to overload natural surface drainage systems. Where development is proposed that will add significant impervious surface areas or interfere with natural drainage systems, the developer will be required to provide facilities to compensate for any negative impacts.
- Mining and other commercial or industrial endeavors shall be required to shield adjoining property from deleterious effects.
- In accord with County policies and regulations, the use of planned unit development (P.U.D.) and residential P.U.D. concepts will be encouraged where such developments provide enhanced environmental protection, protect natural features and result in a better overall design than would result from standard subdivision practices.
- In general, development activity should take place in harmony with the existing, stable, natural environment. Development proposals should be adapted to suit the natural landscape, rather than altering the land to suit the development.

13. Benton County Water Plan

Document Title	Source	Date	URL or Address
Benton County Comprehensive Local Water Management Plan 2008-2018	Benton Soil and Water Conservation District	2008	https://www.soilandwater.org/water-plan/

[Note to the reader: This Water Plan is set to expire in 2018 and Benton County SWCD is currently working on writing a new Local Water Management Plan]

Geographic Extent / Scope:

Benton County.

Organizations / Agencies involved in plan creation:

Members of Water Resources Advisory Committee included representatives from the Benton County Township Officers Association, Benton County Board of Commissioners, Little Rock Lake Association, Elk River Watershed Association, Benton County municipalities, and local citizens.

Agency advisors include representatives from the Natural Resources Conservation Service, Minnesota Department of Health, Minnesota Department of Natural Resources (Waters and Fisheries), Minnesota Pollution Control Agency, Minnesota Extension Service, Minnesota Rural Water Association, Benton County Department of Development, Board of Water and Soil Resources.

Info on Planning Process:

None listed.

Purpose of Plan:

(p. 1)

The purpose of the Benton County Comprehensive Local Water Management Plan is to:

- Identify and address existing and potential issues for the protection, management, and development of water resources and related resources in the County
- Identify priority concerns to be addressed during the effective time frame of the plan
- Develop goals and implement actions that improve water quality and quantity and related resource management and planning in the County

VISION(S)

None listed.

ISSUES (Priority Concerns) / GOALS (Goals) / STRATEGIES (Objectives and Actions)

[The Goals, Objectives, and Actions are grouped under three Priority Concerns as listed in the 'Priority Concerns' section of the Plan] (pp. 29-33)

Feedlot and Nutrient Management

Goal 1: Reduce or minimize the negative impact of animal manure and fertilizer on surface and groundwater.

Objective 1: Increase adoption of feedlot site Best Management Practices (BMPs).

- a. Host field days, meetings, publish written material, etc.
- b. Recruit participants through non-traditional methods, i.e., on farm visits.
- c. Support compliance with MN Rule 7020 and other regulations related to water quality.
- d. Promote low cost feedlot solutions.
- e. Demonstrate economic, environmental, and other benefits of Best Management Practices adoption.
- f. Promote and advertise pasture/grazing management planning.
- g. Identify and work with non-compliant farms to install Best Management Practices.

Objective 2: Increase adoption of manure and fertilizer application BMPs.

- a. Provide basic manure management tools and services, i.e. spreader calibration, manure and soil testing, spreading equipment, etc.
- b. Conduct demonstration trial plots and other on farm educational work with producers in cooperation with private/public entities.
- c. Host field days, meetings, publish written material, etc.
- d. Demonstrate economic, environmental, and other benefits of Best Management Practices adoption.
- e. Recruit participants through non-traditional methods, i.e., on farm visits.
- f. Support compliance with MN Rule 7020 and other regulations related to water quality.
- g. Promote and advertise pasture/grazing management planning.
- h. Promote adoption of manure management BMP's, targeting efforts on dairy and poultry manure and/or land areas of highest concern.

Objective 3: Increase the adoption of improved manure handling, pasture management, and other BMPs related to water quality with small non-traditional hobby/enterprise farm operators.

- a. Promote and advertise pasture/grazing management planning.
- b. Partner with other entities who provide programs and services to this audience to adopt BMP's.
- c. Investigate and promote improved manure handling and application systems, i.e.: community composting, small rental equipment.

Objective 4: Resolve feedlot regulation/delegation issue.

- a. Consider need for LGU review of new projects on feedlots under 300 animal units.
- b. Host exploratory meeting(s) regarding the county feedlot delegation topic, invite other counties/interested parties to speak on the topic.

Development

Goal 1: Balance open space and development in Benton County in such a way as to maintain and/or improve the region's water quality.

Objective 1: Develop a natural resources inventory that identifies rare/critical/vulnerable resources relating to water quality.

- a. Assist in the development of the County Geologic Atlas.
- b. Contact agencies (DNR, County parks, Extension Service, others) to identify & compile list of existing inventories of rare/critical/vulnerable water resources.
- c. Develop a list of components that should go into an inventory of rare/critical/vulnerable water resource areas.
- d. Survey Local Government Units and public to identify water resource concern areas and priorities.
- e. Create sensitive areas management plan using the resource concern areas and priorities developed in d) & list compiled in b).
- f. Develop tools such as conservation subdivision for use in designated areas as defined in e).
 - 1) Host Alternative Shoreline Ordinance standard discussion between Local Government Units.

Objective 2: Prepare and provide materials to developers on requirements for water quality and quantity protection through a unified local government delivery system.

- a. Develop a single source of contact for developers to receive information about rules/regulations for all county and township development projects.
- b. Create a quick reference guide on development regulations.
- c. Bring together Local Government Units to discuss development issues and the needs associated with those issues.
- d. Educate townships about municipal separate storm sewer systems (MS4) plans if they do not have them.
- e. Develop/utilize and distribute materials about best management practices to new landowners at time of purchase.

Goal 2: Encourage Benton County local government units to adopt development related ordinances and policies to maintain and enhance the region's water resources.

Objective 1: Review and amend (if necessary) MS4 plans in watersheds that have completed TMDL loading allocations.

- a. Assist MS4s with Total Maximum Daily Load (TMDL) implementation.

Objective 2: Utilize plat process/policy to implement urban best management practices.

- a. Create & promote incentives to establish and maintain low impact development.
 - 1) Explore method to make low impact development techniques standard.
 - 2) Identify and define low impact development techniques.
 - 3) Educate developers, citizens, landowners about Low Impact Developments (LIDs) using newsletter, i.e. Solid Waste Newsletter.
 - 4) Promote distribution of educational materials for lawn/yard best management practices.
- b. Explore updating standards for high rainfall events.
 - 1) Research to find an appropriate standard for rainfall on runoff requirements for developments.
- c. Identify standard and optional Best Management Practices for development.
- d. SWCD staff serve on plat review committee as BMP technical representative.

Objective 3: Mandate installation of perennial vegetation filters for public ditches (103E.021).

- a. Include the installation of perennial vegetation filters as part of any ditch cleaning/maintenance project, i.e. grass filters.
 - 1) Educate/offer cost sharing and technical assistance to landowners to install grass buffers on private ditches.
- b. Review public ditch inventory, create electronic map and update it on a regular basis.

Goal 3: Provide information and education opportunities to the appropriate audience concerning development impacts on water resources through a coordinated local government effort.

Objective 1: Develop/coordinate a unified outreach effort to address water resource issues in the county.

- a. Develop a crisis delivery system to address emergency or hot topic issues as they arise.
 - 1) Develop procedures to address various levels of water related crisis for protection of the public and the appropriate level of response and notification.
 - 2) Inform the public during crisis using County City Watch (automatic dialer).
 - 3) Complete and maintain digital parcel layer with names, addresses, and phone numbers.
- b. Incorporate water resource education into a county wide environmental newsletter.
- c. Explore options for creating or partnering to create water resource website for the county.
- d. Develop a marketing plan to promote water quality within the county (work with local university business/marketing programs for assistance).
- e. Establish a county wide educational water resource program that incorporates all audiences and ages.
 - 1) Seek to establish a county wide “Water Week” through a county proclamation or other method to highlight the importance of water issues within Benton County.
- f. Encourage townships to have annual water resource meetings to address water issues within the township, possibly in conjunction with the County Water Week.

Goal 4: Pro-actively plan for future growth in order to protect water resources and minimize land use conflicts.

Objective 1: Plan for full build out around rapidly developing areas for watershed based quantity and quality.

- a. Identify full build out areas around rapidly growing communities using Local Government Unit Comprehensive Plans.
- b. Model the impact of full build out in the high growth zones to plan for future developments to determine potential water quality/quantity issues.

Groundwater Quantity and Quality

Goal 1: Protect and maintain groundwater quality resources in Benton County.

Objective 1: Maintain/promote existing cooperative partnerships that monitor groundwater.

- a. Support Department of Agriculture Central Sands Monitoring Network (initiate a discussion of needs).
- b. Promote information sharing regarding monitoring projects (trends), i.e.: Anoka Sandplain, municipalities.
- c. Work with Dept of Agriculture & Health to identify additional groundwater monitoring needs in County.
- d. Establish a groundwater quality database.

Objective 2: Develop and implement Wellhead Protection Plans (WHPA) for all public/community water supplies in County.

- a. Work with Wellhead Protection Area (WHPA) managers to share information and centralize monitoring data.
- b. Work with partners to educate landowners within the Wellhead Protection Area about Best Management Practices.
- c. Work with LGUs to address zoning issues in WHPAs.
- d. Promote cost share programs to encourage BMPS in WHPA.
- e. Recognize drinking water protection areas in existing and future water resource plans by establishing priority protection area overlays on land use and zoning maps, specifically Mississippi River.
- f. Create a process to identify performance standards for sensitive areas, recharge areas, wellhead protection areas that are impacted by developments such as storage tanks, stormwater seepage ponds, mining areas, etc.

Objective 3: Continue to regulate subsurface sewage treatment system (SSTS) in the County.

- a. Develop and implement a plan to identify subsurface sewage treatment system (SSTS) priority areas in County.
- b. Develop and implement a plan and process to inspect and/or upgrade SSTS in priority areas of the County.
- c. Promote grants and low interest loan programs to upgrade SSTS.
- d. Inventory Class V injection wells (motor vehicle waste disposal wells, large capacity septic systems and cesspools, storm water drainage wells, aquifer remediation wells) in sensitive areas and work with EPA to meet Class V Wells Rule Revisions.

Objective 4: Develop plan to eliminate unused wells.

- a. Develop process to inventory unused wells in County.
- b. Promote and utilize cost share program to seal unused wells.
- c. Develop process to require unused wells to be sealed (currently wells must be sealed to complete a title transfer). A landowner who wishes to keep an unused well may do so by obtaining an annual maintenance permit at \$150 cost.

Goal 2: Protect and maintain groundwater quantity resources in Benton County.

Objective 1: Establish relationships between Benton County Local Government Units (LGUs) for water resource sharing and protection.

- a. Identify & protect possible regional water supplies.
- b. Identify and protect possible recharge areas.
- c. Identify intercommunity measures to augment community water supply in the event of water contamination or shortage.

- d. Continue to monitor groundwater levels in the County. Work with MN DNR Waters to investigate groundwater pumping (irrigation) effects on surface water base flow.
- e. Work with municipalities and agricultural community to conserve water use & implement BMP's.

Objective 2: Assist in the development of the County Geologic Atlas.

- a. Work with appropriate entities to identify aquifer thresholds to maintain adequate water supply for consumptive use.
- b. Maintain surface water resources (i.e. lakes, rivers, wetlands).

14. Chisago County Water Plan

Document Title	Source	Date	URL or Address
Chisago County Local Water Management Plan 2013-2023	Chisago County Environmental Services Department	2013	http://www.co.chisago.mn.us/399/Water-Plan

Geographic Extent / Scope:

Chisago County.

Organizations / Agencies involved in plan creation

Members of the Water Plan Policy Team included representatives from the Chisago Soil and Water Conservation District, Chisago County Public Health, Chisago County Board, Chisago County Zoning/Environmental Services, and local citizens.

Members of the Technical Advisory Committee included representatives from the Minnesota Department of Health, Minnesota Pollution Control Agency, Chisago Soil and Water Conservation District, Minnesota Board of Water and Soil Resources, Minnesota Department of Agriculture, Comfort Lake Forest Lake Watershed District, and Minnesota Department of Natural Resources.

Info on Planning Process:

(pp. 8-9)

The Chisago County Board of Commissioners adopted Resolution No. 11/1019-1 – Authorization to revise and update the Chisago County Comprehensive Water Management Plan on October 19, 2011. This resolution is authorized under Minnesota Statutes, Chapter 103B.301, the Comprehensive Local Water Management Act.

The resolution states that the Chisago County Board of Commissioners delegates to the Chisago County Environmental Services/Zoning Department the responsibility of coordinating, assembling, writing, and implementing the revised local water management plan pursuant to M.S. 103B.301 as implemented through the Water Plan Policy Team (Policy Team).

The Policy Team consists of five citizen members (appointed by the Chisago County Board of Commissioners), one supervisor from the Chisago Soil & Water Conservation District, one County Commissioner, and the Director of Chisago County Zoning/Environmental Services. In addition, the Policy Team is supported by the Technical Advisory Team, which is made up of representatives from Chisago County Public Health, Chisago Soil & Water Conservation District, Comfort Lake Forest Lake Watershed District, Minnesota Board of Water & Soil Resources, Minnesota Department of Natural Resources, and the Natural Resources Conservation Service.

Water Plan administration and Policy Team coordination is overseen by the Chisago County Water Resource Manager.

Purpose of Plan:

(p. 9)

The purpose of the Chisago County Local Water Management Plan is to set County watershed priorities. The County will use these priorities to obtain and use resources to protect, improve, and conserve water resources in Chisago County including lakes, rivers, wetlands, and groundwater.

VISION(S)

(p. 9)

Surface and groundwater quality and quantity in Chisago County is preserved, protected, restored, and enhanced for current and future generations.

ISSUES (Priority Concerns) / GOALS (Goals) / STRATEGIES (Objectives) [The Goals and Objectives are grouped under six Priority Concerns as listed in the ‘Goals and Objectives’ section of the Plan] (pp. 48-77)

Protect Quality and Quantity of Groundwater

Goals

- Protect groundwater from human caused contamination to meet or exceed applicable drinking water standards.
- Manage groundwater withdrawal to protect and conserve current and future uses including drinking water, recreation, ecological, agriculture, commercial, and industrial uses.

Objectives

1. Develop a County groundwater plan, subject to Minnesota Statutes, that lays out the technical framework, issues, policies, and implementation actions for the protection and conservation of groundwater resources including those in the Mount Simon/Hinckley aquifer. The plan will include high priority implementation actions to protect the County’s groundwater. Implementation goals will include projects in areas such as: non-agricultural land use, industrial, mining, agriculture, turf, animal waste management, individual sewage treatment systems, source water protection, well management, groundwater supply, groundwater and surface water interaction, and hazardous materials management and transportation.
2. Implement projects identified in the County groundwater plan.
3. Promote the sealing and permanent closure of abandoned wells to protect groundwater. Minnesota Rules specify the requirement for sealing unused wells in Minnesota. Prioritization will be given to areas within a wellhead protection area or a drinking water supply management area.
4. Support local Wellhead and Source Water Protection activities and provide technical assistance and information as requested.
5. Hold a Nitrate Testing Clinic annually in locations where nitrates in groundwater are a concern.
6. Provide drinking Water Test Kits to citizens through the Chisago County Public Health Department and Chisago Soil and Water Conservation District.
7. Use information in the Chisago County Geologic and Hydrogeologic Atlas in decision making.

