COUNTY FOREST COMPREHENSIVE LAND USE PLAN

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CHAPTER 800

INTEGRATED RESOURCE MANAGEMENT

800 CHAPTER OBJECTIVES

1. To introduce and communicate to the public, the County Board of Supervisors, and to the Wisconsin DNR, the integrated resource approach that forestry, wildlife and other natural resource staff will use on the Marathon County Forest during this planning period.
2. Counties may wish to consider "Integrated Resource Management Units" (IRMU) approach, that will identify and summarize the natural resources, social and physical management potential and opportunities for each unit.

805 INTEGRATED RESOURCE MANAGEMENT APPROACH

Integrated Resource Management is defined as: "the simultaneous consideration of ecological, physical, economic, and social aspects of lands, waters and resources in developing and implementing multiple-use, sustained yield management" (Helms, 1998).

This balance of ecological, economic, and social factors is the framework within which the Marathon County Forest is managed. This broad definition describes the content of everything within this comprehensive land use plan. Previous chapters have discussed in depth many of the social and economic issues.

For the purpose of this chapter, the scope of Integrated Resource Management includes:

1. Forests, habitats, biological communities
2. Wetlands and waters
3. Wildlife and endangered resources
4. Soils and minerals
5. Cultural and historical resources

Management of one resource affects the management or use of other resources in an area. Managing each use or resource by itself is less effective than managing all of them in an integrated way. This is a field level approach to integrated resource management. Management decisions are made while considering that each site if part of a larger ecosystem. Similarly, the development and implementation of this plan also considers other planning efforts in order to provide for broader scale management.

The working definition of integrated resource management means, in large part, keeping natural communities of plants and animals and their environments healthy and productive so people can enjoy and benefit from them now and in the future.

The remainder of this chapter is written to help communicate how the Forest is managed on an integrated resource approach.

810 SUSTAINABLE FORESTRY

"the practice of managing dynamic forest ecosystems to provide ecological, economic, social and cultural benefits for present and future generations" NR 44.03(12) Wis. Adm. Code and s. 28.04(1)(e), Wis. Stats.

For the purpose of this chapter, <u>sustainable</u> <u>forestry</u> will be interpreted as the management of the Forest to meet the needs of the present without knowingly compromising the ability of future generations to meet their own needs (economic, social, and ecological) by practicing a land stewardship ethic which integrates the growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air and water quality, and wildlife and fish habitat. This process is dynamic, and changes as we learn from past management.

810.1 TOOLS IN INTEGRATED RESOURCE MANAGEMENT

810.1.1 Compartment Recon

The County will support and utilize the compartment reconnaissance procedures as set forth by the DNR Public Forest Lands Handbook 2460.5. WisFIRS serves as the database for housing recon information.

810.1.2 Forest Habitat Classification System

The Forest Habitat Classification System (*A Guide to Forest Communities and Habitat Types of Northern Wisconsin Second Edition; Kotar, et al.*) is a natural classification system for forest communities and the sites on which they develop. It utilizes systematic interpretation of natural vegetation with emphasis on understory species.

The Forest Habitat Classification System is an ecological tool promoting a common language for interpreting site capability based on potential natural vegetation. Its primary use is the assessment of biological potential of upland forest sites. Through the application of Forest Habitat

Classification, land managers are better able to assess site potential of current stands, identify ecological and silvicultural alternatives, predict the effectiveness of possible silvicultural treatments, assess feasible management alternatives, and choose appropriate management objectives.

Data will be collected in order to classify the entire forest. This information should be included in the compartment reconnaissance system during regular field inspections. This data should also be compared to soil survey information in order to associate the relationships between forest habitat types and soil types.

810.1.3 Soil Surveys

Forestry staff's knowledge of forest ecology and their experience across the landscape can assist in associating forest habitat types and site indices with soil type information. These associations can be beneficial in determining management prescriptions for specific sites. WisFIRS contains soil survey data, and this information can also be found on the NRCS website-based soil survey.

