

Forest Resource Management Plan



West Central Landscape

Minnesota Forest Resources Council
March 16, 2004



Minnesota Forest Resources Council (MFRC)
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Section 1

Introduction



A. Sustainable Forest Resources Act

The Minnesota State Legislature enacted the Sustainable Forest Resources Act (Minn. Statutes, Chapter 89A) in 1995, which established the MN Forest Resource Council (MFRC) and formalized the state's policy to:

- pursue the sustainable management, use, and protection of the state's forest resources to achieve the state's economic, environmental, and social goals;
- encourage cooperation and collaboration between public and private sectors in the management of the state's forest resources;
- recognize and consider forest resource issues, concerns, and impacts at the site and landscape levels;
- recognize the broad array of perspectives regarding the management, use, and protection of the state's forest resources and establish processes and mechanisms that seek and incorporate these perspectives in the planning and management of the state's forest resources.

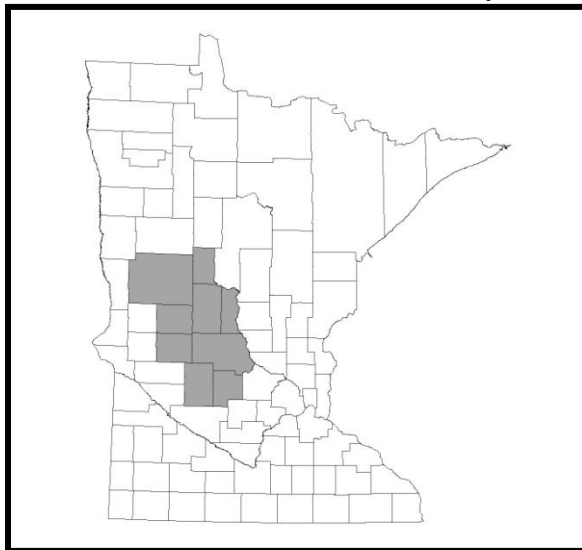
B. Regional Forest Resources Committees

The MFRC Landscape Program establishes landscape committees on a regional basis to implement these state policies at the landscape level throughout the State.

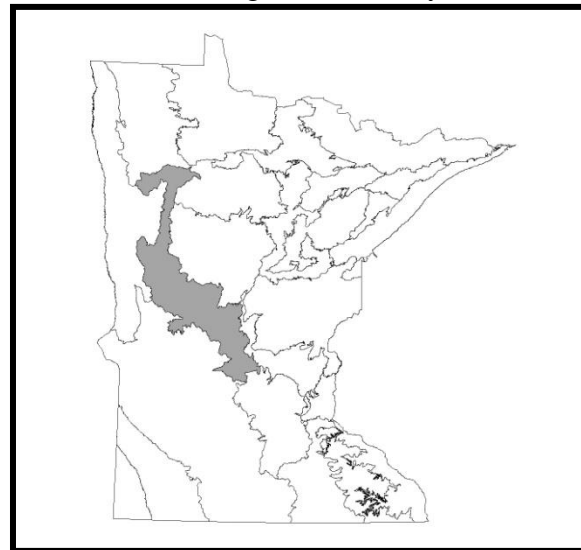
The West Central Landscape Region is defined in two different ways. Administratively it is based on Counties which include: Otter Tail, Wadena, Todd, Douglas, Pope, Stearns, Kandiyohi, Meeker and Morrison west of the Mississippi River (approximately 5.5 million acres). Ecologically, the boundary is the Hardwood Hills Ecological Section from the Ecological Classification System. This system defines regions that have similar ecological characteristics such as geology, vegetation, soils, etc. The West Central Landscape Regional Committee (the Committee) was organized in October 2002 and began working on how best to achieve long-term forest sustainability by determining desired future outcomes and developing goals and strategies to achieve the agreed-upon desired outcomes.

This report summarizes the work of the Committee from October 2002 to October 2003

West Central Administrative Boundary



West Central Ecological Boundary



Section 2

Process Summary



A. Formation of the West Central Regional Landscape Committee

In October 2002 the Committee was organized. A wide variety of people were invited to participate with 20 people indicating an interest in participating. A core group of 10-12 attended the monthly meetings with the remainder continuing to participate via the mailing list. The Committee decided to use county boundaries as the analysis area and requested that the MFRC make the following changes to the West Central Landscape boundary:

- Remove Wadena County from the West Central landscape and include it in the North Central landscape. The North Central Landscape Committee has already completed the ecological analysis and there is no need to duplicate.
- Include the western one third (west of Mississippi River) in Morrison County in the West Central landscape. This makes sense geographically and ecologically.

The MFRC approved the boundary change for Morrison County but did not change boundaries with the North Central landscape. The West Central Landscape can use the recommendations in the North Central Plan for Wadena County and coordinate as necessary.

The Committee developed a process and a schedule to complete their work (refer to Appendix A). A brief description of the steps the Committee followed is given below.

West Central Landscape Regional Committee

Members:

Steve Caron, MN DNR – Wildlife
 Chuck Erickson, Farm Bureau
 Duane Hanson
 Bill Haugan
 Curt Kreklau, MN Agro Forestry Coop
 Kent Montgomery, The Nature Conservancy
 Cheyenne Nolan, Snowy Pines
 Greg Nolan, Snowy Pines
 Anne Oldakowski, Wadena SWCD
 Dean Schmidt, WesMin RC&D
 Tom Schulz, Wadena SWCD
 Bob Sonneberg, MFRP
 Ed Uhlenkamp, Todd SWCD
 Martin Wiley, MN DNR – Forestry

Section 3

Assessment Information



A. Current Trends and Conditions Assessment

Existing information on the social, ecological, and economic aspects of the landscape were compiled by MFRC staff prior to organizing the Committee. This assessment served as a starting point for discussion, definition of new information, and initial issue identification (refer to MFRC web site, at www.frc.state.mn.us for the assessment). Some key highlights from that document include:

- Over 95% the land is privately owned (MN DNR, 1995).
- From 1990 to 2000 the population increased 10% with a projected increase of 29% from 2000 to 2030 with Stearns and Douglas Counties increasing the most (US Census, 2000).
- People aged 65 and older are estimated to increase close to 100% from 2000 to 2030, while the 0-24 age group is projected to increase 15% (US Census, 2000).
- Manufacturing, retail trade, education, health, and human services account for more than 50% of the employment; agriculture and forestry account for approximately 5% of the employment (US Census, 2000).
- Agriculture, forestry, fishing, hunting, and mining industries employ 5.7% (10,800 people) of the total workforce (US Census, 2000).



Generalized Landscape Maps

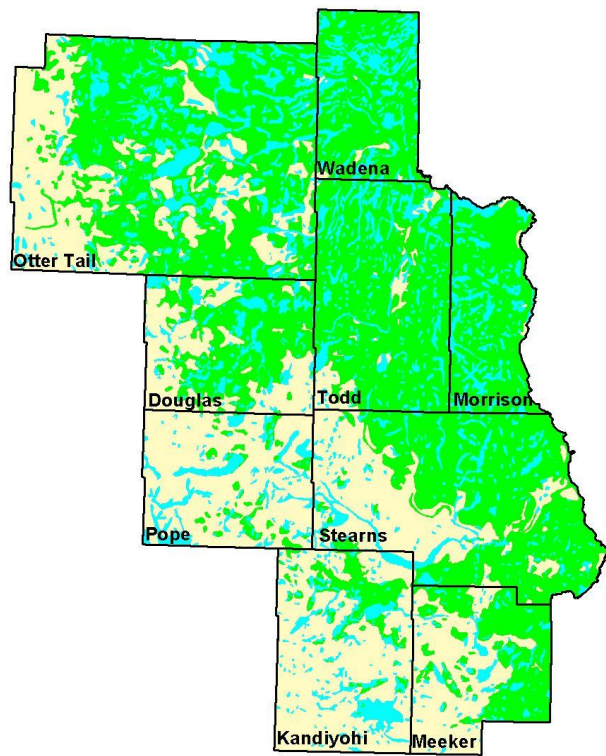
A change analysis was completed of the historic vegetation based on Marschner's Map of 1800's vegetation and 1990 satellite data. This was done to analyze changes in amount of forest and grassland cover. The results of the analysis are in the tables and maps below.