8. Support improved security of city water supply wells and Wellhead Protection areas.
9. Support protection of water resources by participation in Chisago County Emergency Management Planning.
10. Investigate potential detrimental effects of the process of sand and gravel mining upon ground and surface water in Chisago and adjacent counties and, in particular, the mining and processing of frac sand.
11. Promote comprehensive policies to protect ground and surface water from sand and gravel mining and processing, including frac sand mining.
12. Access Minnesota Department of Health Contaminants of Emerging Concern program for support in outreach and education efforts to enhance citizen understanding of their role in protecting groundwater quality including their use and disposal of pharmaceuticals, personal care products, hazardous materials, pesticides, and fertilizers.
13. Participate in a northeast Twin Cities study of water supplies and lakes to determine: if Chisago County lake levels are being impacted by metro area water use, to what extent lake levels are being impacted by municipal or other water use, and prepare long term plans for lake and groundwater use.

Aquatic Invasive Species

Goals

- Monitor aquatic invasive species for current and new infestations.
- Manage aquatic invasive species to maintain water quality, recreation, and fish and wildlife habitat.
- Develop an aquatic invasive species management plan for up to 10 lakes in the County with public accesses.

Objectives

1. Partner with the Comfort Lake Forest Lake Watershed District, Minnesota Department of Natural Resources, and other agencies to provide watercraft inspections and education on aquatic invasive species at public water accesses throughout the Comfort Lake Forest Lake Watershed District, Chisago Lakes Lake Improvement District, and northern Chisago County.
2. Partner with local lake associations to control Eurasian watermilfoil for purposes of improved navigation.
3. Proactively provide education and information on aquatic invasive species.
4. Develop and implement one comprehensive lake aquatic invasive species management plan every other year using principles of integrated pest management to control specific aquatic invasive species such as common carp, zebra mussels, Eurasian watermilfoil, flowering rush, curlyleaf pondweed, or others.

Noncompliant Septic Systems

Goals

- Keep 100% of Imminent Threat to Public Health septic systems in compliance with State and County standards.
- Bring 50% of failing septic systems in rural unincorporated areas into compliance.
- Bring 80% of failing septic systems in the shoreland zone into compliance.

Objectives

1. Provide inspections and enforcement of Imminent Threat to Public Health and failing septic systems.
2. Provide financial assistance to homeowners for upgrades or repairs of Imminent Threat to Public Health or failing septic systems.
3. Implement a strong septic system education program for homeowners, septic installers, maintainers, designers, service providers, realtors, business owners, and builders. Provide contacts with the public in the office and during field visits, along with news articles in publications such as the Environmental Connections Newsletter.
4. Preserve septic system data by updating septic system index.
5. Support the construction of community wastewater treatment systems in unsewered Rural Village Centers as defined in the Chisago County Comprehensive Plan: Almelund, Sunrise, Palmdale, Rush Point, and Stark. Provide support through staff assistance to communities in researching grant opportunities.
6. Partner with local communities in the effort to connect areas of high density, undersized, riparian lots to community wastewater treatment systems. This includes shoreland areas around the Chisago Lakes Chain of Lakes, Goose Lake, Rush Lake, and resorts such as Rose Hill.
7. Promote and encourage participation in the Chisago County/Chisago Lakes Joint Sewage Treatment Commission Holding Tank Waste Receiving Program and encourage expansion of the program so that septage may be accepted. Promote and encourage all municipal sewage treatment facilities to accept individual sewage treatment system sewage.
8. Mail approximately 200 Septic System Owners Guides each year to owners of new or newly purchased homes or replacement septic systems.
9. Promote use of phosphorus free dishwashing detergent.

Land Use Practices

Goals

- Reduce phosphorus loading from Chisago County to the St. Croix River to help meet 20% basin wide reduction goal.
- Protect surface water from human caused contamination to meet or exceed applicable water quality and environmental standards by implementing local water management plans.

Objectives

St. Croix Basin

1. Implement projects that will help meet the goals of the Lake St. Croix Total Maximum Daily Load Watershed Implementation Plan or that are identified in completed subwatershed assessments including direct drainage areas to the St. Croix River. Actively market local/state/federal conservation programs which provide incentives to landowners to stabilize erosion concerns.
2. Complete subwatershed assessments in all urban and rural portions of Chisago County to determine areas of untreated stormwater and potential best management practices to reduce pollution loading to surface waters. Complete 2 subwatershed assessments per year.
3. Complete whole farm management plans for local agricultural producers to identify best management practice locations to reduce nutrient loading to surface waters. Complete 2 whole farm management plans per year.
4. Implement projects identified in the St. Croix River Escarpment Inventory to stabilize erosion concerns and improve water quality. Assist in stabilization of 2 gullies per year.

Sunrise River Watershed

5. Complete Sunrise River Total Maximum Daily Load Study and Watershed Restoration and Protection Plan.
6. Implement projects that will help meet the goals of the Sunrise River Watershed Restoration and Protection Plan or those identified in completed watershed assessments. Actively market local/state/federal conservation programs that provide incentives to landowners to install 20 best management practices per year to improve overall water quality within the watershed.
7. Provide local sponsorship and participation in completion of US Army Corps of Engineers Sunrise River Watershed Study.
8. Implement projects recommended in the US Army Corps of Engineers Sunrise River Watershed Study and strategies for water quality and aquatic ecosystem management, restoration, and protection.
9. Implement projects recommended in the Soil and Water Assessment Tool model of the Sunrise River watershed.
10. Collect surface water runoff samples at the Spring Creek Farms Discovery Farms monitoring station to determine edge of field pollutant runoff levels.

Chisago Lakes Chain of Lakes Watershed

11. Adopt uniform water protection ordinances within Chisago Lakes Chain of Lakes watershed communities, and possibly areas where Chisago County has jurisdiction, consistent with the Minimal Impact Design Standards Pilot Project.
12. Implement projects that will help meet the goals of the Chisago Lakes Chain of Lakes Watershed Restoration and Protection Plan (TMDL) or those identified in completed subwatershed assessments. Actively market local/state/federal conservation programs that provide incentives to landowners to install 40 best management practices per year to improve overall water quality within the watershed.
13. Install urban best management practices within the Lindstrom Stormwater Retrofit Catchment L20 (Pleasant Hills Park area) to capture and provide treatment of the currently untreated stormwater runoff draining to South Lindstrom lake.

Comfort Lake Forest Lake Watershed District

14. Implement projects that will help meet the goals of the Six Lakes Total Maximum Daily Load Implementation Plan and completed subwatershed assessments. Actively market local/state/federal conservation programs that provide incentives to landowners to install 10 best management practices per year to improve overall water quality within the watershed.
15. Implement projects that will help meet the goals of the District's Capital Improvement Program (2011).
16. Implement projects using the District's Residential, Agricultural, and Urban Stormwater Retrofit programs to help with achieving the in-lake water quality goals established in the Comfort Lake Forest Lake Watershed District Watershed Management Plan.
17. Support development of a Sunrise River Regional Stormwater Management Facility downstream of the City of Forest Lake to help correct problems related to excess nutrient and sediment loads to the Sunrise River and Comfort Lake.
18. Complete an inventory and assessment of the drained and partially drained wetlands within the watershed to prioritize areas for potential restoration to reduce pollutant loading to surface waters.
19. Implement projects that will help meet the goals of the City of Wyoming Surface Water Management Plan

North Branch Sunrise River Watershed

20. Implement projects that will help meet goals of the North Branch Sunrise River Total Maximum Daily Load Implementation Plan or are identified in completed subwatershed assessments. Actively market local/state/federal conservation programs that provide incentives to landowners to install 10 best management practices per year to improve overall water quality within the watershed. Conduct citizen informational meetings.

Rock Creek, Rush Creek, Goose Creek Watersheds

21. Complete Rock, Rush, Goose watersheds Total Maximum Daily Load Study and Watershed Restoration and Protection Plans.
22. Implement projects that will help meet the goals of the Rock, Rush, Goose Creeks Watershed Restoration and Protection Strategies or are identified in completed subwatershed assessments. Actively market local/state/federal conservation programs that provide incentives to landowners to install 20 best management practices per year to improve overall water quality within the watersheds.
23. Partner with other organizations researching new methods to control internal loading of phosphorus in lakes. Examples include iron or aluminum augmentation of lake sediment to control phosphorus in Rush Lake.

Agriculture

24. Implement agricultural best management practices for soil health that increase crop productivity and profitability while improving the environment. Best management practices include: cover crops, reduced tillage practices, conservation crop rotation, nutrient and pest management, and rotational grazing.

25. Assist livestock operators with proper management of manure, wastewater, and contaminated runoff. Prioritization will be to areas with direct discharge to waters of the state. Priority conservation practices include: manure storage facilities, grass filter strips, manure management plans, clean water diversions, and closure of waste storage facilities.

Rural

26. Implement healthy forest initiatives to reduce soil erosion and sedimentation, improve water quality, and create or enhance wildlife habitat throughout Chisago County. Common healthy forest practices include: riparian buffers, private forestland management, native plant community restoration, tree and shrub plantings, native grass plantings, and increased canopy cover in developed areas.
27. Implement projects that will help meet water quality goals of the Chisago County Comprehensive Parks and Trails Plan and other public lands. County parks include: Dennis Frandsen, Fish Lake, Checkerboard, Kost Dam, Ki-Chi-Saga, Sunrise Prairie Trail, and North Sunrise Park Reserve.
28. Develop a plan to remove excess sediment in the shoreland area of Dennis Frandsen Park. Complete appropriate studies, which may include an Environmental Assessment Worksheet, and obtain necessary permits.
29. Implement the plan to remove excess sediment in the shoreland area of Dennis Frandsen Park. Plan may include application of sediment to nearby farmland.
30. Review historic aerial photographs to determine locations of abandoned or converted feedlots adjacent to public waters to identify potential remnant pollutant loading sources.
31. Develop a pilot conservation payment initiative at a watershed level that provides agricultural producers an annual payment based on the level of conservation performances implemented throughout the farm.

Urban

32. Assist local communities with the incorporation and installation of stormwater Best Management Practices to reduce nutrient and sediment loading during reconstruction of local road projects, especially areas with direct discharge of untreated stormwater to public waters. Examples include, but are not limited to: North Branch Maple Street, and City of Lindstrom streets that dead end at a lake.
33. Inspect and assess construction sites before and during construction to ensure that conditions placed upon plats are fulfilled, especially those relating to erosion control, stormwater protection, and wetland compliance. The inspection includes a summary of the soil, water, and vegetative resources, a summary of resource degradation potential, and recommendations on the preservation, enhancement, and protection of the resources.
34. Update the Chisago County Subdivision Ordinance to include standards that will improve water quality of surface water runoff.

Wetlands

35. Administer, educate, and provide resources on the Minnesota Wetland Conservation Act.
36. Administer and provide oversight for several wetland restoration projects on private and public property to provide wildlife habitat, flood storage, and infiltration areas for runoff.

37. Utilize the drained wetlands inventory completed by Chisago County and the US Army Corps of Engineers Sunrise River Wetlands Study to prioritize and install wetland restorations on private and public property to provide wildlife habitat, food storage, and infiltration areas for runoff.
38. Compile and manage a computerized inventory of all Wetland Conservation Act replacement plans, wetland banks, no net loss determinations, and delineations.

Shorelands

39. Update the Chisago County Shoreland Ordinance to be consistent with the anticipated revised State of Minnesota Shoreland Ordinance.
40. Inventory all General Development and Recreational Lakes in the County to determine the percentage of shoreline that has been converted from natural vegetation to maintained yard. Use this inventory to educate and promote landowners to install Best Management Practices that will help capture and treat the runoff from their property before entering their lake.
41. Assist landowners in the installation of best management practices and lakeshore restorations on their property. Priority areas include the Chisago Lakes Chain of Lakes and Comfort Lake Forest Lake watersheds.

Drainage Ditches

42. Develop an inventory of the County public ditch systems, and significant tributaries, including record searching and field verification to confirm locations of existing public ditches. Identify, inventory, and evaluate functions, purpose, and necessity of the Chisago County ditch system. Determine legal status of ditches, rights, and responsibilities as defined in Minnesota Statutes 103E.
43. Develop a plan for management and maintenance of the Chisago County ditch system. Establish a system and protocol for establishing Best Management Practices within the easement right of ways of existing public ditches.
44. Implement the management and maintenance plan for the Chisago County ditch system. Recommend and complete maintenance upgrades.
45. Correct and minimize erosion concerns and sedimentation issues occurring in public waters as a result of public roads and county ditch system.
46. Maintain the Chisago Lakes ditch and weir system to control water levels during high water events.
47. Maximize the efficiency of the use of road maintenance products while protecting public safety and minimizing harmful effects on water quality. Conduct annual road and sidewalk salt management training. Attendees may include local units of government, private applicators, and local businesses.

Make Informed Decisions

Goals

- Develop a civic engagement strategy.
- Provide high quality information to citizens and decision makers.
- Maintain a high quality monitoring and assessment program.

Objectives

Education and Outreach

1. Host the countywide Chisago Children's Water Festival on an annual basis. Invite all Chisago County fifth grade students and teachers to the one day event. Provide youth and classroom teachers with an innovative, quality, hands-on learning opportunity highlighting the relationship and interdependence of water to all living things.
2. Develop a civic engagement strategy for County water resource management.
3. Establish and maintain county-wide Hook, Line and Sinker recycling program.
4. Promote the incorporation of water best management practices such as rain gardens, pervious pavers, rain barrels, green roofs, and native plantings, to reduce phosphorus loading to local surface waters practices during new construction or in retrofit situations. Prioritization will be given to highly visible, highly impervious areas such as public libraries, churches, schools, government offices, and commercial structures.
5. Provide information to the public on shoreland management techniques, erosion control, septic system upgrades in shoreland areas, and natural shoreland alterations (lakescaping).
6. Partner with Metro Watershed Partners to conduct clean water media campaigns focusing on a specific water quality message. Campaign will be coordinated with other groups such as lake associations, adjacent counties, and other water management organizations. Possible means of getting the message to the public include use of Environmental Connections Newsletter, news releases, radio spots, and utility bill inserts.
7. Offer shoreland education workshops on topics such as shoreland restoration, buffer strips and rain gardens to lakeshore owners.
8. Provide opportunities to municipal officials, planning commissions, and the agricultural community to receive education on how their land use decisions have a direct impact on non-point source runoff pollution. Principles outlined in the University of Minnesota Non Point Education for Municipal Officials (NEMO) program will be implemented.
9. Provide information and education to Chisago County citizens using the Environmental Connections Newsletter. Publish newsletters twice yearly.
10. Partner with local organizations to provide additional information and education opportunities on topics such as grazing workshops, soil testing, and other types of agriculturally supported workshops.