810.1.4 Ecological Landscapes of Wisconsin

The Wisconsin DNR uses Ecological Landscapes of Wisconsin (WDNR Handbook 1805.1) which is an ecological land classification system based on the National Hierarchical Framework of Ecological Units (NHFEU). Ecological landscapes distinguish land areas different from one another in ecological characteristics. A combination of physical and biological factors including climate, geology, topography, soils, water, and vegetation are used. They provide a useful tool and insight into ecosystem management. Land areas identified and mapped in this manner are known as ecological units.

Generally accepted silvicultural systems are prescribed on a stand level scale, in recognition of the position within an ecological landscape.

810.1.5 Integrated Pest Management

“The maintenance of destructive agents, including insects, at tolerable levels, by the planned use of a variety of preventive, suppressive, or regulatory tactics and strategies that are ecologically and economically efficient and socially acceptable”.

The Committee has the authority to approve and direct the use of pesticides and other reasonable alternatives in an integrated pest management program on the Forest. Refer to Chapter 600 (610.3) for more detailed discussion and integrated pest management strategies.

810.1.6 Best Management Practices for Water Quality

The most practical and cost-effective method to assure that forestry operations do not adversely affect water quality on the County Forest is to utilize "best management practices" (BMP's) as described in *Wisconsin's Forestry Best Management Practices for Water Quality. Publication number FR-093 2010*.

Consistent with the aforementioned manual (page 6), Marathon County will use BMP's on the Forest with the understanding that the application of BMP's may be modified for specific site conditions with guidance from a forester or other natural resource professional. Modifications will provide equal or greater water quality protection or have no impact on water quality. Areas with highly erodible soil types, close proximity to streams or lakes, or steep slopes may require mitigating measures in excess of those outlined in the manual. All Marathon County employees practicing forestry will receive BMP training. Additionally, Marathon County will encourage BMP training of all logging contractors that operate on County timber sales.

810.1.7 Fire Management

810.1.7.1 Uncontrolled Fire: Refer to Chapter 600.

810.1.7.2 Prescribed Fire

Prescribed burning on the County Forest may play an important role in management. Many of the plant communities present today are the result of wild fires.

As the needs are presented to regenerate or maintain timber types or other plant communities, the Committee will examine the costs and benefits of each opportunity. Increased regulations, the county’s cost of completing the burn, and the risk of breakouts and uncontrolled fires will have to be considered with any benefits of vegetation management through prescribed burning.

All prescribed burning will be done in accordance with Wisconsin State Statutes 26.12, 26.14, and the DNR Prescribed Burn Handbook 4360.5 and in cooperation with the Department of Natural Resources per section 605.5 of this plan.

810.1.8 Outside Expertise, Studies and Survey

Additional data necessary to make management decisions on the County Forest will be sought from agencies or individuals, who have the best capability and technical expertise, including, but not limited to:

1. Water Resources: WDNR
2. Wildlife Resources: WDNR
3. Soil Resources: NRCS
4. Mineral Resources: WDNR
5. Wetland Resources: WDNR, Army Corps of Engineers, County Zoning
6. Navigable Streams: WDNR, Army Corps of Engineers, County Zoning
7. Floodplains: County Zoning
8. Cultural Resources: WDNR, State Historical Society
9. Entomology / Pathology: WDNR
10. Endangered Resources: WDNR
11. Forestry: Cooperative Field Trials, see WDNR website
12. Local Citizen Involvement: Public and Forest Citizens' Advisory Subcommittee
13. Other subjects as needed

810.1.9 Local Silvicultural Field Trials

To date, numerous field trials have been completed or are ongoing on the Marathon County Forest. These trials include:

1. Red Oak growth study completed by UWSP Professor Mike Demcheck in Ringle and Elderon Forest Units.
2. Seeded tamarack in strip clearcuts at Nine Mile Forest after Black Ash was harvested.
3. Completed CFI plots in Ringle Forest Unit to determine Red Oak regeneration.