1800s Marschner Land Cover

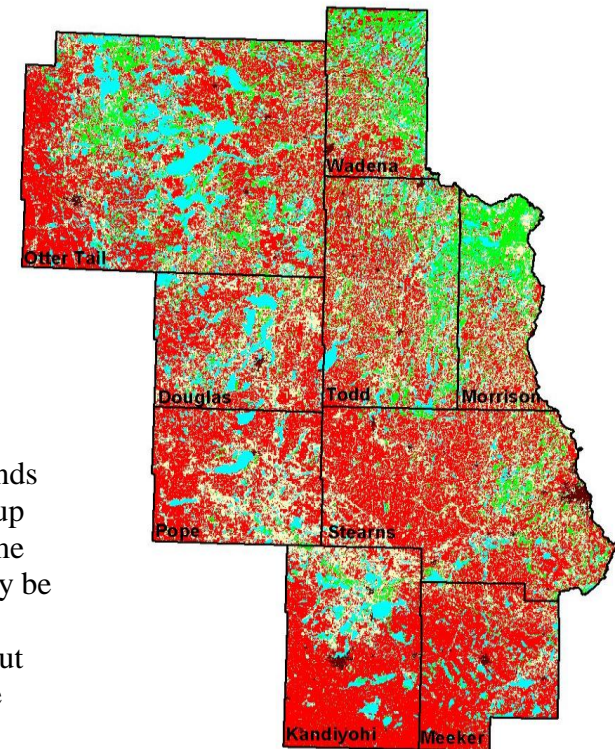
Land Cover	Acres	Percent
Grassland	2,969,000	54%
Forest	1,985,000	36%
Wet	550,000	10%
Total	5,504,000	

1990s Satellite Land Cover

Land Cover	Acres	Percent
Grassland*	1,474,000	27%
Forest	579,000	11%
Wet	685,000	12%
Crop	2,724,000	49%
Developed	42,000	1%
Total	5,504,000	



- Includes areas covered by grasslands and herbaceous plants. May contain up to one-third shrub and tree cover. Some areas may be used for pasture and may be mowed or grazed. Included are fields which show evidence of past tillage but now appear to be abandoned to native vegetation or planted to a native crop.



B. Review of Existing Plans

The document *Forest Resource Management in West Central Minnesota A Landscape Perspective* (Class 2001) examined 20 local plans in the region and common themes were identified (refer to Appendix B for executive summary).

Common Themes/Strategies:

1. Provide public with comprehensive environmental education and technical assistance.
2. Promote land use practices to protect and restore water resources.
3. Promote and improve wildlife habitat.
4. Reduce soil erosion and contaminated runoff.
5. Promote incentives, easements, and development of funding sources.
6. Improve forestland quality and area.
7. Improve compliance and effectiveness of Best Management Practice (BMP) guidelines.
8. Improve cooperation and coordination between agencies, interest groups and private landowners.

Plans Examined

- Beyond the Suburbs: A Landowner's Guide to Conservation Management, 2001
- Douglas County Comprehensive Local Water Plan
- Kandiyohi County Comprehensive Water Management Plan
- Meeker County Comprehensive Water Management Plan
- Minnesota 2001-2005 Nonpoint Source Management Program Plan
- Morrison County Water Plan
- Otter Tail County Comprehensive Local Water Plan Update
- Pomme de Terre River Watershed Implementation Plan 2002-2007
- Pope County Comprehensive Water Plan Update
- The Prairie-Forest Border Ecoregion: A Conservation Plan
- Prairies to Forest Program
- St. Cloud Natural Area Inventory and Planning Framework
- St. John's Land Management Plan Goals
- Sauk River Watershed District Overall Comprehensive Plan
- Staples Community-based Comprehensive Plan
- Stearns County Comprehensive Local Water Plan
- Todd County Comprehensive Land Use Plan
- US Fish and Wildlife Prairie Restoration Plan
- Todd County Comprehensive Water Plan Update
- Wadena County Comprehensive Local Water Plan
- WesMin RC&D 2002 Annual Work Plan

C. Issue Identification

The Committee identified a number of issues affecting the landscape. The following issues in the landscape were the most important:

Issue	Issue Involves
Maintenance/restoration of Natural Ecosystems	<ul style="list-style-type: none"> • Mix of forest species and age class • Inappropriate planting for wildlife and bio-diversity • Conversion of forest to other uses (fragmentation)
Land use/development/conversion	<ul style="list-style-type: none"> • Development of forest land (parcelization) • Reduced understanding of the resource (people are disconnected from resource) • Motivating private landowner to voluntarily be good stewards.
Lack of environmentally informed citizens	<ul style="list-style-type: none"> • Information delivery systems for getting material to non-forestry clientele. • Reduced understanding of the resource (people are disconnected from resource)
Diverse land ownership goals and lack of use of decision-making tools for private landowners (economics, technical harvest etc)	<ul style="list-style-type: none"> • Relations with neighbors (land values, noxious weeds etc) • Lack of coordinated management across ownership (overlapping planning/jurisdictions) • Awareness/access to decision-making tools.

Section 4

Recommended Desired Outcomes, Goals, and Strategies



A. Recommended Goals and Strategies

Goals and strategies are short-term (10-20 years) steps that can be accomplished to move the landscape toward the desired outcomes. Some of the goals are outside the traditional scope of a forest-based plan as per the Sustainable Forest Resources Act, but indicative of the interconnected and diverse environment the Committee is working with in the West Central Landscape. The goals and strategies are listed in no particular order or priority under each of the desired outcomes.

Desired Outcome I - Forest and Prairie Ecosystems: Forest and prairie ecosystems are healthy, resilient, and functioning providing sustainable economic and/or recreational opportunities.

Goal A: Historically this landscape was 36% (1,985,400 acres) forested in the following cover types: Pine, Tamarack, Oak, Lowland Hardwoods, Upland Hardwoods and Aspen/Birch. Restore these native forested types from the current 11% (579,300 acres) to 15% (825,000 acres) in the landscape. Refer to Appendix C for historical and current breakdown.

Strategy 1: Identify 245,000 acres on appropriate sits where forest resources should be restored and distribute these maps to local land use authorities/units.

Strategy 2: Use Federal Farm Programs to reforest 75,000 acres (3%) of previously forested agricultural lands Reforest historically forested sites, such as riparian areas with appropriate native species.

Strategy 3: Initiate resource conservation programs that promote forest resource management and protect the land base.



Strategy 4: Coordinate ecological goals for Wadena County with the North Central Landscape goals (refer to *Recommended Desired Outcomes, Goals and Strategies North Central Landscape Region – A Report to the MN Forest Resources Council*, March 25, 2003).