Monitoring and Assessment

11. Develop a County wide annual water quality monitoring plan for nutrients, aquatic life, and other parameters to determine ambient water quality concentration trends and loading for all public waters in Chisago County, including lakes with public accesses and the main stems and selected tributaries of Rock Creek, Rush Creek, Goose Creek, Sunrise River, and Lawrence Creek.
12. Implement a County wide lake water quality monitoring plan.
13. Implement County wide river and stream water quality monitoring plan.
14. Develop an annual water quality monitoring report for Chisago County describing the water resources that were monitored and what parameters they were monitored for. The annual report will provide a complete summary of the monitoring results.

15. Participate in programs such as the Minnesota Pollution Control Agency Citizen Lake and Stream Monitoring, Surface Water Assessment, or Citizen Lake Monitoring Plus.
16. Participate in county-wide DNR lake level monitoring program. Periodically collect lake level readings during open water season.

PICKM (Pine, Isanti, Chisago, Kanabec, Mille Lacs) Alliance of Lake and River Associations

17. Support the PICKM Alliance of Lake and River Associations. Assist local lake and river associations, lake improvement districts, and lake management planning within the PICKM counties. Provide liaison and technical assistance, help facilitate grant resources for water quality improvement projects, and continue to work with existing lake and river associations as they form a 5 county alliance.
18. Provide lake and river associations within the PICKM counties the opportunity to attend educational events or trainings 2 times per year.
19. Strengthen existing and help form new lake and river associations in Chisago County. Provide technical assistance and act as a conduit of information between PICKM, state agencies and local lake and river associations. Provide educational opportunities at least 2 times per year for lake and river associations.

Sufficient Resources

Goals

- Sufficiently fund Water Plan activities.
- Maintain sufficient staff in place to implement Water Plan activities.
- Maintain active participation of government, volunteer organizations, and citizens in Water Plan activities.

Objectives

1. Administer and coordinate the Chisago County Local Water Management Plan.
2. Administer and coordinate the Chisago Lakes Lake Improvement District Water Resources Management Plan.
3. Explore the feasibility of formation of additional lake improvement districts, watershed management organizations, or watershed districts in Chisago County.
4. Provide technical and administrative support to the St. Croix Basin Water Resources Planning Team.
5. Utilize the 2009 Chisago County Biofuels Feasibility Study to continue to explore the development of a renewable energy demonstration facility in Chisago County.
6. Pursue additional partnership and funding opportunities. Actively pursue local, state, and federal grants.

15. Isanti County Water Plan

Document Title	Source	Date	URL or Address
Isanti County Local Water Management Plan 2018-2028 (DRAFT)	Isanti County Zoning Department	2018	http://www.co.isanti.mn.us/isanti/departments/zoning/zoning-resources/?cat=Zoning

[Note to the reader: This Water Plan is in the draft stage and therefore this summary may be subject to change]

Geographic Extent / Scope:

Isanti County.

Organizations / Agencies involved in plan creation

Members of the Isanti County Water Plan Task Force included representatives from the Isanti Soil and Water Conservation District, Minnesota Pollution Control Agency, Board of Water and Soil Resources, Natural Resources Conservation Service, Isanti County Environmental Coalition, City of Cambridge, City of Braham, Isanti County Commissioners, MN Department of Natural Resources, City of Isanti Public Works Department, and Isanti County Zoning Department.

Info on Planning Process:

(p. 6)

Isanti County held public participation meetings with the Water Plan Task Force (WPTF) to identify the priority concerns. These meetings were facilitated to receive input about perceived threatened water resources, environmental issues, riparian zone decline, land use changes, and aquatic invasive species. The WPTF then considered all input and used this information to create an implementation plan to address these issues. From this selection process, the following priority concerns and goals were identified:

- Protect groundwater resources from impairments and develop a sustainable framework for groundwater users.
- Protection and restoration of Isanti County surface water quality and quantity.
- Promote land use management practices that are beneficial to Isanti County's natural resources.
- Aquatic invasive species (AIS) prevention and management.

Ditches and drainage management is also identified as a concern and will be addressed within the surface water quality priority concern. After the priority concerns were established, the County Zoning Office and ISWCD worked together to develop the implementation schedule and plan.

Purpose of Plan:

(p. 6)

The purpose of the Local Water Management Plan (LWMP) is to identify existing and potential water resource issues, create an implementation strategy for protection and foster positive land

use management and sustainable development within the entire County in a way that is respectful of the resources.

VISION(S)

None listed.

ISSUES (Priority Concerns) / GOALS (Goals) / STRATEGIES (Objectives and Actions)
[The Goals, Objectives, and Actions are grouped under four Priority Concerns as listed in the Implementation Schedule] (pp. 44-48)

Protect groundwater resources from impairments and develop a sustainable framework for groundwater users.

Goal 1: Make educated decisions to protect the quantity and quality of groundwater in Isanti County.

Objective 1: Increase local agencies, stakeholders, and consumers capacity to protect groundwater.

1. Pursue staffing opportunities related to the implementation of groundwater activities (regional or local).
2. Pursue education and training for targeted groups (i.e. LGU staff, elected officials, and users) in an effort to better understand groundwater in Isanti County.
3. Participate in the development and review of wellhead protection plans as the opportunities arise. Usually every 3 years.
4. Seek opportunities to participate in Minnesota Department of Agriculture's (MDA) nitrate testing program for private wells.
5. Provide drinking water test kits to citizens and add arsenic option to nitrate testing kits that are available at the Isanti County Extension Office.
6. Communicate key geologic atlas findings to elected officials, communities involved with wellhead protection and other groups as identified.
7. Provide a mechanism for Local Government Unit (LGU) interaction in regards to land use decisions and their impact on groundwater (i.e. presentations at association meetings, annual meetings, newsletters, maps...)
8. Seek opportunities to provide groundwater education to youth, adults, and storm water construction contractors.

Objective 2: Protect quality and quantity of groundwater within areas identified as vulnerable/sensitive using the most current plans/studies.

1. Rum River and lower St. Croix watersheds - Prioritize sensitive areas for Environmental Quality Incentives Program (EQIP) funding for Agricultural BMPs that protect groundwater quality.
2. Implement existing state and local regulatory controls such as MN Rule 7060, to protect groundwater (Subsurface Sewage Treatment Systems (SSTS), Manure, other land applications of solid waste/septage waste).
3. Continue financial programs for failing septic systems and pursue grant money to fix failing septic systems.

4. Rum River and lower St. Croix watersheds - Implement agricultural BMPs identified in Natural Resources Conservation Service's (NRCS) Cropland Conservation Practices for Protection of Groundwater. (See Appendix 8 for list of practices).
5. Rum River and lower St. Croix watersheds - Support the requirement of Minnesota Department of Health's (MDH) sealing of unused/abandoned wells with a priority in wellhead protection/source water protection areas.
6. Rum River and lower St. Croix watersheds - Promote urban and residential groundwater recharge, infiltration and filtration, and other BMPs identified in approved plans.
 - Review board of adjustment and conditional use permits/requests for all land uses near groundwater recharge areas.

Objective 3: Promote wise groundwater withdrawal to protect and conserve current and future uses including drinking water, recreation, ecological, agricultural, commercial, and industrial uses.

1. Groundwater within cities of Rum River Watershed - Implement Metro Groundwater Conservation Planning Program.
2. Review and comment on Water Appropriation/Use Permits.
3. Consider ditch impacts on groundwater when reviewing drainage plans.

Protection and restoration of Isanti County surface water quality and quantity

Goal 1: Protect and restore lake and stream water quality in Isanti County focusing on actions identified in completed water quality studies and plans.

Objective 1: Control surface water by working with local municipalities and developments.

1. Require rural and suburban communities and municipalities to update comprehensive community storm water models to identify ways to construct storm water BMP's and explore revisions to local county and city ordinances to prevent further impacts due to new developments and redevelopments.
2. Manage land uses within floodplains and shoreland districts by requiring rural and suburban communities to be in compliance with Federal Emergency Management Agency's requirements and criteria; therefore reducing flooding within new and existing developments.
3. Require design of storage and conveyance facilities to accommodate the modern standards for stormwater rate and volume controls, which would control and prevent flooding events in new development and redevelopment areas.
4. Consider adopting wetland standards similar to those within the Upper Rum River Watershed Management Organization Plan. Develop Isanti County wetland protection guidelines.

Objective 2: Acquire data necessary to gain a greater understanding of the resources, threats and strategies to better target practices for planning and implementing watershed activities. (i.e. track trends, identify pollution sources and gauge BMP effectiveness).

1. Rum River, lower St. Croix - Pursue local and state funding to establish a watershed-wide monitoring program as identified in the Rum River and Lower St. Croix WRAPS. Continue to develop and implement long-term monitoring plans that include

- collection of data to prioritize catchments, waters or tributaries for BMPs based on water quality and flow volumes.
2. Impaired waters county wide - Collect data (i.e. sediment cores or hypo limnetic samples) to quantify internal loading in impaired lakes.
 3. Development of a land services GIS (Geographical Information System) program to map Isanti County's natural resources, wetlands, buffers, 103E ditches, riparian impact zones and utilize parcel information to analyze areas of potential impacts.

Objective 3: Implement projects that minimize the transport of nutrients, sediment, and bacteria to surface waters to meet the goals of WRAPS, TMDLs and/or SRAs.

1. Implement all aspects of the State Statue Chapter 85 103F.48 buffer law by providing rural landowners with technical and financial assistance for compliance.
2. Seek Funding and provide technical assistance leading to the adoption of 25% of agricultural BMP's over 10 years identified in SRAs.
3. Rum River & Lower St. Croix - Hire a part time Program Technician to work in partnership with the NRCS in an effort to actively engage landowners, promote and implement action 3.2.
4. Rum River - Restore and/or treat outflow from degraded wetlands identified via completed studies and water quality monitoring.
5. Rum River & lower St. Croix drainage systems - Encourage conservation drainage practices and buffers on drainage ditches (minimization of cleaning, two-stage ditch design, impoundments and peak water flow management).
6. Rum River: Blue Lake - Seek funding for and implement projects identified in the Blue Lake Storm Water Retrofit Assessment.
 - Actively engage lakeshore owners, the LID and municipalities within Blue Lake Watershed.
7. Rum River: Green Lake - Implement projects identified in the Green Lake Storm Water Retrofit Assessment.
 - Actively engage lakeshore owners, the LID and municipalities within Green Lake Watershed.
8. Rum River, lower St. Croix - Provide financial, technical and outreach assistance to implement stormwater management and/or erosion control retrofit projects around impaired and/or protected lakes and rivers.
9. Rum River and tributaries - Seek opportunities to protect and/or restore hydrology and geomorphology of the Rum River and its tributaries.
10. Rum River - Offer regular educational opportunities concerning water quality, erosion/nutrient problems and solutions to targeted communities and groups including Isanti county environmental groups such as: ICCOLA*, FORR*, and ICEC*.
11. County wide impaired waters - Research and implement methods to control internal loading of phosphorus in lakes. Examples include iron or aluminum sediment augmentation, rough fish management and curly leaf pondweed control.
12. Rum River and lower St. Croix - Research and implement opportunities to offer assistance (technical and/or financial) for Operation and Maintenance of existing or newly created Best Management Practices.

Objective 4: Enforce County zoning ordinances with land uses to protect surface water quality and pursue additional regulations or ordinance amendments.

1. Enforce local county ordinances for meeting compliance requirements with septic systems when building permits are issued and/or during property sales or transfers.
2. Pursue additional grant funding opportunities to upgrade septic systems and explore ordinance amendments on septic tank waste applications to ag fields, garbage feeding, and feedlot runoff alteration projects.
3. Develop standards or amend the current peat /topsoil mining standards when directly connected to surface waters or ditches which drain to/from these waters.
4. Provide public educational opportunities on recycling, disposal of hazardous wastes, burning debris and wastes, and continue to partner with Chisago County Hazardous Waste Facility.
5. Rum River - Enforce Rum River Scenic Floodplain Ordinance and shoreland district ordinance on redevelopment and new developments.

Promote land use management practices that are beneficial to Isanti County's natural resources.

Goal 1: Minimize the impacts of land use conversions on surface and ground water resources.

Objective 1: Use local plans, controls, and ordinances to reduce impacts from storm water runoff from lands being developed or converted.

1. Monitor developments for additional impervious surfaces through LGU permitting and enforcement. Priorities placed on new shoreland developments or sensitive riparian zones to impaired waters.
2. Offer educational opportunities for area contractors, developers and professionals with primary focus on storm water management techniques and county storm water rules.
3. Rum River and lakes within Rum River - Complete and implement a Stormwater Retrofit Assessments for high priority drainage areas.
4. Rum River - Use land use change scenario maps as presented in the Rum River WRAPS to 1) educate staff and officials and 2) prioritize and make land use decisions.
5. Consider development standards that further protect both shore land areas and land that has a direct connection to surface and groundwater.

Objective 2: Develop a process for drainage management with a focus on public and private drainage systems.

1. Modernize ditch records and develop ditch maintenance plan.
2. Develop a process to inventory the condition of county 103E ditches, map stream crossings and culverts, and identify locations for drainage management and best management practices. Survey elevations and inspections if necessary.
3. Begin the process of redetermining benefits and opportunities for assessing benefitted land owners for maintenance.

Objective 3: Ensure the protection of healthy, connected forest and natural areas for both water quality and habitat.

1. Watersheds with >25% forest cover - Promote longterm conservation easement programs in partnership with MN DNR, BWSR and MN land trust to protect high quality areas.

2. Explore standards and ordinances to require an undisturbed buffer along public and private waterbodies during platting and development.
3. Watersheds with >25% forest cover; Rum River - Promote public and private forest management programs such as those offered by the MN DNR or other LGU's.

Aquatic invasive species (AIS) prevention and management.

Goal 1: Proactively use the legislatively granted AIS prevention funds (STATUTE 477A.19) to partner with local groups to implement the following actions.

Objective 1: Monitor and map surface waters for current and new infestations of AIS (early detection inspections).

1. Lakes with public accesses - Inspect (via DNR Protocol) the public access's, inlets and outlets of lakes that are determined to be at the highest risk for new infestations of AIS* at least one time between May and September.
2. Lakes with AIS infestation - Offer AIS mapping services to lake associations and improvement districts. This information is used to expedite treatment.

Objective 2: Protect lakes with public accesses from AIS infestation.