815 MANAGEMENT CONSIDERATIONS TO REDUCE LOSS

815.1 RISK FACTORS

815.1.1 Wind

The first order of business after a wind event is to clear and open roads, trails and recreational sites. As those tasks are completed, efforts are then turned to cleaning up and salvaging damage done to the forest.

Storm-damaged pine stands should be top priority when deciding where to start. Salvaging pine is much more urgent than oak or other hardwood stands because damaged pines will quickly begin to stain, and insects and disease will rapidly infest the damaged trees. As areas with pine are salvaged, the focus can turn to hardwoods and other types of timber. Stands with a high percentage of oak should follow oak harvesting guidelines if possible.

Uprooted trees and those with completely broken tops, will die and should be salvaged. Standing trees with some broken branches are judgment calls. A general rule is to salvage the tree if more than 50% of the crown or top is broken, but there may be situations when these damaged trees could be left to help the forest recover. Trees that are leaning may have broken roots or broken stem fibers and should be considered for salvage. Hail damage associated with wind storms may not be apparent until the following spring. Dieback, and mortality associated with storms could continue for 2-3 years after the event. As a result, stands will continue to be monitored for several years, especially if additional stresses occur in the year or years after the storm damage occurred.

815.1.2 Flooding

Flooding and high water can cause mortality by reducing the amount of oxygen in the soil, depriving trees with submerged roots of the oxygen needed for growth and respiration. Along with submerged roots, trees can also die from uprooting and from subsequent insect and disease attack following flooding stress. DNR Forest Health Specialist’s may be consulted in flood-damaged stands and it may become necessary to conduct salvage harvests in flooded stands where appropriate. Access to wet or flooded sites can be difficult and may require frozen ground conditions. This is of greatest concern in stands where salvage harvests are needed to capture value, such as stands impacted by insects like emerald ash borer.

815.1.3 Fire

See Chapter 600, Section 605.

815.1.4 Climate Change

Northern forests may be affected by climate change during the next century. Marathon County recognizes that these potential changes to our climate can impact our forest and the various programs that we manage. A proactive approach will be followed with consideration being given to how changing conditions could impact forest composition, management of roads and recreational trails, wildlife habitat, watersheds, invasive species and forest pests/diseases. Timber management may include goals such as encouraging ecosystems with a variety of species on the landscape whenever possible, and giving consideration to forest types that will be less impacted by changing climate patterns.

815.1.5 Timber markets

Generally, the number of mills utilizing raw forest products in Wisconsin has declined significantly over the last 20 years. However, this decline has been somewhat offset by an increased demand for export logs and lumber. As transportation costs continue to rise, short distance hauls to a mill become more desirable for timber producers. With a pulp/paper mill (hardwood) and an OSB mill located in Tomahawk; a pulp/paper mill (hardwood) in Rothschild and a pulp/paper mill (softwood) in Mosinee, the Marathon County Forest is situated well for small diameter lower quality raw material markets. The Marathon County Forest also has several markets for hardwood saw logs and saw bolts and softwood saw logs within close proximity. Considering the location of the Marathon County Forest, demand for its forest products should remain strong into the future.

820 PLANT COMMUNITIES MANAGEMENT

Marathon County recognizes the importance of maintaining the diversity of the forest under an ecosystem approach. The process involved in making management decisions to encourage or not encourage specific species or communities is complex. It includes an understanding of:

1. Objectives of the County
2. Integration of landforms, soils, climate, and vegetative factors
3. Habitat classification
4. Past, present and future desired condition
5. Surrounding ownership patterns and general objectives

6. Wildlife habitat and other values
7. Social needs

820.1 SILVICULTURAL PRACTICES/TREATMENTS

Silviculture is the art and science of controlling forest composition, structure, and growth to maintain and enhance the forest's utility for any purpose. These practices are based on research and general silviculture knowledge of the species being managed. The goal is to encourage vigor within all developmental stages of forest stands, managed in an even aged or uneven aged system. The application of silviculture to a diverse forest needs a unified, systematic approach. The DNR Public Forest Lands Handbook (2460.5) and DNR Silvicultural Guidance will be used as guidelines for management practices used on the County Forest.