Goal B: Assure that 50% of the private forest land parcels greater than 40 acres have landowners who use professional advice in caring for their land currently, stewardship plans cover 26% of the non-industrial private land statewide.

Strategy 1: Publicize the importance of resource management through PSA's (Public Service Announcements) and other outreach efforts.

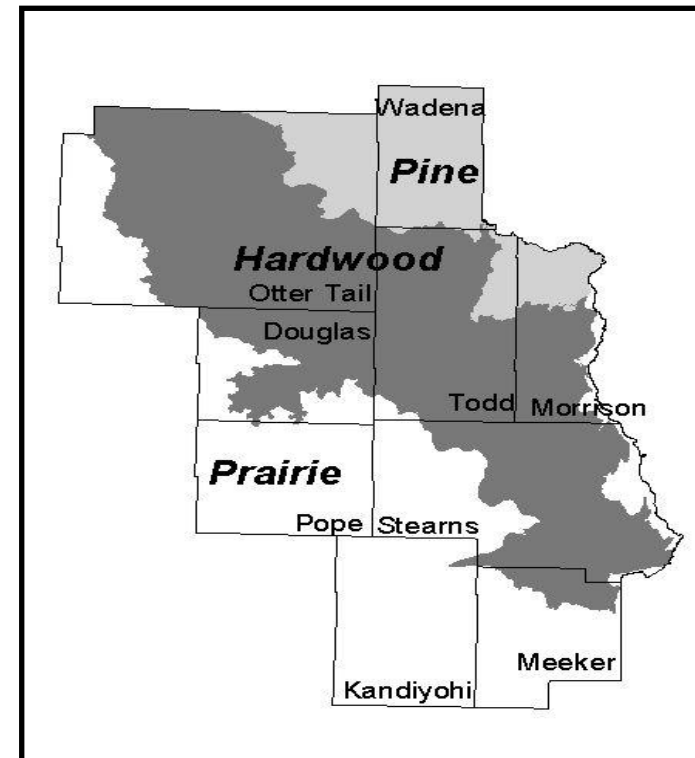
Strategy 2: Encourage programs that allow non-industrial private forest and prairie landowners to use well-qualified natural resource advisors at a reasonable cost.

Goal C: Maintain size of tracts of 500 contiguous acres or greater of forest land.

Strategy 1: Identify and map 500 acres or greater forest tracts and distribute the map and data to local land use authorities

Strategy 2: Encourage organizations (State of Minnesota, National, Sportsmen Groups, etc) to adopt conservation easements or pay stewardship costs for conservation easements on large forested properties. (Similar to current Legislative Commission on Minnesota's Resources - LCMR wildlife corridors project costing approximately \$10-12,000 per easement).

Strategy 3: MFRC should explore ways to encourage counties and townships to adopt land use planning and zoning regulations, which preserves an appropriate and significant portion of the non-developed private land base in 40 acre or greater parcels of forest, wetland, prairie, and agriculture.



Strategy 4: Encourage cluster developments that group development to certain parts of a parcel and leave the remaining naturally vegetated.

Goal D: Enhance the opportunities for restoring native species by increasing existing grassland habitat (primarily non-native) from the current 27% (1,500,200 acres) to 33 % (1,800,600 acres) of the landscape by using native species in grassland restorations and protecting all remaining native prairies.

Strategy 1: Encourage the establishment of an additional 300,000 acres of native grassland with at least 10% in Type I “Bird Conservation Areas” (appendix D for description).

Strategy 2: In the area east of the prairie regions, consolidate existing grass acreage into larger patches to create better habitat for nesting ducks and other grassland nesting birds.

Strategy 3: Restore a range of woodland/grassland mixes, including sparsely timbered oak savannah and other areas with a nearly closed canopy with varying amounts of shrub/grass understory.

Strategy 4: Discourage planting trees on inappropriate sites in the prairie region, such as areas in close proximity to existing native grasslands or areas being managed by mutual agreement of the affected parties as treeless habitat.

Desired Outcome II - Water Resources: Water resources are managed to sustain their quality for human use and provide habitat for many species of plants and animals.

Goal A: Maintain and increase riparian buffers along and around all public waters.

Strategy 1: Encourage Soil and Water Conservation Districts (SWCDs) to continue their riparian buffer work.

Strategy 2: Identify and map existing riparian buffers in the landscape.



Strategy 3: Develop small grant (matching funds) program to encourage proper planning, design and installation of riparian buffers.

Goal B: Best Management Practices (BMPs) are used on at least 80% of the management activities in forests and forest riparian zones to protect water quality.

Strategy 1: Support Minnesota Logger Education Program (MLEP) efforts to encourage loggers to practice BMPs.

Strategy 2: Expand surface water monitoring program.

Strategy 3: Encourage septic system updates whenever property changes ownership.

Strategy 4: Expand BMP monitoring activities.

Strategy 5: Encourage written BMP implementation plans for development projects near shorelands, riparian, etc.

Strategy 6: Use BMPs to protect well-head areas.

Goal C: Reduce non-point source pollution and urban flooding.

Strategy 1: Encourage use of educational programs on the benefits of preventing wind erosion.

Strategy 2: Encourage Extension Service to develop and promote BMPs for controlling wind erosion through farm associations, Minnesota Department of Agriculture, and SWCDs.

Strategy 3: Reduce the extent of land that is cultivated and developed within areas subject to wind erosion or snow pack.

Desired Outcome III – Business: Encourage viable and geographically diverse natural resource based businesses, which advocate the long- term stewardship of natural resources.

Goal A: Encourage natural resource based businesses, both service and product driven, of all sizes.



Strategy 1: Encourage partnering of for-profit and non-profit organizations to promote favorable business opportunities/climates.

Strategy 2: Use government purchasing power to encourage business development, for example purchase locally.

Strategy 3: Identify raw material base for potential business.

Goal B: Maintain a stable supply of raw natural resources products.

Strategy 1: Promote short rotation woody crops on up to 35,000 acres on appropriate sites.

Strategy 2: MFRC should explore the pros and cons of right to practice forestry legislation as a tool to promoting sustainable forestry.

Desired outcome IV – Education: The public is well informed relative to environmental concerns and how to obtain technical environmental assistance.

Goal A: Public officials and their staff are aware of the benefits of healthy ecosystems and the value of viable natural resource based businesses.

Strategy 1: Identify economic cost of poor environmental policy and advertise those numbers against other economic costs.

Strategy 2: Provide environmental educational opportunities for county staff in appropriate areas of concern.

Strategy 3: Offer MFRC sponsored talks at annual statewide township and county association meetings.

Strategy 4: Facilitate a workshop and develop appropriate fact sheets on Forestry + Economic Development + Opportunities + Benefits, and invite local officials and landowners.

Goal B: Promote natural resource educational programs for grades K-12 that result in students understanding ecological functions and values.



Strategy 1: Fund and promote existing programs (Project Learning Tree, Project Wild, etc).

Strategy 2: Encourage an ecosystem based approach to teaching natural resource management.

Goal C: Land owners and potential land owners understand their role as land stewards and are aware of sources of professional natural resources assistance.

Strategy 1: Encourage information sharing between organizations such as Forestry co-ops, Extension-private landowners, etc.

Strategy 2: Encourage Extension and others to promote forestry assistance sources (Forest Stewardship Planning, etc) in their quarterly news releases to local media.

Goal D: The general public is informed of natural resource issues through the mass media to the extent that the public understands basic ecological concepts and that forest resources are renewable.