1. Lakes with public accesses - Locally administer an inspection program which is prioritized based on boat traffic and infestation status. This program also provides education at boat landings.
2. County wide/new infestations - Partner with the DNR in efforts to implement treatment of new infestations.
3. Lakes with public accesses - Implement Stormwater management practices at public accesses (both township and State-owned). May include boat clean-off lanes at the busiest boat landings.
4. County wide surface waters - Practice adaptive management based on new information and rapidly changing conditions. This task may include grant applications for innovative practices.
5. Lakes with inspectors - Coordinate with lake improvement districts and lake associations that have their own inspectors.

Objective 3: Make informed decisions regarding AIS (includes ongoing education for county and ISWCD staff).

1. Annually review and edit (if necessary) the County AIS Prevention Plan to Ensure consistency with State Statute as well as State and neighboring AIS efforts and plans.
2. Participate in AIS workshops, work groups, and webinars related to development of prevention plans.

Objective 4: Proactively provide education and information on AIS; this includes rules and threats.

1. Create and/or use an existing set of diverse public awareness and education pieces (i.e. as provided by DNR or Sea Grant) such that people are exposed to the same message many time and in many different formats.
2. Offer educational programing for targeted groups in an effort to explain AIS threats and the laws.

3. Coordinate with Isanti County Coalition of Lake Associations (ICCOLA) to offer education programs to lake associations and lake improvement districts.

16. Kanabec County Water Plan

Document Title	Source	Date	URL or Address
Kanabec County Comprehensive Local Water Plan 2006-2016	Kanabec County Environmental Services	2006	http://www.kanabeccounty.org/departments/environmental_services/water_plan_administration.php

Geographic Extent / Scope:

Kanabec County.

Organizations / Agencies involved in plan creation

Members of the Water Plan Committee included representatives from the Kanabec County Public Works Department, Kanabec County Environmental Services Department, Kanabec Soil and Water Conservation District, Snake River Watershed Management Board, and a public health nurse.

Info on Planning Process: (p. 7)

The Kanabec County Board of Commissioners passed a resolution on June 13, 1990, to engage in this water planning process and enter into an agreement with the Minnesota Board of Water and Soil Resources. On August 24th, 2005, the Kanabec County Board of Commissioners passed a resolution, indicating their intent to update the 2001 plan. The Kanabec County Board of Commissioners delegated the task of coordinating water planning to the Kanabec County Water Plan Administrator. In addition, the Water Planning Committee was charged with the task of updating the comprehensive local water plan for Kanabec County.

Purpose of Plan: (p. 6)

The purpose of Kanabec County's Comprehensive Local Water Plan is:

- To identify existing and potential challenges or opportunities for the protection, management, and development of water resources and related land resources in Kanabec County and the Snake River Watershed.
- To develop and implement an action plan to promote sound water management decisions, and
- To achieve effective environmental protection of Kanabec County's water and land resources.

VISION(S)

None listed.

ISSUES (Priority Concerns) / GOALS (Goals) (pp. 44-48)

The protection of shorelands and tributaries from erosion sedimentation and nutrient loading

Goal: This will be addressed through on-going “Best Management Practices” established through forestry, shoreland, agriculture and SWCD plan development impact can be addressed through county and state regulations with shoreland regulations and MPCA storm water regulations.

Drainage Ditch Maintenance

Goal: Kanabec County Highway Department has started an inventory of the ditches, within the County. Establishing existing ditches will set the ground work for the maintenance, abandonment and any future ditch projects. This project is being funded in part by the Water Plan Fund.

Ground Water Concerns

Goal: Kanabec County Water plan has and will continue funding for well testing of homes with new babies. This helps to address issues and concerns for nitrates Kanabec County through the County septic ordinance will continue to bring no-compliant shoreland septic systems into compliance. Kanabec County SWCD through funding for well sealing will continue to provide for the sealing of wells.

Ground & Surface Waters

Goal: Kanabec County sponsors a county household hazardous waste day and a county clean-up day. Both will continue in an effort to protect ground and surface waters from contamination. Through the solid waste plan, for Kanabec County, the education and promotion of recycling and disposing of solid waste properly will continue to reduce water contamination.

STRATEGIES

None listed.

17. Mille Lacs County Water Plan

Document Title	Source	Date	URL or Address
Mille Lacs County Local Water Resource Management Plan 2006-2016	Mille Lacs Soil and Water Conservation District	2006	https://www.millelacsswcd.org/comprehensive-water-management-plan-2/

Geographic Extent / Scope:

Mille Lacs County.

Organizations / Agencies involved in plan creation

The Water Management Plan Advisory Committee and technical assistance included representatives from the Natural Resources Conservation Service, MN Department of Natural Resources (Hydrology, Fisheries, and Forestry), Snake River Watershed Management Board, Board of Water and Soil Resources, Mille Lacs Band of Ojibwe, Mille Lacs County Commissioner, Mille Lacs County Public Health, Mille Lacs County Public Works, Mille lacs County Community and Veteran Services, Mille Lacs Lake Watershed Management Group, Mille Lacs County Zoning & Environmental Services, Mille Lacs County Highway Department, Mille Lacs Soil and Water Conservation District, Mille Lacs Soil and Water Conservation District Board, US Fish & Wildlife Service.

Info on Planning Process:

(p. 7)

The Mille Lacs Soil & Water Conservation District's role in the development and implementation of the Local Water Management Plan is to act as the catalyst for the water management planning process, and the integration of local initiatives with funding sources. Through involvement with the Water Management Plan Advisory Committee, local citizens, representatives from local organizations, associations and agency staff, work together to achieve efficient management and local ownership of water management initiatives.

Purpose of Plan:

(p. 7)

The Mille Lacs County Local Water Management Plan (LWMP) is developed and written under the legislative authority of the "Comprehensive Local Water Management Act" (M.S. 103B.301-103B.355) and is meant to function as a long term planning document. The plan seeks to identify existing and potential problems, opportunities for protection, management and development of water and related land resources in the County. Problems or opportunities identified through the planning process are prioritized and addressed within the context of watershed units and groundwater systems. Objectives and action steps to address identified priorities are based upon principles of sound hydrologic management of water, effective environmental protection, and efficient management of activities that impact these resources.

VISION(S)

None listed.

ISSUES (Priority Concerns) / GOALS (Goals) / STRATEGIES (Objectives and Actions)
[The Goals, Objectives, and Actions are grouped under two Priority Concerns as listed in the section B of the Plan] (pp. 12-14)

The Cumulative Effects of Development on Surface and Groundwater

Goals:

1. To seek the protection of surface and groundwater quality in Mille Lacs County.
2. Enhance surface and groundwater quality where degradation has already occurred.

Objectives

Objective A: Encourage development patterns that protect, enhance, maintain or restore surface and groundwater quality.

1. Develop a process that provides a coordinated approach to resource management as it relates to development. The process would address natural resource issues that overlap the scope of individual efforts by planning & zoning entities, Wetland Conservation Act (WCA) technical evaluation panel (TEP), Soil & Water Conservation District (SWCD), and others. This process will provide decision makers and land use planners with the information they need to make informed land use decisions by providing technical expertise. Specifically, best management practices (BMPs), focusing in the areas of erosion, sedimentation, and stormwater control.
2. Educate residents on restoring and preserving natural shoreline areas.
3. Assist landowners with shoreland and riparian best management practices and provide cost-share assistance through existing programs.
4. Educate and provide developers and communities with guidance and incentives to incorporate the use of innovative waste treatment alternatives such as cluster septic systems where appropriate.
5. Encourage the use of buffers around wetlands to ensure that wetland function is somewhat protected from direct encroachment of development and human activity within this designated buffer area. This buffer area can provide space between which human activities such as recreation, lawns, parking, storage, agriculture, etc. and wetland functions like runoff filtration, wildlife habitat, etc can coexist.
6. Develop a Geographic Information System (GIS) to assist in mapping natural resources and development activities for improved analysis of impacts. GIS is a means of electronically mapping information at the County level. Utilizing a parcel map in electronic format, a variety of information can be “layered” for the purpose of analysis. For example, a map of tax forfeited parcels can be layered with wetland information to identify parcels that might be suitable for wetland restoration purposes.

Objective B: Improve stormwater runoff quality throughout the county.

1. Develop a coordinated approach with local planning and zoning authorities to minimize stormwater impacts by encouraging good site design, especially by utilizing low impact development technologies; encouraging stormwater best management practices in all development plans; and identifying sites where increased storm water discharge has a high potential for adversely impacting surface and groundwater resources.

2. Work with contractors to understand and implement the NPDES permitting program and its requirements for controlling stormwater runoff during construction.
3. Educate and provide developers with guidance and incentives to incorporate the use of innovative stormwater runoff treatment alternatives, such as rainwater gardens, and impervious surface alternatives, such as porous asphalt or geogrid type surfaces, where appropriate.
4. Educate the public about the impacts of stormwater runoff on water resources through cooperative programs with communities, using public awareness tools such as storm drain stenciling.
5. Work with communities regarding management of stormwater inputs, such as storage of highway salt & sand, or storage of snow in winter where melt can run directly to water resources like rivers or lakes.
6. Educate communities and homeowners about stormwater inputs they can control and improve.

Objective C: Maintain or improve groundwater quality throughout the county.

1. Continue to inspect new and upgraded Individual Sewage Treatment Systems (ISTS) or undertake a random inspection program to check compliance, performance and acceptable construction practices.
2. Continue to check older septic systems for compliance in the shoreland and wild and scenic river districts.
3. Consider the implementation of a county-wide “point of sale” ISTS inspection program as part of the development code update.
4. Continue to make available well water testing opportunities to individuals in Mille Lacs County and provide free well water testing clinics for Nitrates annually in cooperation with the Minnesota Department of Agriculture.
5. Educate landowners through news articles, news letters, brochures, website, workshops, radio spots, etc. on the importance of properly sealing abandoned wells.
6. Assist landowners with the sealing of abandoned wells and provide cost-share assistance through existing programs
7. Update the County’s local ordinance regulating ISTS once the revised State rules are adopted.

Development of TMDLs for Impaired Waters

Goals:

1. Determine the status of TMDLs of the various water resources and protect those that currently support their designated uses, and where needed, improve those that do not.

Objectives

Objective A: Assess the ability of water resources in Mille Lacs County to meet their designated uses. Action steps to implement Objective A include:

1. Prioritize impaired waters in need of TMDL studies as time and funding become available.
2. Create monitoring plans of waters for a more comprehensive assessment of waters in Mille Lacs County.

3. Participate in the development and implementation of TMDL projects. Establish funding sources for implementation plans.
4. Coordinate data sharing between agencies and entities collecting information for TMDL monitoring.
5. Monitor water quality on the Groundhouse and Knife Rivers (Snake River Watershed) within Mille Lacs County.

Objective B: Work with land managers, land owners and operators in Mille Lacs County, regardless of land use to encourage best management practices. Action steps to implement Objective B include:

1. Continue farm planning followed by implementation of recommended best management practices.
2. Assist with the registration and inspection of all feedlot sites in Mille Lacs County.
3. Educate feedlot owners about the importance of protecting surface waters from animal waste runoff.
4. Provide information and technical assistance to operators regarding the appropriate management of animal waste.
5. Provide technical and financial assistance to feedlot owners wishing/desiring to comply with local and state requirements.
6. Educate forest owners and loggers about the impacts of harvest damage and provide information on best management practices (BMP), and industry BMP certifications.
7. Educate landowners about proper forest management and sustainable forestry opportunities and available programs.
8. Support the efforts of the Snake River Watershed Management Board in encouraging best management practices to improve water quality and wise stewardship during forestry, grazing & agricultural crop activities.
9. Work with cities local government units or state agencies to improve riverside recreation areas that will meet both water quality and community recreation needs.

18. Morrison County Water Plan

Document Title	Source	Date	URL or Address
Morrison County Comprehensive Local Water Plan 2017-2022	Morrison Soil and Water Conservation District	2017	http://morrisonswcd.org/programs-services/water-plan

Geographic Extent / Scope:

Morrison County.

Organizations / Agencies involved in plan creation:

The Water Plan Task Force and partners included representatives from the Morrison County Board, Morrison Soil and Water Conservation District Board, The Nature Conservancy, MN Board of Water and Soil Resources, MN Department of Natural Resources Fisheries, MN Department of Natural Resources Ecological and Water Resources, Minnesota Pollution Control Agency, Mississippi Headwaters Board, MN National Guard, Morrison County Land Services, Morrison County, Morrison Soil and Water Conservation District, City of Little Falls, Anglers for Habitat, and Maps by Mitch.

Info on Planning Process:

None listed.

Purpose of Plan: (p. 18)

The purpose of this plan, and the direction of the Morrison SWCD, is to identify goals and provide guidance to the public and Morrison County in an effort to improve and protect the water quality and quantity in Morrison County and our surrounding watershed neighbors.

VISION(S)

None listed.

ISSUES (Priority Concerns) / GOALS (Goals) / STRATEGIES (Objectives and Actions)
[The Goals, Objectives, and Actions are grouped under three Priority Concerns as listed in the ‘Water Planning Future’ section of the Plan] (pp. 27-49)

Groundwater

Goal 1: Protect and provide high quality groundwater resources for the citizens and visitors of Morrison County.

Objective A: Increase the available background information of the County’s groundwater resources.

1. Support the development of a county Geologic Atlas and Regional Hydrologic Atlas.

2. Use the atlas to identify and inventory sensitive areas of the county. Ensure the distribution and sharing of the digital Atlas to other agencies for their use and applications.
3. Sponsor two workshops to present the completed atlas to the public and provide training on use.
4. SWCD will request state agency assistance in evaluating existing groundwater quality and quantity monitoring being done in the county and how it can be improved and organized locally to support ongoing groundwater protection activities.

Objective B: Develop and implement public information programs aimed at public awareness in the protection of public water supply in the well head protection (WHPP) communities.

1. Implementation of public information programs on WHPP communities will include:
 - Signage identifying the DWSMA boundary
 - Mailings to rural and urban residents with information on WHPP.
 - Utilize web sites
 - Media
 - Presentations to local service organizations
2. Promote agricultural Best Management Practices that reduce the potential for groundwater contamination such as irrigation management, fertilizer and herbicide management.

Objective C: Prevent groundwater contamination through both current and abandoned wells.

1. Promote and utilize cost share to seal unused wells in priority areas (wellhead protection areas and sensitive groundwater areas).
2. Promote materials that address the potential impacts of abandoned wells and the costs and process to seal properly. Distribute through media/events and web site.
3. Continue to investigate Class V wells located in wellhead protection communities within the DWSMA. Present educational information to property owners on impacts, mitigation and Environmental Protection Agency (EPA) reporting requirements. Notify MDH of locations of potential Class V wells.
4. Cities as well as rural entities will obtain and distribute educational brochures describing proper well maintenance and operation to provide landowners within the DWSMA.

Objective D: Continue to regulate Subsurface Sewage Treatment Systems (SSTS) in the County.