820.1.1 Natural Regeneration

Where feasible, natural regeneration will be encouraged through the use of silvicultural methods that promote regrowth and recruitment of the forest. Examples include: clearcuts, shelterwood cuts, strip cuts, scarification, prescribed burning, select cuts, and seed tree cuts. These practices can be enhanced by additional treatments, including the cutting of non-merchantable trees following harvest, by scarification before or after cutting for natural seeding, by prescribed burning, and by chemical treatment. These treatments can be used alone or in combination, depending on the needs of the site. In general, the particular silvicultural method chosen will depend on the biological functions of the target species or forest type.

820.1.1.1 Clearcutting/Coppice

Clearcutting is a silvicultural method used to regenerate shade intolerant species. Complete, or nearly complete removal of the forest canopy will stimulate the regeneration and growth of species such as aspen, jack pine and white birch. This method is also used as a final rotation removal in species such as red oak, red pine and others. Tree retention guidelines are followed when prescribing clearcut or coppice cuts.

820.1.1.2 Shelterwood / Seed Tree

Shelterwood harvest is a method used to regenerate mid-shade tolerant and shade tolerant species. Partial canopies stimulate regeneration, enhance growth and can provide seed source. Canopies are eventually removed. This method is used for white birch, white pine, red oak, and northern hardwood (when managing even aged).

820.1.1.3 All Aged Regeneration Harvests

All aged regeneration harvests are used in shade tolerant species. Gaps in the forest canopy allow regeneration to occur throughout the stand. Over time, multiple entries into the stand will create multiple age class structure with the intent of creating a fully regulated stand. All aged regeneration harvests may be prescribed in the form of single tree selection, group selection or patch selection. This method is used in northern hardwood and occasionally in swamp hardwoods (when managing for all aged).

820.1.1.4 Prescribed Burning

Prescribed burning may be utilized as a tool to promote regeneration. A number of forest types in Marathon County are ecologically tied to fire. Burning may create seeding conditions or release regeneration from competing vegetation. Prescribed fire may be used for regeneration of red oak, jack pine or white pine. See Chapter 600, Section 605.4.

820.1.1.5 Soil Scarification

Scarification is a technique used to prepare a seedbed beneath forest stands scheduled for harvest and regeneration. This mechanical disturbance that exposes bare mineral seedbeds and creates conditions necessary for regeneration of pine species. Disturbance that mixes seed into duff and soil layers creates optimal conditions for regeneration of oak, white birch, fir and others. Marathon County utilizes salmon blades, root rakes, straight blade, anchor chain or any others to accomplish soil scarification.

820.1.1.6 Other

Other natural regeneration techniques may be considered where necessary and appropriate. New methods for natural regeneration are continually tested for effectiveness.

820.1.2 Artificial Regeneration

When natural regeneration fails, or when tree species present do not coincide with management objectives for the site, artificial means will be employed to establish a desirable stand of trees. Artificial regeneration on a site usually requires some form of site preparation followed by seeding or planting. Cost effectiveness of any method of site preparation will be considered when deciding the appropriate method to use.

820.1.2.1 Mechanical Site Preparation

Mechanical site preparation includes the use of soil disturbance equipment such as a disc, roller chopper, patch scarifier, disk trencher or V-plow prior to tree planting or seeding. These types of equipment are used to reduce logging debris to a smaller size, incorporate debris into the soil, clear brush and debris from the site to facilitate planting or seeding, and to reduce competition from other vegetation.

820.1.2.2 Chemical Site Preparation

Herbicide application can be an effective means of controlling unwanted vegetation in order to establish seedlings or plantations. It should be used sparingly, in situations where mechanical treatment is not expected to provide the level of vegetative control needed. Chemicals will be selected and applied in strict accordance with label recommendations, requirements, and under the oversight of a certified applicator. The objective of herbicide use is not to kill all competing vegetation, but rather to kill or set back competing vegetation only enough to establish a reasonable stocked stand of desirable trees. Proximity to private lands, residences, highways, and other public use areas must be considered in selecting both the herbicide and the means of application. Herbicides can be applied with hand-held equipment, by motorized ground-based equipment, or aircraft. A written prescription for each herbicide application will be prepared, kept on file, and be made available to the primary applicator.