Strategy 1: Develop Public Service Announcements referring to natural resource management issues.

Desired outcome V – Coordination: Cooperation and coordination between agencies, interest groups, and private land owners result in effective communication, planning, and natural resource management.

Goal A: Encourage the cooperative inventory and analysis of forest resources.

Strategy 1: MFRC should continue to serve a primary roll of creating and maintaining forestry data “clearing house”.

Strategy 2: Supplement Forest Inventory Analysis (FIA) efforts with continuing analysis of forest resources (such as the Gap Analysis Program - GAP).



Desired outcome VI – Policy: Land use policies, regulations, tax incentives, and cost share opportunities are developed to preserve the rural land base, recognizing that sustainable development is necessary.

Goal A: Protect rural land and forest base from unrestricted/unplanned development to enhance or preserve the natural resources and reduce infrastructure costs.



Strategy 1: MFRC should explore ways to encourage counties and townships to adopt land use planning and zoning regulations, which preserves an appropriate and significant portion of the non-developed private land base in 40 acre or greater parcels of forest, wetland, prairie, and agriculture.

Strategy 2: MFRC should support the development and distribution of model land use plans and ordinances that promote sustainable forest resource management.

Goal B: Provide cost share incentives for sustainable natural resource practices.

Strategy 1: Utilize federal, state, and local agencies, sportsmen, service, farm organizations, conservation and environmental groups to develop and/or expand cost share programs in the following areas:

- reforestation projects
- prairie restoration
- wetland restoration
- riparian area restoration
- erosion control systems

Strategy 2: Target small, private natural resource based business development with government cost share monies.

Goal C: A tax structure that provides incentives for sustainable natural resource management.

Strategy 1: The MFRC should recommend to the legislature revisions in current tax law and/or propose new tax laws (property and/or income) that:

- assure property taxes are in proportion to the minimal demands and low social costs required by large tracts of undeveloped land (almost all demands-schools, roads, emergency services – are associated with home sites, not undeveloped land).
- discourage property taxes with highest and best valuation basis and emphasize taxes that promote current use valuation with long term commitment to land stewardship.
- promote an income and/or property tax credit for clean water produced on well managed riparian forests.
- provide favorable capital gains taxes as they pertain to the sale of forest products.
- keep the land forested.
- reward landowners that practice sustainable management of forest and prairie ecosystems.
- encourage families to keep land holdings together.
- allow tax credits for the value of a conservation easement.

Strategy 2: Promote Sustained Forestry Incentives Act (SFIA) with eligible landowners (provides incentives to landowners to using stewardship plans to provide a basis for sound management).

Strategy 3: MFRC should explore a sales tax exemption for certified wood products.

Section 5

Coordination/Implementation/Monitoring



The Committee agreed to the following:

- The Committee does not have direct influence to carryout the desired outcomes, goals and strategies. This work must be done primarily through others.
- The key implementation task is to make organizations, local government, non-profits, and others aware of the Landscape Planning effort and the goals and strategies in the approved plan.
- The Committee should meet after the plan is approved by the MFRC to decide on details of implementation and then yearly to monitor progress
- The Committee or sub-committee should design a process to make key contacts, presentations, and other outreach efforts to tell people about the landscape plan.
- The Committee or sub-committee should also survey to find out what other organization are doing to further the landscape goals and opportunities for coordination.
- The Committee should follow-up initial contacts in a year to see how things are going and what was accomplished. This could be used to monitor the non-measurable outcomes.

Section 6

Glossary of Terms and Acronyms



Term	Definition
Forest fragmentation	The breaking up of a forest by various forest or non-forest uses*
Forest parcelization	The subdividing of forestland for residential and/or commercial building*
Productive Conservation	Active or semi active management of ecosystems for product and/or benefit
Agro-forestry (international definition)	A land use system that involves deliberate retention, introduction, or mixture of trees or other woody perennials in crop and animal production systems to take advantage of economic or ecological interactions among components *
Short Rotation Woody Crops	Plantations of fast maturing shrubs or trees that are produced as crops to supply wood fiber to industry or biofuel to generate electrical power**
Native species	An indigenous species that is normally found as part of a particular ecosystem*
Natural area	A physical and biological area in nearly natural condition that exemplifies an ecological community and its associated vegetation and other biotic, soil, geologic and aquatic features *
Restoration	The process by which natural flora is reintroduced into an area and maintained to prevent repeated extirpation (Wisconsin DNR Silvicultural Manual)

*From the “The Dictionary of Forestry”, John A. Helms, editor, Society of American Foresters.

** Minnesota Chapter of the Wildlife Society 2002 Position Paper “Short Rotation Woody Crops in Minnesota’s Historically Open Landscapes: Information Concepts and Recommendations in Regard to Native Wildlife and their Habitats”.

BMPs	-	Best Management Practices
DNR	-	Department of Natural Resources
FIA	-	Forest Inventory and Analysis
GAP	-	Gap Analysis Program
GIS	-	Geographic Information System
GBCAs	-	Grassland Bird Conservation Areas
LCMR	-	Legislative Commission on Minnesota Resources
MFRC	-	Minnesota Forest Resources Council
MLEP	-	Minnesota Logger Education Program
PSA	-	Public Service Announcement
R&D	-	Research and Development
SFIA	-	Sustained Forestry Incentives Act
SWCDs	-	Soil and Water Conservation Districts