1. Implement a plan to identify SSTS in priority areas, such as high water table, wellhead protection areas, excessively sandy soils, heavy soils.
2. Morrison County Land Services Department completion of compliance inspections of all SSTS within a DWSMA that do not have current inspections.
3. Promote low interest loan programs to assist in upgrades of failing SSTS, targeting priority areas.
4. Continue to require septic inspections and Certificate of Compliance for building permit applications.
5. Require all new constructions and all failing SSTS to connect to the municipal sewage treatment system in DWSMA where possible.

6. Work cooperatively with lake organizations to distribute educational materials and information to public regarding SSTS operation and maintenance. Maintain supply of brochures.
7. Publish SSTS BMP information on both county and SWCD website.
8. Hold bi-annual designer, installer workshops.

Objective E: Manage above ground tanks within the DWSMA for the protection of the aquifer.

1. Look for new above ground tanks within the DWSMA and develop an education program to show need for protective barriers to prevent ground water contamination in the event of a leak or spill.
2. Investigate past cleanup efforts for existing contaminants in the soil. Work with MPCA on site closure for known contaminants.
3. Continue oversight and awareness of existing above and below ground tanks for potential contamination issues.

Objective F: Support continued solid waste programs and educational efforts on the proper disposal of hazardous waste and recycling programs for the preservation of the drinking water aquifer.

1. Support pesticide waste and waste container collection dates and locations. Notify land owners within the DWSMA of these dates and locations. Provide information on hazardous waste management and wellhead protection in these mailings.
2. Follow up on permitted Ag Chemical and Industrial Hazardous Waste sites to determine the status of use. Survey sites for potential contamination of the soil and /or groundwater.
3. The Wellhead protection communities will participate in the priority setting local work group meetings conducted by the Cities with cooperative support from the SWCD, supporting programs within the DWSMA.

Objective G: Work to establish a coordinated spill response plan for the transportation corridor through joint training and spill notification.

1. Establish working relationship with and coordinate spill response efforts with other agencies such as MNDot, Burlington Northern Santa Fe Railroad (BNSF), MPCA and other potential parties.
2. Maintain a process to respond to emergency spills, potential fertilizer or manure storage damage.

Objective H: Support Source Water/Wetland Protection Planning and implementation.

1. Participate in wellhead protection plan (WHPP) development and implementation efforts to assist public water suppliers protect the community drinking water supply.
2. Assist and support the review of comprehensive plans and ordinances by local government to make sure State approved WHPP maps and plan concerns are included to provide the basis for the use of local controls if needed to protect drinking water supplies.
3. Work with appropriate entities to identify aquifer thresholds to maintain adequate water supply for consumptive use.

4. Promote wetland restorations in critical recharge areas and flood zones. Encourage the restoration and maintenance of native vegetation (trees, brush, ground cover) in these areas.
5. Collect and test water samples for quality in all wellhead protection areas.

Objective I: Maintain and promote existing cooperative partnerships to monitor groundwater.

1. Continue to monitor 15 United States Geologic Survey wells to measure static water levels in irrigation areas and around the county landfill.
2. Hold annual nitrate clinics for county residents and provide public with information on private well testing and safe drinking standards.
3. Provide regular news releases on radio and newspapers with groundwater concerns.
4. Continue to work with the Little Rock Watershed Partnership for groundwater and surface water sustainability.

Goal 2: Preserve and ensure adequate quantity of the groundwater resources for the citizens and visitors of Morrison County.

Objective A: Improve groundwater understanding, awareness and protection relating to irrigation practices.

1. Strive to determine if groundwater appropriation is having an effect on surface waters and wetlands in Little Rock Creek and possibly other heavy use areas.
2. Participate in the Little Rock Creek Sustainable Groundwater Use Planning Project where increased demands for irrigation is being analyzed.
3. Work with municipalities and agricultural community to conserve water use and implement irrigation BMPs. Promote the newly installed weather station and irrigation scheduler program to give the agricultural community a second opinion on the soil moisture status of a given field.
4. Review irrigation logs and permits to ensure proper procedures are maintained in Little Rock Watershed. Review of permits by DNR in Little Rock Creek Planning Project Area may commence in the future; the plan has not been completed to date.
5. Assess ground water resources; determine long term trends, impacts of pumping and climate, plan for water conservation on major aquifers of the county as identified in the atlas.
6. Continue to write conservation plans for new irrigators and work with existing irrigators to encourage low pressure systems.
7. Evaluate the impacts of windbreak removal for irrigation systems to promote development of soil loss ordinance.
8. Conduct a study considering appropriation permitting and land use decisions to evaluate the relationship between groundwater quantity and demand, and determine conflicts. DNR currently is not conducting a separate study outside of its current roles and efforts. Additional efforts would be considered by Department management.

Surface Water

Goal: To protect, enhance, and maintain the quality of the lakes, rivers, streams, and wetlands in Morrison County.

Objective A: Reduce impacts of agricultural run-off from feedlots and farming practices.

1. Per the requirements of Minnesota Statutes, Chapter 103F.48, Riparian Practices and Water Quality Protection (Buffer Law), assist 700 Morrison County landowners with the establishment and/or compliance of riparian buffers along public waters and public ditches. 50-foot buffers are required adjacent to public waters by November 1, 2017. 16.5-foot buffers are required adjacent to public ditches by November 1, 2018.
2. Recommend and approve these additional waters to be considered for buffer compliance.
3. Continue to monitor affected landowners and enforce the Buffer Law as necessary.
4. Bring all non-compliance riparian feedlots into compliance by offering technical and financial assistance. (EQIP and CWF funding).
5. Develop and implement a long term strategy involving farm management to minimize excess phosphorus runoff in the Little Rock Watershed. (Little Rock Lake TMDL)
6. Encourage nutrient management practices for manure application through federal and state programs.
7. Encourage buffer strips and riparian plantings along cropland fields adjacent to other waters and/or road right of ways that drain into public waters.
8. Maintain state, federal, and county rules regarding setbacks for structures, applications, and feedlots.
9. Hold landowner/producer workshops for manure/nutrient management.
10. Cooperate with all local and state agencies to resolve pollution issues in a manner that provides agricultural sustainability.
11. Support the implementation of Best Management Practices to improve habitat, flows and water quality in the headwaters of the Rum River.

Objective B: Ensure that land use decisions for shoreland development take environmental impacts into consideration.

1. Assure that developers have secured their Non-Point Discharge Elimination Systems (NPDES) permits before approving building/Conditional Use Permits/Variations.
2. Hold 1 training session for elected and appointed officials on storm water management and BMPs in shore land development utilizing the BWSR Climate Change Trends Report.
3. Work towards county ordinance provisions that prohibit vegetative removal in shoreland impact zones and require run-off abatement in all variance and conditional use permits.
4. Continue establishing a septic inspection process for critical areas.

Objective C: To provide coordination and assist in implementation of the Morrison AIS Plan in the fight against aquatic invasive species Aquatic Invasive Species (AIS) by developing proactive solutions aimed at educating and empowering local citizens.

1. Assess the County's resources and risk of AIS introduction.
2. Increase public awareness and participation on prevention to include updated signage, social media, website and displays.
3. Increase available resources and leverage partnerships.
4. Broaden knowledge of and participation in early detection and rapid response activities.

Objective D: Protect and enhance the County's wetlands.

1. Reduce impacts to wetlands by administering MN Wetland Conservation Act (WCA), and encouraging vegetative buffers around wetlands.
2. Encourage wetland restorations, prioritizing flood management areas, water recharge area.
3. Hold bi-annual contractor trainings sessions to help developers identify wetlands.
4. Continue to publicize via radio and educational opportunities, the rules and regulations concerning wetland impacts.
5. Work with elected officials to require wetland delineations for all new development.
6. Hold realtor training sessions on wetlands rules/county ordinances.

Objective E: Assist Lake Associations and Lake Improvement Districts in developing and maintaining good lake protection plans.

1. Conduct follow-up and support to Lake Improvement Districts (LIDs) to assure they are carrying through with their plans and reports to County Commissioners.
2. Host an annual meeting for lake associations and LID's to provide funding information and have DNR-Enforcement present shoreland management rules.
3. Establish a schedule of monitoring to facilitate water quality trend analysis.
4. Monitor, maintain, and enhance healthy aquatic vegetation on all lakes.
5. Protect and enhance wild rice lakes (Twelve, Coon, Rice, Skunk, and others identified by DNR).
6. Provide low interest loan info to lakeshore owners to encourage septic upgrades.
7. Apply for Clean Water Fund (CWF) grant to achieve monitoring and implementation goals.
8. Support continued lake water quality monitoring.

Objective F: Improve, maintain, and ensure clean and healthy lakes and rivers in Morrison County.

1. Support Benton SWCD in the Little Rock Lake and Little Rock Creek TMDL recommendations.
2. Apply for Native Buffer Funding for critical area restorations and secondary buffering initiatives.
3. Hold annual Lake and River Day for BMP education.
4. Target cost share programs and funding sources to critical areas with declining water quality as determined by water quality monitoring.

Objective G: Increase protection of lakes and rivers from floodwaters.

1. Assist Federal Emergency Management Agency (FEMA) in their update of new floodplain maps for Morrison County. Adopt new floodplain maps and incorporate them into the GIS map system.
2. Target funding sources to critical flood areas (Little Elk, Bellevue Twp. Swan River, Skunk R, Platte R, Lake Shamineau, Fletcher Creek, Mississippi River).

Objective H: Prioritize minor watersheds for protection.

1. Review minor watershed data and gain input from local stakeholders.
2. Impanel the Water Plan Task Force to set minor watershed protection priorities.
3. Determine priority projects in those minor watersheds and develop a priority implementation list.
4. Seek State and local funding to support those projects.

5. Implement 10 minor watershed protection projects.

Objective I: Complete and implement the Morrison County Comprehensive Drainage Management Plan.

1. Complete culvert inventory and prepare documents for each township.
2. Maintain culvert inventory and create a website accessibility.
3. Train contractors in the use of the database.
4. Tie culvert information into Lidar mapping tool to develop a hydrology model showing project impacts for local government decision makers.
5. Provide assistance and support in the management of stormwater, erosion, and sediment control.
6. Study and comprehend the hydrology and storm water management through evaluating watershed changes in surface water elevations in Morrison County.
7. Develop necessary regulation and/or ordinances on culvert sizing and tile drainage.

Objective J: River Connectivity.

1. Seek funding and assist in the installation of a Fish Ladder on the Mississippi River in the City of Little Falls.

Land Use and Development

Goal: To ensure that land use decisions are compatible with natural resource protection.

Objective A: To assure all riparian feedlot producers are in full compliance.

1. Apply for and prioritize all funding sources to address the most critical pollution sites.
2. Maintain technical assistance capabilities to assist landowners.
3. Continue serving as environmental advisor member to the Planning Commission (PC) and Board of Adjustment (BOA).
4. Continue environmental reviews for feedlot changes.
5. Enforce manure stockpiling rules. Lead: Land Services Department, County Feedlot Officer.
6. Promote pasture management, nutrient management, and residue management through state and federal programs.

Objective B: Reduce the pressure and impact of shore-land, rural residential and marginal land development.

1. Enact ordinances that minimize the over-development of sensitive areas.
2. Support the Camp Ripley Army Compatible Use Buffer (ACUB) Program.
3. Work with the Sentinel Landscape Coordinating Committee to identify the boundaries of the Camp Ripley Sentinel Landscape and develop a suite of tools and programs to provide technical and financial assistance to interested landowners within roughly 10 miles of the Camp.
4. Encourage the state to re-establish the Re-Invest in Minnesota (RIM) program statewide to protect high quality habitat such as wild rice and to protect undeveloped properties around non-impaired and impaired waters.
5. Apply for state funding to purchase conservation easements on undeveloped shore land and forestland.
6. Require conditions on developments to address potential impacts.

7. Develop and implement cooperative monitoring of land use changes.
8. Support DNR shore-land rules regarding dock and boathouse rules.

Objective C: Reduce the loss of natural habitat.

1. Develop a soil loss ordinance for the county that includes the control of windbreak and forestry removal.
2. Encourage and support the use of DNR's ecological classification system in native vegetation work. Support training of agency staff and conservation leaders on native plant communities appropriate to the County.
3. Support land ordinances that protect natural resources and encourage use of Mississippi Headwaters Board (MHB) Habitat Corridor Project – Easement and fee title acquisition program to prevent loss of habitat.
4. Require all developments to include green space and storm water management.
5. Preserve forested lands by identifying and mapping priority forested blocks in the county. Work with Minnesota Forest Resource Council (MFRC) to develop funding to support forest protection and restoration efforts in the County.
6. Encourage private forest stewardship plans. Utilize DNR Spatial Analysis to prioritize high priority areas.
7. Encourage native grass plantings in right of ways on county and township roads.
8. Support the coordination/implementation of MN Forest Resource Council (MFRC) regional forest management plans/landscape plans.
9. Encourage protection and restoration of grasslands. Complete and continue to monitor public water and public ditch buffers.

19. Pine County Water Plan

Document Title	Source	Date	URL or Address
Pine County Local Water Management Plan 2015-2020	Pine County Soil and Water Conservation District	2015	http://www.pineswcd.com/index.asp?SEC=226E16C8-75F5-4F16-BAE2-50AB3E21BAEC&Type=B_BASICt

Geographic Extent / Scope:

Pine County.

Organizations / Agencies involved in plan creation:

(p. 3)

The Water Plan Working Group consists of people who represent lake associations, cities, townships, sportsman's groups, river associations, soil and water conservation district staff and supervisors and a county commissioner. The working group has twelve members.

Info on Planning Process:

Not listed.

Purpose of Plan:

(p. 3)

This updated Local Water Management Plan will show the direction in natural resource management the county will proceed in for the next five years. This is the five year amendment to the ten year plan. In five years, the ten year update will occur. The following guidelines will be met in this document:

- The plan must cover the entire county.
- The plan must address problems in the context of watershed units and groundwater systems.
- The plan must be based upon principles of sound hydrologic management of water, effective environmental protection and efficient management.
- The plan must be consistent with local water management plans prepared by counties, watershed districts and watershed management organizations wholly or partially within a single watershed unit or groundwater system.
- The plan must cover a ten year period of time, with a review in five years. The Water Plan Task Force will be given yearly status reports and give their input.
- The full implementation of this plan is dependent on what is economically feasible.

VISION(S)

None listed.

ISSUES (Priority Concerns) / GOALS (Goals) / STRATEGIES (Actions) [The Goals and Actions are grouped under two Priority Concerns as listed in section four of the Plan] (pp. 9-16)

Water Quality

A. Improving Impaired Waters

B. Maintaining Unimpaired Waters

Goal 1: Use existing monitoring information and new information being collected to determine what waters are impaired and which are not.

1. Secure additional grants to monitor waters not assessed like the Upper St. Croix Tributaries.
2. Utilize data from Surface Water Assessment (SWA) grants.
3. Recruit and train volunteers to assist with monitoring in necessary areas.

Goal 2: Participate in TMDL and WRAPS processes that include waters in the county.