820.1.2.3 Prescribed Burning

Prescribed burning for site preparation can be used to reduce logging debris, clear the site, reduce competing vegetation, and to release nutrients into the soil. DNR fire control staff will be the major source of guidance and direction for use of fire as a tool.

820.1.2.4 Tree Planting / Seeding

Both machine and/or hand planting/seeding will be utilized to insure adequate regeneration. The selection of species will be determined according to the specific management objectives and capabilities of each site. Planting or seeding will primarily occur in areas where natural regeneration is inadequate or conflicts with the management goals of the site. County will make all reasonable efforts to source seeds/seedlings from local genetics.

820.1.3 Intermediate Treatments

Intermediate treatments are those practices used to enhance the health and vigor of a forest stand. In general, intermediate treatments are applied to forest stands managed as even aged.

820.1.3.1 Mechanical Release

Mechanical release is the removal of competing vegetation by means other than herbicide or fire. Mechanical may include releasing young pine plantations from competing vegetation using chain saws or other hand-held equipment; or mowing to release regeneration.

820.1.3.2 Chemical Release

Chemical Release is the removal of competing vegetation from desirable trees through the use of herbicides. It should be used sparingly and in situations where mechanical treatment is not expected to provide the level of vegetative control needed. Chemicals will be applied in strict accordance with label recommendations, requirements and under the oversight of a certified applicator. A written prescription for each herbicide application will be prepared and kept on file.

820.1.3.3 Non-Commercial Thinning (TSI)

In general, most thinning needs are accomplished through commercial harvest operations. Non-commercial thinning may be considered if the individual site requirements, funding and/or available labor make it desirable.

820.1.3.4 Thinning / Intermediate Cuts

Management of some even aged forest types necessitates the use of commercial thinning, also known as intermediate harvests, to maintain forest health and vigor. Thinning is generally prescribed in forest types such as red pine, red oak, and in cases of even aged hardwood management. Thinning may be prescribed on other even aged types as appropriate and where feasible. Intermediate harvests include prescriptions for residual densities, marking priorities, spacing, crown closure, diameter distribution, or other measurements.

820.1.3.5 Pruning

Pruning is the removal of limbs from lower sections of trees to increase log quality. Major pruning efforts were conducted in the past but it is not generally recognized as economically viable on the forest.

820.2 SILVICULTURAL PRESCRIPTIONS

820.2.1 Even-Aged Management

A forest stand composed of trees having relatively small differences in age. Typical cutting practices include: clear cutting, shelterwood cutting and seed-tree cutting. Even aged management is generally required to manage shade intolerant, early successional forest types.

820.2.1.1 Aspen

These are types where aspen trees comprise of more than 50% of the stems. On the forest, aspen types may be dominated by quaking or big tooth aspen or a combination of both. Aspen stands contain a wide variety of associated hardwood and conifer species.

Shade tolerance:	Intolerant
Habitats:	AVb, ATM
Intermediate treatments:	None
Median rotation age:	45
Primary regeneration method:	Natural
Harvest method:	Clearcutting with coppice
Habitat value:	Early successional related species
Economic value:	Fiber production / bolts
Insect disease considerations:	Hypoxylon and other cankers
Trends:	General declines on statewide acreage, -increasing slightly on Marathon County Forest
Landscape considerations:	Retain and/or convert acreages to hardwoods where possible

820.2.1.2 Red Pine

These are types where red pine comprises 50% or more of the basal area in saw timber and pole timber stands, or 50% or more of the stems in sapling or seedling stands.