Section 7

References

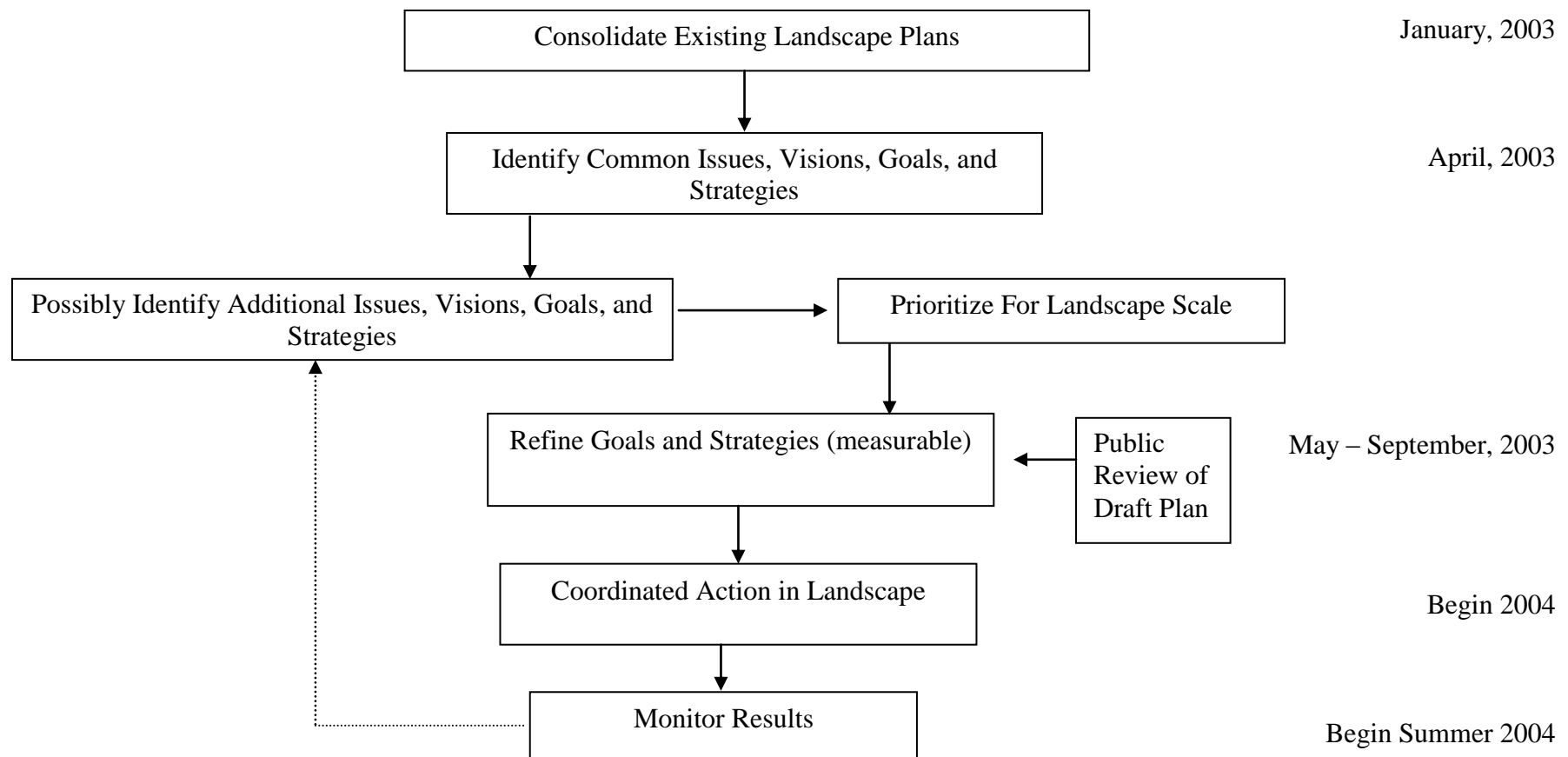


1. Prairie Restoration: Rex Johnson, Project Leader of the Habitat and Population Evaluation Team of the Fish and Wildlife Service, gave the Committee an overview of the work his team is doing to identify high priority prairie restoration areas and displayed maps showing where the high priority sites are located. Rex and his team are looking to cooperate with groups in sharing information and making sure a consistent message about prairie restoration is being told to stakeholders. Members of his staff worked with the Committee to develop goals and strategies for the prairie region of the landscape.
2. Minnesota West Central Landscape Current Conditions and Trends Assessment: Draft, March 2001, Minnesota Forest Resources Council Landscape Program
3. Forest Resource Management in West Central Landscape A Landscape Perspective: Class L and Skally C

Section 8 Appendix



A. Appendix A: Planning Process Timeline



B. Appendix B: Executive Summary “A Landscape Perspective

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. In 2001, specific references were added by the Legislature to address forest resources in West Central Minnesota. The Council commenced to create a broad statement of key issues, desired future conditions (visions), goals, and strategies. As used in this report, an issue is a concern based on current information and people’s values that relate to a problem or focus area addressed by forest resource reports. A vision refers to a future desired condition for an area 100 years or more in the future. Goals are specific benchmarks to strive towards in addressing visions and resolving issues. Goals are detailed and assist in developing strategies, which are specific tools and techniques to accomplish goals and move toward achieving visions.

This Landscape Perspective report has been developed by utilizing existing plans and documents prepared by stakeholder groups in West Central Minnesota. Fifteen documents were obtained and reviewed. References in each report concerning forest resource issues, visions, goals and strategies were summarized. Eight similar vision themes were identified from the summaries, and are presented with their respective goals and strategies.

Based on the similar visions, goals, and strategies, a future vision statement was developed as a template to provide guidance to agencies and individuals utilizing this report:

Streams, lakes, and wetlands are surrounded by healthy riparian vegetation, dominated by native species. Timber harvest and rural and urban development are restricted close to water resources, thus reducing the potential impact on water quality.

Reforestation and woodland improvement are encouraged in riparian zones and other critical areas. Diversity of vegetation and animals is promoted through enhancement and expansion of wildlife habitat and natural areas on public and private land.

Cost-share and incentive programs are used to promote forest regeneration and conservation practices. Education programs for children and adults promote appreciation and stewardship of the environment. Funding is actively sought to expand conservation practices, incentive programs, and environmental education.

Natural communities and regionally significant areas have been identified and management objectives have been developed for their sustainability. Best management practices are emphasized in forest and shoreland management. Education on proper implementation of BMPs is provided to contractors and landowners. Existing regulations and ordinances that protect natural resources are enforced, and local governments and management agencies are encouraged to prepare resource management plans.

A database and GIS of natural and cultural resource information have been developed for the region to guide planning and monitoring activities, and are continually updated. Public agencies, private organizations, and interested individuals correspond often to ensure proper management of forest resources and collaborate to promote the continued health of West Central Minnesota's unique environment.

The information in this report can be used to assist groups in coordinated landscape management of forest resources. The ideas presented are meant as a preliminary guide for landscape planning in West Central Minnesota to be modified and refined as implementation and coordination occurs.

C. Appendix C: Historical and Current Vegetation Breakdown

General trends for land use in the West Central landscape show significant decreases in forest and prairie, and increases in crop and developed land uses (Table 1).

Table 1. Comparison of Land Covert, Historic (late 1800s) to Current (1990s)

Class	Historic Percent¹	Current Percent²	<i>Percent Change</i>
Forest	36	11	-27
Prairie/Open/Brush	54	27	-25
Wet	10	12	2
Crop	0	49	49
Developed	0	1	1

¹ Based on Marschner's map

² Based on GAP Land Cover classification

Represents the data summarized for the West Central counties: Douglas, Kandiyohi, Meeker, Morrison (western half), Otter Tail, Pope, Stearns, Todd and Wadena

Even with the significant decrease in forest, forest composition has stayed somewhat similar to what it has been in the past, with the exception of decreases in tamarack and lowland hardwoods and increases in oak and aspen (Table 2).

Table 2. Comparison of Tree Species, Historic (late 1800s) to Current (1990s)

Class	Historic Percent¹	Present Percent²	<i>Percent Change</i>
Pine	8	8	0
Tamarack	10	3	-7
Oak	32	41	9
Lowland Hardwoods	13	1	-12
Upland Hardwoods	15	14	-1
Aspen/Birch	22	32	10

¹ Based on Bearing Tree data

² Based on GAP Land Cover classification

Represents the data summarized for the West Central counties: Douglas, Kandiyohi, Meeker, Morrison (western half), Otter Tail, Pope, Stearns, Todd and Wadena

D. Appendix D: US Fish & Wildlife Bird Conservation Area Guidelines

The Bird Conservation Area concept was developed by Partner's in Flight as a model for prioritizing conservation areas for declining bird species. The Grassland Bird Conservation Areas (GBCA) was designed for grassland nesting birds and based on the following assumptions: 1) larger patches are better due to an inherent preference for larger patches by some grassland birds (a.k.a., area sensitivity), 2) patches with minimal edge (round or square shapes) are better due to fewer edges that may harbor predators, 3) trees are a hostile habitat for grassland nesting birds because they provide habitat and a travel corridor for mammalian predators and perches for avian predators, 4) productivity within a patch depends on habitat (compatible, neutral, hostile) in the surrounding landscape.