1. Serve on technical committee for TMDL's.
2. Do monitoring where needed.
3. Host stakeholder meetings.
4. Install projects listed in the WRAPS document.
5. Install cover crops.
6. Proper containment and management of animal waste.
7. Install vegetative filters strips near barnyards and milkhouses.
8. Exclusion of livestock from sensitive areas such as riparian areas along lakes and rivers.
9. Installation of rain gardens/wetlands/retention basins that absorb excess runoff and promote ground infiltration.
10. Plan and host stakeholder meetings for TMDL.
11. Attend technical advisory committee meetings for TMDL.
12. Develop a process to engage, educate and organize citizens to be local leaders to help accomplish water quality goals.
13. Provide resources/education for soil or manure nutrient testing and spreading in sensitive areas such as riparian areas along lakes and rivers.
14. Work with Pokegama and Cross Lakes on Management Plans in an effort to address concerns about curly-leaf pondweed treatments.
15. Implement pastureland runoff controls, and buffers near streams.
16. Continue to pursue and promote conservation easements.
17. Participate in tracking monitoring to see if projects are improving water quality.
18. Participate in development of WRAPS.
19. Treat 10% of the farmsteads needing manure runoff control and manage storage facilities.
20. Target 20% of the unprotected streambanks for restoration and habitat improvement including: bank stabilization, re-meanders, substrate installation, fine sediment removal, etc.
21. Develop a process to engage, educate and organize citizens to be local leaders to help accomplish water quality goals.
22. Participate in MPCA SWA grants and assist intensive MPCA sampling in the Kettle River Watershed beginning in 2016.
23. Cooperate with MDH, cities of Finlayson, Willow River and Sturgeon Lake to secure grants to implement their wellhead protection plans.
24. Support the protection and maintenance of undeveloped and native shorelands.
25. Support programs and projects that improve, restore, and maintain wildlife habitat on private lands (EQIP, WHIP, etc.).

26. Support the development of lake management plans which include the watersheds of the lakes. The DNR can assist in determining lake watershed boundaries in the early stages of lake management planning efforts.
27. Synchronize watershed priorities with federal/state/regional/local priorities.
28. Conduct systematic and comprehensive landowner outreach.
29. Follow recommended actions and apply for funds according to the Kettle River Landscape Stewardship Plan. Implement activities.
30. Cooperate with Minnesota Department of Health, Minnesota Rural Water Association, and the city of Askov to secure grants to implement its wellhead protection plan.
31. Provide agriculture and feedlot BMPs information to farmers and crop producers.
32. Participate in the Upper St. Croix TMDL/WRAPS process with writing and outreach meetings and writing the restoration and protection strategies and implementing conservation practices.

Goal 3: Improve forestry practices.

1. Forestry BMP Education – MN Forestry Resource Council.
2. Assist landowners in forestry BMP's and development of sustainable forest management plans.
3. Secure funding for employee to write forest stewardship plans.
4. Develop forestry management plans.
5. Increase and restore forest land cover.
6. Support the expansion and effectiveness of local conservation groups through their active involvement in private forest management (Kettle River Woodland Owners Association, lake associations, etc.).
7. Advocate sound land use planning and the recognition of forest resources in local planning and regulation processes. Seek DNR assistance with incorporating ordinance provisions that encourage healthy watersheds.
8. Work with local outdoor recreation groups to increase the awareness of the public about the value of forests and high quality natural resources.
9. Work with partners and stakeholders to link citizens and businesses in the watershed to support organizations actively working to protect, restore, and improve forest and water resources in the watershed.
10. Encourage urban forestry in the City of Sandstone.
11. Promote urban forestry in the City of Hinckley.
12. Restore upland forests in the Big Pine Lake and Medicine Creek – Pine River minor watershed.

Goal 4: Encourage jurisdictions to adopt stormwater and shoreland ordinances.

1. Encourage cities to implement LID practices.
2. Encourage the LGU adoption and implementation of a County Stormwater Ordinance.
3. Upgrade the imminent public health threat septic systems and the septic systems failing to protect ground water.

Goal 5: Educate jurisdictions and the public on erosion and sediment control and LID practices.

1. Increased exposure to U of M erosion and sediment control classes and National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) stormwater permits.

2. Encourage LID and minimize disturbance, increase contiguous green space on developments, implementing infiltration techniques such as rain gardens, pervious pavements, or green roofs for stormwater control; and education for the community and for agencies as to the techniques, benefits, and long term cost savings of LID.
3. Utilize grants when municipalities are doing stormwater practices like rain gardens, filter strips and other LID Practices.
4. Encourage new techniques for temporary and permanent erosion control.
5. Promote the use of conservation tillage and no-till practices.
6. Promote the use of vegetative filter strips and field buffers among row crops.
7. Education on stormwater pollution prevention planning and implementation for small (non-MS4) communities and towns.
8. Promote, educate and install 15 shoreline plantings/buffers/setbacks.
9. Proactively educate visitors to the Kettle River Major Watershed about the high quality natural resources in the watershed and their role in protecting them.
10. Promote shoreline restoration with lakeshore owners around lakes of concern in Moose River HUC 12.
11. Actively educate stakeholders in the watershed about the watershed/forest land cover connection groups and its role in producing clean water.

Goal 6: Educate and find funding for natural shoreline projects and projects in riparian areas.

1. Encourage landowners around lakes and rivers to implement best management practices, preserve and restore riparian land, offer incentives for riparian conservation.
2. Secure grant funding for Robinson Park buffer in the City of Sandstone.
3. Work with homeowners on natural shoreline projects around rivers and second and third tier development around lakes.
4. Apply for more beaver damage control grants.
5. Utilize DNR Clean Water Funded staff to assist natural shoreline and riparian projects.

Natural Resources Conservation, Utilization and Education

Goal 1: Apply for grant funds to implement projects. Utilize DNR Clean Water Amendment funded staff to assist implementation of successful grants.

1. Apply for grant funding for septic inspections, studies or projects related to water quality in shoreland areas.
2. Secure funding to improve public accesses and divert the storm water into infiltration basins where possible and not directly into lakes and streams.

Goal 2: Educate jurisdictions and public on conservation best management practices.

1. Education through projects. Do native planting projects on Pokegama, Grindstone, Sturgeon, Island and Sand Lakes.
2. Install native buffers in riparian areas.
3. Form a county-wide lake association.
4. Encourage best practices for septic systems around lakes.
5. Provide homeowners with guidelines for their new or replaced septic systems which require a management plan.
6. Encourage buffers around the lakes.
7. Education and cost share for abandoned wells.
8. Encourage LID practices in new developments.

9. Assist municipalities with Wellhead Protection Plans.
10. Educate the public about aquatic invasive species through brochures at boat launches.
11. Educate the public about aquatic invasive species by having billboard at the southern end of the county.

Goal 3: Improve habitat in lakes and streams.

1. Apply for funds to implement trout stream habitat improvement projects.
2. Continue implementation of Wetland Conservation Act.
3. Education and cooperation on Eurasian Water Milfoil Control – support lake associations’ eradication efforts.
4. Education on controlling Curly Leaf Pondweed – support lake associations’ eradication efforts.
5. Education on the preventing the spread of zebra mussels into Pine County lakes.
6. Provide for aquatic invasive species enforcement and watercraft inspection saturation coverage at the public accesses.
7. Purchase 2 decontamination units.
8. Identify undersized and perched culverts in the watershed, and replace them.

20. Sherburne County Water Plan

Document Title	Source	Date	URL or Address
Sherburne County Local Water Management Plan 2018-2022 (DRAFT)	Sherburne Soil and Water Conservation District	2018	http://www.sherburneswcd.org/water-management.html

[Note to the reader: This Water Plan is in the draft stage and therefore this summary may be subject to change]

Geographic Extent / Scope:

Sherburne County.

Organizations / Agencies involved in plan creation:

Members of the Water Plain Advisory Committee included representatives from the Sherburne County Public Works, Sherburne Soil and Water Conservation District, Board of Water and Soil Resources, Sherburne County Commissioner, Sherburne County Public Works, Minnesota Pollution Control Agency, and Sherburne County Planning and Zoning.

Participating stakeholders and partners included the cities of Becker, Big Lake, Clear Lake, Elk River, Princeton, St. Cloud, and Zimmerman and townships of Baldwin, Becker, Big Lake, Blue Hill, Clear Lake, Haven, Livonia, Orrock, Palmer, and Santiago. Other stakeholders and partners include the Elk River Watershed Association, Mississippi River-St Cloud Watershed partnership, Rum River Watershed partnership, residents and businesses of Sherburne County, Sherburne County Coalition of Lake Associations, Sherburne County Public Works and Planning & Zoning, and United States Fish & Wildlife Service (Sherburne National Wildlife Refuge staff).

Technical Advisory Agencies included the Board of Water and Soil Resources, Farm Service Agency, Minnesota Department of Natural Resources, Minnesota Pollution Control Agency, Minnesota Department of Agriculture, Minnesota Department of Health, and Natural Resource Conservation Service.

Info on Planning Process: (p. 22)

In 1989, the Sherburne County Board delegated the responsibility of local water management plan development to the Sherburne SWCD Board of Supervisors and staff. The SWCD is supported by Sherburne County staff, primarily those involved in natural resources and planning / zoning. A Sherburne County Water Planning Task Force was convened in March 1990 to assist in crafting the first LWMP in 1992. Since then, a Water Plan Advisory Committee appointed by the SWCD Supervisors and County Board have been meeting to further oversee the updates and implementation of the LWMP.

Purpose of Plan: (p. 22)

The LWMP process is designed to protect county water resources through a series of scientific dataset analyses, stakeholder input, and alternatives analyses which resulted in the identification of feasible goals, objectives and actions. Specifically, the intent of this plan is to:

1. Identify existing and potential concerns facing the county's water resources
2. Prioritize those concerns through examination of existing data as well as stakeholder feedback
3. Identify opportunities to protect or restore the county's water resources
4. Communicate an implementation plan that specifies the goals and actions the county will pursue

VISION(S)

None listed.

ISSUES (Priority Concerns) / GOALS (Goals) / STRATEGIES (Objectives and Actions)

[The Goals, Objectives, and Actions are grouped under three Priority Concerns as listed in section five of the Plan] (pp. 56-63)

Surface Water Quality

Goal: Protect existing high quality resources and improve quality of impaired waters.

Objective 1: Protect existing waterways through maintaining vegetative buffers and other beneficial vegetative habitats.

1. Assist landowners to reach and maintain compliance with 2015 Buffer Law, Minn. Stat 103F.48, on public waters and public drainage ditches.
2. Promote conservation practices along "other waters" regions as identified within Sherburne SWCD Resolution No. 17.073.
3. Maintain the existing level of wetland areas in the County.
4. Increase proactive review and permitting of wetland projects.
5. Maintain County and SWCD presence on WCA Technical Evaluation Panel.
6. Address eroding and sparsely vegetated shorelines and streambanks in the County.
7. Complete an inventory of lake and river shorelines to determine level of development and areas of erosion concern.
8. Enforce regulatory controls for wetland protection in new and redevelopment projects.
9. Continue to offer free onsite forestry consultations and provide recommendations for forestry health and water quality benefits.
10. Develop woodland stewardship plans for county residents.
11. Promote cost-share program for high-value ash canopy preservation.
12. Conduct legislative outreach for EAB state-wide community forestry program.
13. Pursue funding for easements on developments around sensitive areas.

Objective 2: Work with local and state partners to strategically monitor and manage water resources.

1. Work with partners to inventory dams and culverts to assess hydrologic conditions / areas for improvement.
2. Continue to monitor surface water at solid waste facilities in Sherburne County.
3. Provide technical and administrative assistance to MPCA on watershed monitoring.
4. Encourage volunteer water quality sampling through MPCA's Citizen Lake Monitoring program.

5. Establish volunteer-based macroinvertebrate assessment program.
6. Identify needs for initial or updated TMDL studies as appropriate.
7. Work with Mississippi River - St. Cloud Watershed partners on 2019 WRAPS monitoring and strategic plan.
8. Work with Mississippi River - St. Cloud Watershed partners to complete One Watershed, One Plan Strategic Planning Project.
9. Work with Rum River partners to complete One Watershed, One Plan Strategic Planning Project.

Objective 3: Prioritize restoration of waterbodies with excessive nutrient, fecal coliform and dissolved oxygen impairments.

1. Implement activities identified within the Rum River Watershed TMDL for impaired waterbodies.
2. Implement activities identified within the MR-SC Watershed TMDL for impaired waterbodies.
3. Address Tier 1 and Tier 2 Priority Zone sources of bacteria in the Elk River Watershed.
4. Address Tier 1 and Tier 2 Priority Zone sources of nutrient and sediment loss in the Elk River Watershed.
5. Host small / hobby farm nutrient and pasture management events.
6. Engage in diagnostic/feasibility studies to quantify and address in-lake sources of nutrients for impaired lakes.

Objective 4: Increase stormwater treatment capacity through ordinance enforcement, strong partnerships and BMP implementation.

1. Form County partnership to collaboratively meet and exceed MS4 SWPPP objectives.
2. Collaborate with Townships to determine appropriate changes to rainfall accommodation for development on new standard plats.
3. Provide commentary on proposed variances with regards to shoreline health, impervious surfaces, stormwater runoff, and other environmental considerations.
4. Reduce overdevelopment and impervious surface of county lake and river (public waters) shoreland districts.
5. Complete Subwatershed Analysis (SWA) on priority urban water resource areas.

Objective 5: Understand and mitigate rural runoff through inventories and promotion of soil health practices.

1. Establish baseline precision agricultural and soil health practices inventory.
2. Promote adoption of soil health practices.
3. Promote and increase MAWQC program.

Objective 6: Engage citizens, public officials and contractors through educational mailings, presentations and programs.

1. Provide stormwater related educational opportunities for County and City staff as well as locally elected representatives.
2. Expand use of advanced scheduling tools for irrigation management.
3. Explore program for Sherburne County contractor license training.

Objective 7: Update and manage county drainage systems, implement BMPs where possible.

1. Identify water quality BMP retrofit opportunities along public ditch systems.
2. Encourage water storage feasibility projects aiming to mitigate or minimize the occurrence of flooding.

Groundwater Quality & Quantity

Goal: Reduce overall usage as well as groundwater contaminants / pollutants.

Objective 1: Mitigate occurrence of high nitrate concentrations in groundwater.

1. Continue a free nitrate testing and low-cost drinking water testing opportunity for county residents.
2. Assist with implementation of a County-wide Nitrate Management Plan.
3. Promote adoption of soil health practices.

Objective 2: Support protection of WHPAs and DWSMAs, increase smart utilization of groundwater.

1. Support protection of wellhead protection areas and DWSMAs through zoning ordinances.
2. Expand use of advanced scheduling tools for irrigation management.
3. Address abandoned wells through education and cost-share opportunities for capping.
4. Implement protocol for public campus groundwater conservation (utilize Campus Groundwater Protocol).

Objective 3: Enforce septic system regulations and incentivize proactive system maintenance.

1. Enforce Sherburne County ordinances for meeting SSTs compliance.
2. Promote and administer AgBMP Loan program and promote low-income MPCA grant program for failing SSTs replacement.
3. Educate riparian and other landowners on SSTs maintenance practices.

Objective 4: Educate public employees, private contractors and landowners on groundwater quality BMPs and opportunities.

1. Provide resources to contractors for stormwater alternatives, infiltration-based BMPs and bioengineering restoration practices.
2. Expand education efforts for citizens on nitrate issues.
3. Explore program for Sherburne County contractor license training.

Objective 5: Pursue groundwater monitoring opportunities in priority areas and established trend sites.

1. Continue to monitor ground water at solid waste facilities in Sherburne County.
2. Partner with state agencies to monitor groundwater in long-term trend wells.

Aquatic Invasive Species

Goal: Prevent the introduction and mitigate impact of AIS to Sherburne County waters.

Objective 1: Target high-use public access lakes for AIS Volunteer education, Level 1 inspections and Sheriff's Department Water Patrol presence annually.

1. Utilize State AIS Prevention funds to maintain a presence at high use public accesses.

2. Coordinate AIS volunteers to provide AIS education at public access points; implement incentive program to bolster program.
3. Continue Sherburne Sheriff's Department Water Patrol presence and education on County lakes.

Objective 2: Continue to conduct AIS monitoring activities on 12+ public access lakes annually.

1. Levy local volunteers to conduct zebra mussel veliger early detection monitoring on high-use lakes.
2. Provide annual coordinated AIS training and monitoring opportunities.

Objective 3: Increase county stakeholder's exposure to AIS educational materials and references.

1. Communicate AIS education and County prevention efforts to residents and visitors through annually coordinated educational initiatives.
2. Arrange for county resident exposure to AIS experts and current research.

Objective 4: Assist county lake groups with AIS strategic planning and management.

1. Assist lake association / district strategic management planning of native and non-native species through annual grant program.
2. Assist lake associations / districts with creation or updates of Lake Vegetation Management Plans.
3. Facilitate partnerships in AIS education, outreach, research and management.

Objective 5: Levy local and statewide partnerships to foster innovative approaches to prevent AIS introduction and movement.

1. Investigate feasibility of watercraft decontamination or centralized watercraft cleaning station(s).
2. Develop and maintain relationships with peer AIS agencies and local management groups.
3. Maintain diverse working group to advise on AIS matters (lake front owners, bait shop owners, fishermen, etc.).

21. North Fork Crow River One Watershed, One Plan

Document Title	Source	Date	URL or Address
North Fork Crow River One Watershed, One Plan (DRAFT)	CROW Joint Powers Board	2018	http://www.crowriver.org/NorthFork1W1P.html

Note to the reader: This 1W1P is in the draft stage and therefore this summary may be subject to change]

Geographic Extent / Scope: (p. 1.1)

The North Fork Crow River (NFCR) 1W1P area is in an agricultural region of south-central Minnesota, draining an area of 1,483 square miles (950,000 acres). The boundary of the NFCR 1W1P follows the boundary of the North Fork Crow River Watershed (HUC 07010204). The watershed is in the Upper Mississippi River Basin and encompasses parts of Pope (3.7%), Stearns (16.0%), Kandiyohi (16.0%), Meeker (28.4%), Wright (31.7%), Hennepin (3.0%), Carver (0.1%), and McLeod (1.0%) counties.

Organizations / Agencies involved in plan creation: (p. 1.3)

The following plan partners joined together and were selected by BWSR as one of the first watersheds to pilot the One Watershed, One Plan in Minnesota:

- The Crow River Organization of Water Joint Powers Board (i.e. CROW), by and through the CROW Board of Directors;
- The counties of Kandiyohi, McLeod, Meeker, Pope, Stearns, and Wright Counties (i.e., the Counties), by and through their respective County Board of Commissioners;
- The Kandiyohi, McLeod, Meeker, Pope, Stearns, and Wright Counties Soil and Water Conservation Districts (i.e., the SWCDs), by and through their respective SWCD Board of Supervisors; and
- The Middle Fork of the Crow River and North Fork of the Crow River Watershed Districts (i.e., the WDs), by and through their Board of Managers.

Collectively, the entities are organized as the North Fork Crow River Watershed Planning Partnership (NFCRWPP).

Info on Planning Process: (p. 1.3)

Through this partnership and in collaboration with other stakeholders, the following groups served during the development of this plan:

- The Policy Committee comprised the decision-making authority for the planning process. The committee was composed of one County Commissioner and one SWCD Supervisor appointed from each of the participating Counties in the North Fork Crow River Watershed, plus a manager from each of the Watershed Districts in the North Fork Crow River Watershed and a one member from the CROW Board of Directors;
- The Advisory Committee served to make recommendations to the Policy Committee regarding the planning process and plan content. The committee was composed of local,

state, and federal agency staff, representatives from agricultural and conservation groups, municipalities, special interest representatives, and other stakeholder groups; and

- The Planning Work Group guided the logistics of the planning process and drafted the plan. The Planning Work Group was composed of local governmental staff from the counties, SWCDs, WDs, and the CROW in the watershed.

The NFCRWPP is utilizing the CROW to assist with plan administration and coordination, and Houston Engineering, Inc. (HEI) to assist with plan assessment and writing.

Purpose of Plan: (p. 1.1)

The NFCRWPP prepared this plan to develop implementation strategies that are prioritized and targeted resulting in measurable resource improvements. The development of this plan provides a framework for the NFCRWPP to be an effective local organization comprised of local governments engaged in the management, restoration, and protection of resources within the North Fork Crow River One Watershed, One Plan (1W1P) area.

VISION(S)

None identified.

ISSUES (Priority Concerns) / GOALS (Measureable Goals) [The Goals are grouped under thirteen Priority Concerns, as listed in Chapter 3 of the 1W1P] (pp. 3.10-3.28)

Drinking Water (Groundwater)

- Apply structural BMPs or management practices to 80% of the high nitrogen infiltration risk areas (see Section 4) to minimize the likelihood of nitrate-nitrogen leaching to tile systems and groundwater. Priority for the implementation of practices is given to high nitrogen infiltration risk areas within DWSMAs.
- Maintain a less than 10% exceedance rate of public and private drinking water supply wells exceeding a nitrate-nitrogen concentration of 10 mg/l per the MDA Nitrogen Fertilizer Management Plan.
- Maintain unimpacted private and public drinking water supply wells with nitrate-nitrogen concentrations at or near a concentration representative of background and transitional levels (>3 mg/l).
- Seal 150 unused and abandoned wells per year, with 20 being targeted to areas of high and moderately high nitrogen infiltration risk (see Section 4) and Drinking Water Supply Management Areas.
- Reduce the number of public and private drinking water supplies which have nitrate - nitrogen concentrations considered moderately elevated above background concentrations.
- Reduce the number of private and public drinking water supplies which have nitrate - nitrogen concentrations representing a possible future health concern.
- Restore private and public drinking water supplies which have nitrate - nitrogen concentrations that currently represent a health concern.

Groundwater Supplies (Quantity)

- Treat 10% of land in "high" recharge areas with low nitrogen infiltration risk (see Section 4) with recharge management practices, defined as practices which increase soil organic matter content or increase infiltration to the aquifer. Priority given to the Bonanza Valley Groundwater Management Area or areas covered by DWSMAs.
- Sustain the groundwater basin, aquifer, or aquifer system without rendering groundwater supplies unreliable and causing a long-term progressive lowering of groundwater level.

Streams and Rivers

- Increase stream and river length categorized as Above Average Quality, Potential Impairment Risk, and Threatened Impairment Risk for a water quality parameter.
- Decrease stream and river length categorized as Low Restoration Effort (converted to Threatened Impairment Risk or better) and High Restoration Effort (converted to Low Restoration Effort or better) for a given water quality parameter. Use load allocation as whether a stream or river length achieves the goal.
- Decrease stream and river length categorized as Low Restoration Effort (converted to Threatened Impairment Risk or better) and High Restoration Effort (converted to Low Restoration Effort or better) for a given water quality parameter.

Lakes

- Meet TP target load reduction goals established by State agencies.
- Maintain or decrease existing loads entering the lake, as estimated by PTMApp (Nondegradation).
- Limit the spread of infested lakes, with containment of existing infested lakes.
- Decrease the number of impaired lakes. Use TMDL load allocation as whether a lake achieves the goal.
- Decrease annual total phosphorus loads entering the lake by 10% (as estimated by PTMApp).
- Manage current infested lakes within the NFCR Watershed.

Surface Water Runoff

- Achieve the altered hydrology goals established using the historic period (1940 - 1975) for the USGS gage at Crow River at Rockford, MN as the desired benchmark condition by reducing and managing runoff volume. Interim volume reduction goal for the watershed is a 0.5 inch reduction in runoff depth on average across the watershed. Long-term goal for the watershed is to meet altered hydrology mitigation goal of reducing runoff depth 0.75 inches across the watershed.

Wetlands

- No net loss of wetlands.
- Maintain and increase the number of large wetland blocks with a minimum size (i.e., block size) and mixture of features (i.e., proportion of cropland, grassland, wetland, open space) necessary to sustain ecosystem services representative of a terrestrial landscape within the plan area. Block sizes of 4 square miles with approximately 60% cropland, 10% woodland and forest, 15% wetland, and 15% grassland are desired.

Terrestrial Habitat

- Maintain or increase acreage of protected land for public use and good habitat quality for recreational use.
- Maintain or increase large areas of contiguous grassland (preferably native vegetation) with minimum block size of 300 acres; or adjacent to other existing terrestrial habitat blocks. Priority given to remnant prairie and oak savannah communities.
- Maintain and increase the number of large terrestrial habitat blocks with a minimum size (i.e., block size) and mixture of features (i.e., proportion of cropland, grassland, wetland, open space) necessary to sustain ecosystem services representative of a terrestrial landscape within the plan area. Block sizes of 4 square miles with approximately 60% cropland, 10% woodland and forest, 15% wetland and 15% grassland are desired.
- Maintain or increase the quality of existing terrestrial habitat, as measured through diversity index of terrestrial species and presence of rare species and native communities.

Lake Shoreland and Stream Riparian Corridors

- Maintain or increase the amount of area within the riparian corridor providing multiple ecosystem benefits (reduced erosion; increased wildlife habitat; presence of migration corridor; water quality improvement). The area includes land subject to MN Buffer Law, adjusted to meet landowner business needs. Priority given to habitat block sizes with a minimum of 300-feet in width and 1,500-feet in length with connections to other habitat blocks.
- Increase the proportion of land adjacent to lakes, streams, rivers and waterways achieving shoreland stewardship by 80% above current condition.

Public Knowledge and Behavior Relative to Water Issues

- Increase the number citizens reached during outreach events as part of the Public Knowledge Campaign within the Education and Outreach Initiative to increase annual public participation levels. Baseline participation levels across counties to be determined during creation of the Public Knowledge and Behavior Campaign.

Landowner, Producer, and Lake Shore Owner Engagement in Water Management

- Use field walk overs in rural areas, landowner visits along shoreland areas, and consultations within urban areas, for community outreach, as means of increasing use of cost share programs, delivering conservation, and gaining knowledge about proportion of the plan area achieving stewardship. Complete 125 field walkovers, city consultations, or shoreland owner visits over the duration of the plan.

Rural Development and Sustainability

- Implement management practices (i.e. cover crops, conservation tillage to increase residue, permanent cover, etc.) in 40% of all cropland areas in the watershed to increase Soil Organic Matter (SOM) content 1%. Areas to be managed are cropland areas categorized as rural stewardship “Probability Low” and “Probability Depends on Practice Effectiveness” which have SOM content > 1% and ≤ 4 %.

Urban Stormwater

- Increase the number of cities meeting urban stewardship criteria.

Agricultural Drainage Systems

- Treat 40% of all cropland areas in in watershed with management practices (cover crops, conservation tillage to increase residue, permanent cover, etc.) to increase Soil Organic Matter (SOM) content 1%, thereby making progress toward surface runoff (altered hydrology) measurable goals. Areas to be treated are cropland areas categorized as rural stewardship “Probability Low” and “Probability Depends on Practice Effectiveness” which have SOM content > 1% and =< 4 %.

STRATEGIES (Actions) (pp. 4.4-4.11)

1. Implement and maintain existing BMPs that reduce leaching within Drinking Water Supply Management Areas (DWSMAs) and recharge areas that are highly vulnerable to contamination. Implement and maintain existing BMPs within priority locations which reduce vertical movement of nitrate into groundwater.
2. Implement and maintain existing BMPs which are focused on and maintain soil health and soil organic content, including but not limited to conservation tillage and residue management, crop rotation methods, and the use of cover crops.
3. Develop and implement nutrient management plans for agricultural producers which follow operational best management practice recommendations, summarized within the MDA Nitrogen Fertilizer Management Plan and consistent with University of Minnesota recommendations.
4. Develop and implement manure management plans for agricultural producers which follow operational best management practice recommendations, summarized within the MDA Nitrogen Fertilizer Management Plan and consistent with University of Minnesota recommendations.
5. Promote the development of pesticide management plans which follow operational best management practice recommendations, including Licensed Applicators Statute.
6. Encourage the use of precision agriculture through education, technical, and financial assistance.
7. Provide technical and financial assistance to landowners to implement animal waste management systems and manage water using runoff control measures in accordance with accepted design standards and practice.
8. Provide education, financial incentives, and technical support to increase the percentage of irrigated acres that employ conservation irrigation practices, such as variable rate application and low flow drop nozzles.
9. Implement and maintain existing storage BMPs within priority locations.
10. Promote BMPs that enhance hydrologic storage by increasing perennial native vegetation in upland and riparian areas that provide connections to expand riparian access. These actions also provide benefits to restoring stream stability and equilibrium where it is found to be impaired. Hydrologic storage could most directly be increased by restoring wetlands.
11. Implement and maintain existing BMPs that stabilize ravines, gullies, and gully heads.
12. Proactively cleanout build-up of debris from water resources and stormwater ponds.