A GBCA was originally defined as an 800 ha (2000 ac) grassland core surrounded by a 4,000 ha (10,000 ac) area that contained at least 20% grassland. Since most of the tallgrass prairie has already been extensively fragmented, and recovery is usually in small patches, this definition a GBCA was too restrictive to be useful throughout most of the tallgrass prairie region. Grassland bird experts of the Prairie Pothole Region agreed that using a tiered approach would be more productive. It was assumed that the needs of the most sensitive species could be met by the largest (Type 1) GBCAs, while birds with fewer restrictions could thrive in smaller grass patches (Types 2 and 3).

All GBCAs consist of a grassland core with a surrounding 1-mile wide matrix (see figure). Core areas are at least 95% grassland (or compatible wetland types - see table), at least 50 m from trees and other hostile habitats, and may contain up to 30% wetland habitat. Each GBCA type is differentiated on the basis of size, width, amount of grass in the landscape, and the types of wetlands considered compatible (e.g., temporary wetlands are considered compatible for all GBCA types because they are typically dry for much of the nesting season).

Type 1 – at least 640 acres of grassland at least 1 mile wide. Matrix and core are at least 40% grassland.

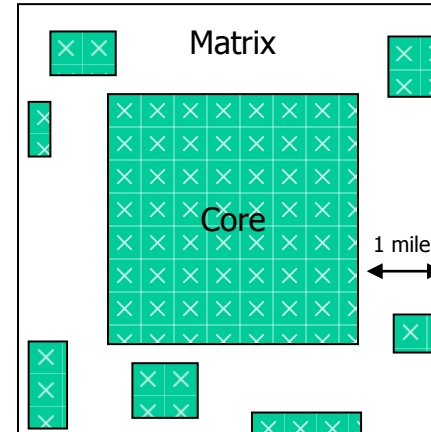
Type 2 – at least 160 acres of grassland at least ½ mile wide. Matrix and core are at least 30% grassland.

Type 3 – at least 55 acres of grassland at least ¼ mile wide. Matrix and core are at least 20% grassland.

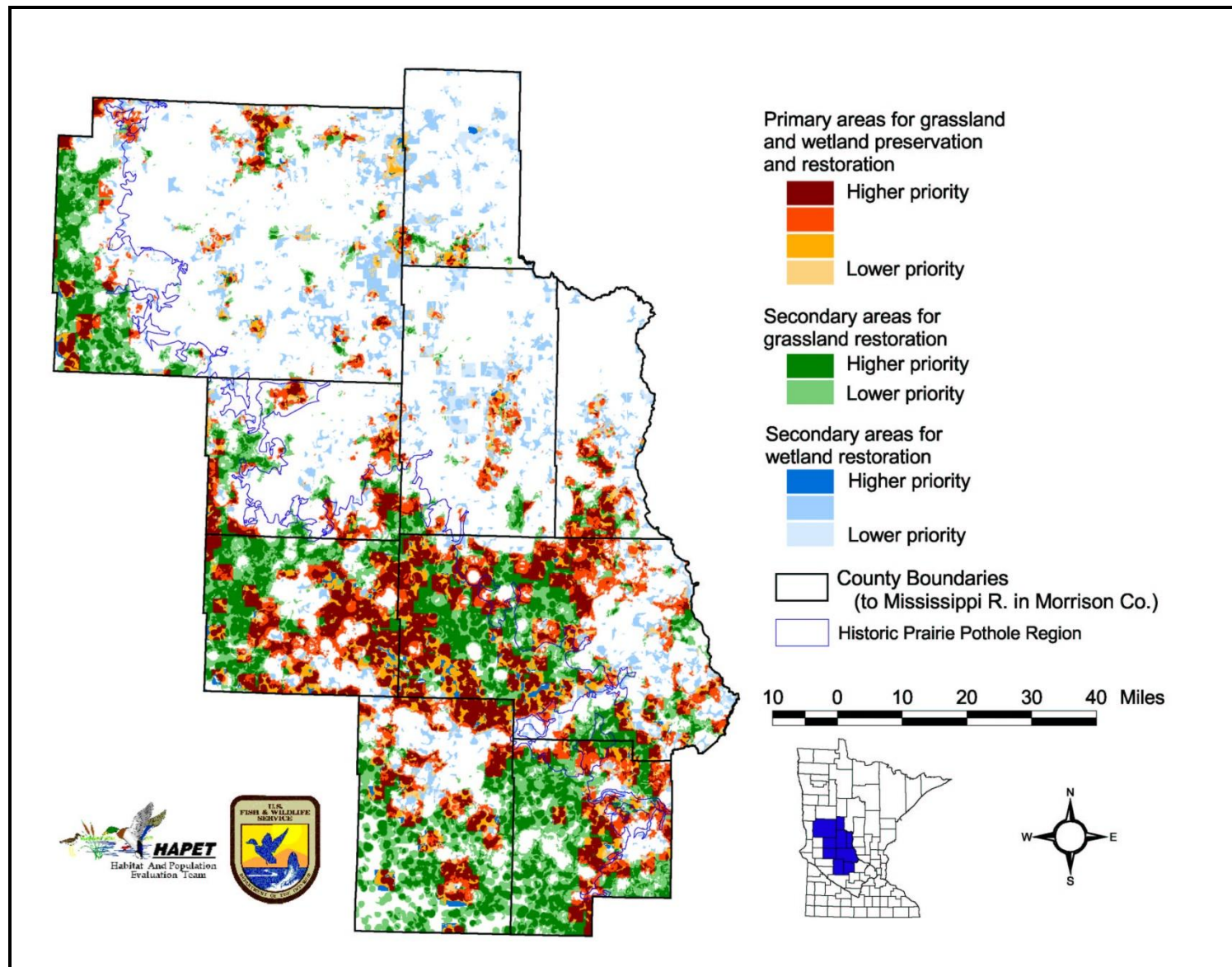
Landsat Thematic Mapper imagery and National Wetlands Inventory data were used to delineate GBCAs. The following table describes how landuse type and wetlands were categorized for each GBCA type.

Landuse	Type 1	Type 2	Type 3
Grassland	C	C	C
Hayland	N	N	N
Cropland	N	N	N
Barren	N	N	N
Scrub/shrub	H	H	H
Urban/developed	H	H	H
Trees	H	H	H
Wetland			
Temporary	C	C	C
Saturated	C	C	C
Seasonal	C	C	<30%
Semipermanent	<30%	<30%	<30%
Permanent	<30%	<30%	<30%
Forested	H	H	H
Scrub/shrub	H	H	H

C = compatible, N = neutral, H = hostile (requires ≥ 50 m buffer)



Conservation/Restoration Areas: were based on the premise that action taken in the most intact landscapes will yield the highest benefits; other landscapes can be managed by ‘filling in’ missing components. Delineations were based on the amount of grass in the landscape using the Grassland Bird Conservation Area model ($\geq 20\%$ grass within 1 mile surrounding a ≥ 55 ac core of grass); the variety of wetlands with differing water regimes with 0.5 miles; and the number and size of woody patches within 2 miles (smaller and fewer woody patches facilitates establishment of grassland in the prairie region and savannah in the transition zone).



E. Appendix E: Re-listing of Recommended Strategies for Specific Audiences

This is a re-listing of the recommended strategies by specific audiences. The intent is to assist people in finding specific strategies that apply to their organizational or personal interests.

Strategies for Local/County Officials

Desired Outcome I: Forest and Prairie Ecosystems

- Encourage the use of resource conservation programs that promote forest resource management and protect the land base.
- Encourage cluster developments that group development to only certain parts of a parcel and leave the remaining naturally vegetated.
- Encourage programs that allow non-industrial private forest and prairie landowners to use well-qualified natural resource advisors at a reasonable cost.

Desired Outcome II: Water Resources

- Encourage septic system updates whenever property changes ownership.
- Develop small grant (matching funds) program to encourage proper planning, design and installation of riparian buffers.

Desired Outcome III: Business

- Use government purchasing power to encourage business development, for example purchase locally.
- Encourage partnering of for profit and non-profit organizations to promote favorable business opportunities.

Desired Outcome IV: Education

- Fund and promote existing programs (Project Learning Tree, Project Wild, etc).

Desired Outcome VI: Policy

- Utilize federal, state, and local agencies, sportsmen, service, farm organizations, conservation and environmental groups to develop and/or expand cost share programs in the following areas:
 1. reforestation projects
 2. prairie restoration
 3. wetland restoration
 4. riparian area restoration
 5. erosion control systems
- Target small, private natural resource based business development with government cost share monies.

Strategies for Minnesota Forest Resources Council**Desired Outcome I: Forest and Prairie Ecosystems**

- Publicize the importance of resource management through PSAs and other outreach efforts.
- Encourage programs that allow non-industrial private forest and prairie landowners to use well-qualified natural resource advisors at a reasonable cost.
- MFRC should explore ways to encourage counties and townships to adopt land use planning and zoning regulations, which preserves an appropriate and significant portion of the non-developed private land base in 40 acre or greater parcels of forest, wetland, prairie, and agriculture.

Desired Outcome IV Education

- Identify economic cost of poor environmental policy and advertise those numbers against other economic costs.
- Offer MFRC sponsored talks at annual statewide township and county association meetings.
- Encourage an ecosystem based approach to teaching natural resource management.
- Encourage information sharing between organizations such as Forestry co-ops, Extension-private landowners, etc.

Desired Outcome V Coordination

- MFRC should continue to serve in primary roll of creating and maintaining forestry data “clearing house.”
- Supplement FIA efforts with continuing analysis of forest resources (such as the GAP analysis).

Desired Outcome VI Policy

- Utilize Federal, State, Local agencies, sportsmen, service, farm organizations, conservation and environmental groups to develop and/or expand cost share programs in the following areas:
 1. reforestation projects
 2. prairie restoration
 3. wetland restoration
 4. riparian area restoration
 5. erosion control systems
- The MFRC should recommend to the legislature revisions and/or propose new tax laws (property and/or income) that:
 1. Assure property taxes are in proportion to the minimal demands and low social costs required by large tracts of undeveloped land (almost all demands-schools, roads, emergency services – are associated with home sites, not undeveloped land).
 2. Discourage property taxes with highest and best valuation basis and emphasize taxes that promote current use valuation with long term commitment to land stewardship.
 3. Promote an income and/or property tax credit for clean water produced on well managed riparian forests.
 4. Provide favorable capital gains taxes as they pertain to the sale of forest products.
 5. Keep the land forested.
 6. Reward landowners that practice sustainable management of forest and prairie ecosystems.
 7. Encourage families to keep land holdings together.
 8. Allow tax credits for the value of a conservation easement.
- Promote Sustained Forestry Incentives Act (SFIA) with eligible landowners (provides incentives to landowners to using stewardship plans to provide a basis for sound management).
- MFRC should explore a sales tax exemption for certified wood products.

Strategies for Managing Agencies

Desired Outcome I Forest and Prairie Ecosystems

- Use Federal Farm Programs to reforest 75,000 acres (3%) of previously forested agricultural land use historically forested sites, such as riparian areas with appropriate native species.
- Identify and map areas where forest resources should be restored and distribute these maps to local land use authorities/units.
- Identify and map 500+ acres forest tracts and distribute the map and data to local land use authorities/units.
- Encourage programs that allow non-industrial private forest and prairie landowners to use well-qualified natural resource advisors at a reasonable cost.
- Encourage (state of Minnesota, Sportsmen Groups, etc) to pay stewardship costs for conservation easements on large forested properties. (Similar to current LCMR wildlife corridors project costing approximately \$10-12,000 per easement.
- Create 300,000 acres of native grassland with at least 10% in Type I “Bird Conservation Areas” (appendix D for description).
- In the area east of prairie regions, consolidate existing grass acreage into larger patches to create better habitat for nesting ducks and other grassland nesting birds.
- Restore a range of woodland/grassland mixes, including sparsely timbered oak savannah and other areas with a nearly closed canopy with varying amounts of shrub/grass understory.
- Avoid planting trees on inappropriate sites in the prairie region.

Desired Outcome II Water Resource

- Identify and map existing riparian buffers in landscape.
- Expand surface water monitoring program.
- Expand BMP monitoring activities.
- Encourage written BMP implementation plans for development projects near shorelands, riparian, etc.
- Protect well-head areas with BMPs.
- Reduce the extent of land that is cultivated and developed within areas subject to wind erosion or snow pack.

Desired Outcome III Business

- Promote short rotation woody crops on up to 35,000 acres on appropriate sites.

Desired Outcome VI Policy

- Utilize Federal, State, Local agencies, sportsmen, service, farm organizations, conservation and environmental groups to develop and/or expand cost share programs in the following areas:
 1. reforestation projects
 2. prairie restoration
 3. wetland restoration
 4. riparian area restoration
 5. erosion control systems

Strategies for Conservation/Non-Government Organizations

Desired Outcome I Forest and Prairie Ecosystems

- Use Federal Farm Programs to reforest 75,000 acres (3%) of previously forested agricultural land use historically forested sites, such as riparian areas with appropriate native species.
- Encourage the use of resource conservation programs that promote forest resource management and protect the land base.
- Encourage (state of Minnesota, Sportsmen Groups, etc) to pay stewardship costs for conservation easements on large forested properties. (Similar to current LCMR wildlife corridors project costing approximately \$10-12,000 per easement.)
- Create 300,000 acres of native grassland with at least 10% in Type I “Bird Conservation Areas” (appendix D for description).
- In the area east of prairie regions, consolidate existing grass acreage into larger patches to create better habitat for nesting ducks and other grassland nesting birds.
- Restore a range of woodland/grassland mixes, including sparsely timbered oak savannah and other areas with a nearly closed canopy with varying amounts of shrub/grass understory.
- Avoid planting trees on inappropriate sites in the prairie region.

Desired Outcome II Water Resources

- Reduce the extent of land that is cultivated and developed within areas subject to wind erosion or snow pack.

Desired Outcome III Business

- Encourage partnering of for profit and non-profit organizations to promote favorable business opportunities/climates.

Desired Outcome IV Education

- Encourage an ecosystem based approach to teaching natural resource management.
- Encourage information sharing between organizations such as Forestry co-ops, Extension-private landowners, etc.

Desired Outcome VI: Policy

- Utilize Federal, State, Local agencies, sportsmen, service, farm organizations, conservation and environmental groups to develop and/or expand cost share programs in the following areas:
 1. reforestation projects
 2. prairie restoration
 3. wetland restoration
 4. riparian area restoration
 5. erosion control systems

Strategies for Extension/Education Groups**Desired Outcome I Forest and Prairie Ecosystems**

- Encourage the use of resource conservation programs that promote forest resource management and protect the land base.
- Publicize the importance of resource management through PSAs and other outreach efforts.
- Encourage programs that allow non-industrial private forest and prairie landowners to use well-qualified natural resource advisors at a reasonable cost.
- Encourage cluster developments that group development to only certain parts of a parcel and leave the remaining naturally vegetated.