13. Work with landowners and drainage authorities to install two-stage ditch systems for multiple benefits including improved drainage and ditch bank stability and sediment transport, increased habitat (e.g., riffle and pool habitat in low flows) and pollutant removal of nitrogen. Implement and maintain existing BMPs that provide perennial vegetative cover within the Right Of Way (ROW) of the public drainage system to increase stream roughness, and decrease bank erosion.
14. Implement and maintain existing BMPs that treat surface runoff within priority locations. Implement and maintain existing BMPs within priority locations that reduce nutrient loading to waterbodies by treating surface and shallow sub-surface runoff before entering ditches and streams.
15. Use managed and rotational grazing methods to manage animal wastes and prevent livestock entry into surface waterbodies.
16. Implement and maintain existing BMPs that provide perennial vegetative cover within the riparian corridor to decrease bank erosion, increase stream shading, and reduce water temperature.
17. Explore and promote protection of natural and pervious lands through such programs as acquisition, property tax credits and easements.
18. Implement and maintain existing BMPs within riparian areas that improve connectivity within riparian corridors and floodplains.
19. Promote and implement practices to restore natural hydrology, such as the adoption of drainage water management and the restoration of drained wetlands and altered streams for multiple benefits. Support research of modified agricultural drainage systems. Support innovative water management solutions to conventional tile drainage systems.
20. Implement and maintain practices that provide a minimum 10-year level of protection for agricultural lands, including upland and floodplain storage projects, conservation, and/or flowage easements.
21. Implement and maintain existing BMPs to manage native plant and animal communities, such as forestland, prairies, wetlands, oak savannahs, etc.
22. Promote protection of lands identified as areas of moderate, high, and outstanding biodiversity and/or areas identified as MBS Sites of Biodiversity Significance and Native Plan Communities through such programs as acquisition, property tax credits and easements.
23. Encourage use of conservation easement programs in marginal, erodible land.
24. Inspect, maintain and improve the integrity of existing urban structures that route and treat stormwater runoff to prevent downstream stream erosion and flooding and improve water quality.
25. Encourage implementation and maintenance of BMPs that treat urban stormwater discharge.
26. Implement and maintain existing drainage management BMPs and conservation drainage practices to control ground water elevation, reduce water volume yield, and remove pollutants from tile discharge prior to entering surface waters.
27. Provide one-on-one consultations with landowners and producers about agricultural BMPs, field productivity benefits of BMPs, and available financial incentive options for funding them.
28. Tailor recommended BMPs to each field based on the economic and environmental capacity of each area of a field, such as precision agriculture.

29. Seal abandoned and unused wells, particularly those wells which may impact public or private drinking water supplies, such as those found within DWSMAs or multi-aquifer wells.
30. Administer adopted land use and zoning ordinances to manage possible sources of nitrate contamination (e.g., subsurface sewage treatment systems; manure management; land development), and pathogenic bacterial contamination (e.g., subsurface sewage treatment systems; manure management; concentrated livestock access to streams), and consider potential adverse effects within DWSMAs.
31. Plan land use patterns and evaluate zoning changes and project proposals with the goal of reducing the amount of potential contaminants in sensitive groundwater recharge areas/vulnerable DWSMAs.
32. Bring Subsurface Sewage Treatment Systems (SSTSs) into compliance to reduce nutrient and bacterial loading from small, unsewered communities and homes with inadequate wastewater treatment.
33. Provide educational and financial assistance to promote maintenance of compliant Subsurface Sewage Treatment Systems (SSTSs).
34. Maintain compliance with National Point Discharge Elimination System (NPDES) Permits for point sources.
35. Meet all statutory requirements of the State of Minnesota (MN Rules 6120.250- 3900) which regulate the subdivision, use, and development of shorelands of public waters, in addition to the Buffer and Soil Erosion Legislation.
36. Encourage stormwater sediment reduction in existing and developing rural subdivisions and urban areas, including implementing existing construction stormwater permit programs and installing MIDS requirements. Promote incorporation of MIDS requirements (or similar) into local zoning ordinances.
37. Explore possibility of an ordinance restricting open intakes on drainage tiles that outlet directly into lakes.
38. Develop and apply resources to assess and estimate wetland loss.
39. Administer zoning regulations that encourage development practices which preserve and enhance natural and pervious areas, such as native prairies and old growth forests.
40. Inventory shoreland violations and map shoreland stewardship on lakes in each county.
41. Use the floodplain management ordinance and land use and zoning approvals to minimize the likelihood of future flood damages.
42. Implement and enforce applicable county ordinances and the Wetland Conservation Act (WCA) to retain wetland quantity, function, and value.
43. Adhere to Minnesota Statutes and Rules pertaining to invasive species (Minnesota Statute 84D and Minnesota Rules 6216) and the Noxious Weed Law (Minnesota Statutes Sections 18.76 to 18.91).
44. Administer Minnesota Rules Chapter 7080 through 7083 managing Subsurface Sewage Treatment Systems (SSTS) and Minnesota Rules Chapter 7020 managing feedlots to protect surface and groundwater quality.
45. Encourage the use of BMPs on active construction sites to reduce amount of erosion. Refer to MN Rule Chapter 7090 Storm water regulatory program for guidance for activities that do not fall under permitting requirements or are in non-MS4 communities.
46. Administer Minnesota Rules Chapter 103D

47. Review and update local regulations that address storm water erosion and runoff control, grading plan approval, and grading drainage standards.
48. Collaborate with cities in watershed to encourage use of Low Impact Design criteria (or similar) during development planning. Cities that request help will be prioritized for funding to upgrade procedures.
49. Regulate the reconstruction and repair of dams and other water control structures.
50. Complete the delineation and mapping of DWSMAs and the boundaries of Wellhead Protection Areas.
51. Monitor nitrate levels in private wells.
52. Monitor groundwater for pesticides and/or other contaminants.
53. Continue research to map and model groundwater and monitor basic groundwater flow.
54. Identify areas that are less susceptible to contaminant threats as possible future well locations to supply future drinking water needs.
55. Consider Minneapolis and St. Paul Source Water Protection Areas as part of an evaluation of how existing or new land use activities or redevelopment may impact the quality of the Mississippi River as a drinking water source.
56. Promote the development of a spill response plan that addresses high volume railroad corridors, pipelines, and other large contaminant threats in relation to the locations of community wells, DWSMA vulnerability and potential impacts to the Mississippi River as a drinking water source.
57. Map, monitor, and model surface water BMPs and their impacts on groundwater recharge in different land use patterns and hydrogeologic settings.
58. Incorporate mapped contamination plumes into local land use decision making process. For example, consider groundwater contamination as part of stormwater BMP decision-making, to reduce the risk of spreading groundwater contamination.
59. Develop and implement a program to assess the number of failing and non-conforming SSTs within the plan area, and the estimate impact to area water resources.
60. Set criteria for and manage groundwater supply for sustainable use, based on an evaluation of historical and projected water demand.
61. Fill gaps in the groundwater level observation well network by installing additional, strategically located long-term groundwater observation wells.
62. Develop criteria and baseline conditions for shoreland stewardship within the watershed.
63. Develop technical team to devise reasonable action plan or possible changes to shore land rules to reflect what the public will accept.
64. Identify non-conforming feedlots and target to bring into compliance. Number of feedlots targeted for compliance for each county is based on area of the county in the watershed and the number of non-conforming feedlots identified.
65. Monitor precipitation and increase the number of volunteer rain gauge readers to evaluate short and long-term trends and their relationship to groundwater supplies and lake levels.
66. Develop a comprehensive hydrologic and hydraulic model for culvert and bridge design to determine timing and magnitude of peak discharge of existing conditions, the duration of discharge, and base flow conditions. Use proper hydrologic and hydraulic design standards for road crossings to provide flood protection, while considering fish passage and environmental needs.

67. Set peak discharge, volume reduction goals and sediment load goals to achieve stable geomorphologic conditions.
68. Define basic geomorphic characteristics for stable reaches including bank full discharge, channel cross sectional area, slope, and bed composition.
69. Inventory the locations and cause of unstable stream and river reaches and prioritize them for implementation by addressing the root cause of instability, as well as on-site implementation.
70. Obtain soil health and loss to meet principles of stewardship from a soil health and fertility perspective from urban and rural lands.
71. Complete sufficiently detailed sediment mass balances for affected reaches, which identify the source and relative magnitude of sediment leading to impairments.
72. Determine the location and value of existing barriers relevant to fish management and aquatic invasive species (AIS) control.
73. Form committee to explore collaborative efforts in dealing with aquatic invasive species including education, control, rapid response, and inspections.
74. Pursue funding to provide technical and financial assistance to control/manage/prevent invasive species.
75. Maintain current and historical GIS records of invasive species using the MnDNR database.
76. Determine the location and severity of ravines within lake drainage areas.
77. Implement monitoring efforts to develop lake level trends for analysis.
78. Investigate and document surface water and groundwater known areas of interactions in the NFCR Watershed.
79. Research existing conditions of lake bed sediment deposits and its interaction with native plant communities.
80. Prepare and maintain formal maps to define the boundary of the riparian area adjacent to perennial streams and rivers, as a means to focus the implementation of incentive based initiatives.
81. Define impact of altered hydrology on surface runoff and water resources within the watershed and utilize results to generate quantitative storage goals for each planning region to mitigate impacts of altered hydrology.
82. Establish bankfull elevations to determine floodplain connectivity and stream incision.
83. Define, develop, maintain, and make available the most current floodplain maps.
84. Develop and maintain an inventory of urban and agricultural locations on the landscape which are prone to flood damages.
85. Locate, identify, and protect all calcareous fens not yet on the DNR Commissioner's List.
86. Review and investigate WCA consistency and review possibility of shared services.
87. Continue to develop and maintain a database inventory of existing BMPs with associated costs of implementation.
88. Promote programs that recognize and/or provide incentives to landowners for the multiple benefits resulting from implementation of BMPs, including improved water quality, resilience against flood damage, and protected/enhanced wildlife habitat and biodiversity.
89. Identify information sources to better classify rural stewardship within the plan area, including where existing nutrient management plans, soil health and tillage practices, and irrigation best management practices are currently being implemented.

90. Identify information sources to better classify urban stewardship within the plan area.
91. Inventory urban infrastructure to assess downstream flooding and water quality degradation from storm events.
92. Assess capacity to productively reuse stormwater runoff through either rainwater harvesting (collection of roof runoff) or stormwater capture and reuse.
93. Explore a pilot area inventory and map of known field tile drainage locations in the plan area.
94. Support research that characterizes the quantity and quality of tile drainage and its impacts on recharge to local groundwater aquifers. Encourage projects that monitor the outfalls of select agricultural tile lines to better understand effects on ecosystem functions.
95. Develop terrestrial habitat existing conditions map with number and location of large terrestrial habitat blocks (4 square miles with approximately 60% cropland, 10% woodland and forest, 15% wetland and 15% grassland) within the plan area.
96. Develop and maintain a database of the number of irrigation wells used for agricultural purposes and the area subject to irrigation.
97. Maintain monitoring site at the Crow River in Rockford, MN (USGS ID: 05280000) to continue the generation of streamflow and water quality data for evaluating trends and changes.
98. Maintain and make improvements to the Nitrate Infiltration Risk Map to increase its utility in guiding management practice and structural BMP implementation decisions.
99. Conduct assessments of the condition and functionality of existing dams.
100. Develop Education and Outreach Initiative with two campaigns: the General Public Knowledge and Behavior Campaign, and the Landowner, Producer and Lake Shore Owner Engagement Campaign
101. Implement an education/outreach campaign for the responsible use, storage, and disposal of pesticides.
102. Encourage municipalities to utilize practices that promote water conservation and efficiency. Some examples include tiered billing rates that reward conservation, improved meters and leak detection, and rebates for water-saving appliances and irrigation Best Practices including turf irrigation technologies (i.e. Golf Course, Schools).
103. Encourage watershed residents and businesses through educational and outreach efforts to adopt conservation and water reuse practices, such as capturing stormwater for irrigation and planting native vegetation / lawns that do not require as much water.
104. Promote education about source control within rural subdivisions and urban areas to promote a reduction of chloride loading to waterbodies. Encourage stormwater chloride source reduction in rural subdivisions and urban areas.
105. Perform education and outreach initiatives targeted to general public / lake shore owners about threats of invasive species, and ways to prevent / control them.
106. Facilitate conversations with local stakeholders and LGU's in regards to increased watercraft inspections/monitoring at lake access sites to promote prevention.
107. Promote natural shorelands and shoreland revegetation by providing education, technical, and financial assistance to landowners for shoreland restoration.
108. Provide technical and financial assistance to lake associations and other stakeholders for the implementation of in-lake management efforts to improve the quality of water resources, when appropriate.

109. Perform education and outreach initiatives targeted to general public / lake shore owners about impacts of recreational boating motors on the resuspension of lake sediment.
110. Use various programs to provide land owners with economically viable alternatives for use of land in flood prone areas.
111. Provide educational and technical assistance to landowners regarding State and Federal programs to preserve and restore wetlands, including the State wetland-banking program.
112. Provide educational materials, consultations, demonstration projects, and workshops to landowners, agricultural producers, and lake shore owners about compensation and incentive programs to promote riparian BMPs and shoreland BMPs (including shoreland restoration and shoreland revegetation).
113. Provide school presentations and other educational efforts tailored to youth.
114. Provide and distribute educational materials through various multi-media methods about local water management, the impacts of decisions, and actions the public can take to make a difference.
115. Host meetings for the public regarding monitoring results and assessments from North Fork Crow River Watershed 1W1P monitoring activities.
116. Host annual meetings for local government officials about the condition of water resources, progress made, and results and assessments from North Fork Crow River Watershed 1W1P monitoring activities.
117. Provide cooperative education efforts and demonstration projects to promote agricultural BMP's including, but not limited to: nutrient management, conservation tillage, buffers, soil testing, pesticide application, etc.
118. Develop new techniques to promote conservation efforts, such as administering a local certification training program or partnering with agribusiness retailers to recommend appropriate BMPs.
119. Support and encourage citizen led initiatives, such as Farmer Led Councils, lake associations, farmer mentor lists, and local advisory committees, that promote conservation through peer based outreach and performance based incentives.
120. Develop a comprehensive civic engagement plan.
121. Promote education for solid and hazardous waste disposal and awareness of existing regulations, rules, and ordinances pertaining to proper waste disposal to reduce chemical and nutrient contamination of water.
122. Promote the natural meandering of streams to decrease stream velocity for reducing flood impacts and enhance recreational and fish and wildlife habitat value.
123. Provide educational materials, consultations, and workshops to landowners and agricultural producers about public drainage and public water statutes, including MS 103E.015 subd 1a.
124. Provide technical and financial assistance, as available, for the reconstruction and repair of dams to ensure adequate water levels are maintained.
125. Stabilize and or restore degraded sections of stream and river reaches to provide multiple benefits, such as enhanced hydrologic function and reduced bank failure and sediment deposition into waterbodies, while also providing connectivity benefits for aquatic and terrestrial habitats.
126. Assist as needed with outlet structure reconstruction and improvements on degraded or failing structures.

127. Maintain public infrastructure to provide drainage at the anticipated level of service to minimize flood damage to land both upland and downstream of the managed systems.
128. Evaluate the need for, develop, and implement capital improvement projects to address areas currently subject to damage.
129. Protect the natural meandering of streams and promote the restoration of straightened streams to decrease stream velocity for reducing flood impacts and enhance recreational and fish and wildlife habitat value.
130. Identify where maintenance is needed on County ditch systems, and complete repairs in accordance with multi-purpose drainage goals as stated in MS 103E.015.