Desired Outcome II Water Resources

- Develop a small grant (matching funds) program to encourage proper planning, design and installation of riparian buffers.
- Encourage use of educational programs on the benefits of field windbreaks.
- Encourage Extension Service to develop and promote BMPs for controlling wind erosion through Farm associations, Minnesota Department of Agriculture, and SWCDs.
- Reduce the extent of land that is cultivated and developed within areas subject to wind erosion or snow pack.

Desired Outcome III Business

- Encourage partnering of for profit and non-profit organizations to promote favorable business opportunities/climates.

Desired Outcome IV: Education

- Identify economic cost of poor environmental policy and advertise those numbers against other economic costs.
- Provide environmental educational opportunities for county staff in appropriate areas of concern.
- Facilitate a workshop and appropriate fact sheets on Forestry + Economic Development + Opportunities + Benefits, and invite local officials and landowners.
- Fund and promote existing programs (Project Learning Tree, Project Wild, Agstravaganza, etc).
- Encourage an ecosystem based approach to teaching natural resource management.
- Encourage information sharing between organizations such as Forestry co-ops, Extension-private landowners, etc.
- Encourage Extension and others to promote forestry assistance sources (Forest Stewardship Planning, etc) in their quarterly news releases to local media.
- Develop PSAs referring to natural resource management issues.

Strategies for Business Community**Desired Outcome I Forest and Prairie Ecosystems**

- Encourage cluster developments that group development to only certain parts of a parcel and leave the remaining naturally vegetated.

Desired Outcome III Business

- Encourage partnering of for profit and non-profit organizations to promote favorable business opportunities/climates.

Desired Outcome VI: Policy

- Target small, private natural resource based business development with government cost share monies.

Strategies for Farm/Private Landowners**Desired Outcome I Forest and Prairie Ecosystems**

- Use Federal Farm Programs to reforest 75,000 acres (3%) of previously forested agricultural land use historically forested sites, such as riparian areas with appropriate native species.
- Create 300,000 acres of native grassland with at least 10% in Type I “Bird Conservation Areas” (appendix D for description).
- In the area east of prairie regions, consolidate existing grass acreage into larger patches to create better habitat for nesting ducks and other grassland nesting birds.
- Restore a range of woodland/grassland mixes, including sparsely timbered oak savannah and other areas with a nearly closed canopy with varying amounts of shrub/grass understory.
- Avoid planting trees on inappropriate sites in the prairie region.

Desired Outcome II Water Resources

- Reduce the extent of land that is cultivated and developed within areas subject to wind erosion or snow pack.

Desired Outcome III Business

- Promote short rotation woody crops on up to 35,000 acres on appropriate sites.

Strategies for Natural Resources Professionals

Desired Outcome I Forest and Prairie Ecosystems

- Encourage the use of resource conservation programs that promote forest resource management and protect the land base.
- Encourage programs that allow non-industrial private forest and prairie landowners to use well-qualified natural resource advisors at a reasonable cost.

Desired Outcome III Business

- Promote short rotation woody crops on up to 35,000 acres on appropriate sites.

Strategies for Realtors/Developers

Desired Outcome I Forest and Prairie Ecosystems

- Encourage cluster developments that group development to only certain parts of a parcel and leave the remaining naturally vegetated.

Desired Outcome II Water Resources

- Reduce the extent of land that is cultivated and developed within areas subject to wind erosion or snow pack.

F. Appendix F: Additional Ideas, Discussed by the Committee

The following list of strategy ideas were discussed by the Committee but were not included as part of the report. They are listed here to document all the ideas that the Committee considered.

General

- Incorporate environmental awareness rating system in employee job description.
- Establish rating systems (with incentives) which encourage public officials and staff to participate in educational opportunities.
- Support the Staples/Motley, Bertha/Hewitt, and Long Prairie “benefits of forestry future job opportunities.
- Hire necessary work force so planning is started in a reasonable time frame.
- Promote, encourage “Smart Growth” concepts.
- Remove wild wetlands from the tax rolls.

Forest Restoration

- Encourage the relaxation of the requirements for stewardship plan writers.
- Develop an annual award for the best landowner/forester team and management plan.
- Conduct more stewardship training sessions through Regional Extension Centers.
- Encourage cluster developments that group development to only certain parts of a parcel and leave the remaining naturally vegetated.
- Promote school forests and nature areas.
- Promote Certified Forests, Forest Stewardship Council, Tree Farm, etc.

Prairie

- Restore grass patches in areas with a higher percent grass in the landscape. Restore grass adjacent to current grass core areas to build larger habitat blocks. In some areas, potentially large patches of grass are fragmented by small tree patches or windbreaks. Removal of small tree patches may greatly increase patch size by consolidating adjacent grass patches. Maintain healthy grass stands using grazing, haying, burning to control woody vegetation and maintain herbaceous vigor. (Vary treatments spatially and temporally to maintain a variety of successional stages.)

- To provide for a range of habitat needs for woodland, grassland, and savannah species, restoration should include a range of woodland/grassland mixes, with some areas nearly all grass with a few scattered trees (oak if possible) and others with a nearly closed canopy with varying amounts of shrub/grass understory. Prescribed burning near the prairie/hardwood border would likely help control undesirable brush without harming fire tolerant species such as oak and aspen.

Water

- Create/acquire/distribute the benefits of trees and riparian buffers.
- Encourage BOWSR to map general potential for storm run off based on landforms.
- Collaborate with prairie landscape to identify cities, towns, and other developments experiencing flooding losses.
- Intersect maps of runoff risk with flooding losses to identify watershed management opportunities.
- Develop strategies to minimize snow pack generated flooding and to promote infiltration for characteristic settings (i.e. north flowing vs. south flowing rivers, areas with or without artificial drainage. Seek assistance from DNR or consultants for necessary modeling.
- Prioritize watersheds as demonstration areas.
- Support City of Browerville Pilot Project Community Living Snow fence.

Information

- Prepare, maintain, and distribute a list of professional foresters in this landscape. Use MFRC, County SWCDs, and DNR websites.
- Develop a white paper or educational document to the benefits that large wooded tracts have on the environment.
- Assist the county in developing information regarding the positive aspects of conservation easements.
- Obtain list of WHPA community contacts from Minnesota Department of Health, distribute information on MFRC, Sustainable Forest Resources Act and West Central Landscape Create a list of economic development officials.
- Develop fact sheets on ecosystem management and on contributions to the economy provided by natural resource based businesses.
- Identify economic returns of good management practices.
- Provide brochures/websites that realtors can distribute outlining stewardship opportunities for new land owners.

Education/Research

- Encourage forest researchers to develop effective silvicultural systems with cooperating land owners for sites currently occupied by Reed Canary Grass.
- Create/acquire/distribute the benefits of trees and riparian buffers.
- Encourage University of Minnesota to do R&D on boxelder utilization.
- Support Todd County Pilot Project-Youth Forestry Education program.
- Tie into the “Project Departure” program.
- DNR regional office does appropriate mass mailing to all land owners with 40+ forested acres or include this in tax statements.
- Require environmental training in the licensing process of real estate agents and developers.
- Create hobby farmer/recreational land owner education curriculum program.
- Promote the issuance of regular press releases by Public agencies and private organizations that explain natural resource management. Target weekly newspapers using Extension expertise.
- Design and promote shock value sound and video bytes that show environmental impacts of poor planning/practices.
- Advertise the cost downstream of current draining and ditching programs.