Shade tolerance:	Intolerant
Habitats:	AVb-V, PArVAa
Intermediate treatments:	Yes, thinnings
Median rotation age:	80
Primary regeneration method:	Artificial
Harvest method:	Clearcutting then planting
Habitat value:	Thermal cover for wildlife species
Economic value:	Fiber production/bolts/sawlogs/utility and cabin poles

Insect disease considerations:	Heterobasidion, Leptographium
Trends:	General increase on statewide acreage, increasing slightly on Marathon County Forest
Landscape considerations:	Retain acreages where possible

820.2.1.3 Red Oak

These are types where Red Oak trees comprise 50% or more of the basal area in pole timber and saw timber stands, or 50% or more of the stems in seedling and sapling stands.

Shade tolerance:	Intolerant
Habitats:	AVb
Intermediate treatments:	Yes, thinnings
Median rotation age:	100
Primary regeneration method:	Natural
Harvest method:	Shelterwood
Habitat value:	Mast Acorns
Economic value:	Fiber production/bolts/sawlogs
Insect disease considerations:	Oak Wilt, Gypsy Moth
Trends:	General declines on Statewide acreage and on Marathon County Forest
Landscape considerations:	Retain and increase acreages to Red Oak

820.2.1.4 Red Maple

These are types where Red Maple trees comprise 50% or more of the basal area in pole timber and saw timber stands, or 50% or more of the stems in seedling and sapling stands.

Shade tolerance:	Mid-tolerant
Habitats:	ATM
Intermediate treatments:	Yes, thinnings
Median rotation age:	75-80
Primary regeneration method:	Natural
Harvest method:	Coppice or on better sites - shelterwood
Habitat value:	Structural support for nesting, seeds for songbirds
Economic value:	Fiber production/bolts/sawlogs
Insect disease considerations:	Long Horned Beetle
Trends:	General increase on Statewide acreage and on Marathon County Forest
Landscape considerations:	Retain acreages of Red Maple

820.2.2 Uneven-Aged Management

A forest stand composed of trees in various age and size classes. The typical cutting practice is selection cutting, where individual trees are removed from the stand. Regeneration is continually

occurring after the stand is cut. Uneven-aged management is generally used to manage shade tolerant forest types.

820.2.2.1 Northern Hardwood

These are stands dominated by shade tolerant and mid-shade tolerant species. In Marathon County, northern hardwood stands are typically dominated by sugar maple, ash, and basswood.

Shade tolerance	Tolerant to mid-tolerant
Habitats:	ATM, AH
Intermediate treatments:	None
Median rotation age:	N/A
Primary regeneration method:	Natural – all aged regeneration
Harvest method:	Single tree, gaps, group selection
Habitat value:	Variety of breeding birds, mammals, etc.
Economic value:	High, fiber/bolts/sawlogs
Insect disease considerations:	Emerald ash borer, gypsy moth, many others
Trends:	General decrease in Statewide acreages and on Marathon County Forest
Landscape considerations:	Retain or increase acreages if possible on fair to good quality sites

820.3 LOCALLY UNCOMMON TREES / FOREST TYPES

The presence or lack of a particular tree species is dependent on land capability, climate, natural range, natural or human disturbance and many other factors. The following trees and types are considered uncommon on the Marathon County Forest and likely across the general region. These trees may be left as reserves in even aged management prescriptions, or in thinnings and all aged regeneration harvests.

820.3.1 American Elm (*Ulmus americana.*) is scarce primarily due to Dutch elm disease. Healthy looking elm may be left uncut in hope that they may continue on the landscape as potential resistant seed sources.

820.3.2 Butternut (*Juglans cinerea*) primarily occurs on the Burma County Forest and is declining due to butternut canker. Healthy individuals that appear to be canker free will be reserved in the forest as potential resistant seed sources.

820.3.3 Eastern Hemlock (*Tsuga canodensis*) is a highly preferred deer and small mammal browse species. Regeneration is difficult and remnant stands will be retained to provide seed sources for future management activities.

820.4 FOREST TYPES REQUIRING INTENSIVE EFFORT TO REGENERATE

There are certain forest types within the County Forest that are difficult to regenerate. In many cases, this difficulty may be related to the exclusion of fire from the landscape, deer browsing or other factors. The following list itemizes forest types with difficult regeneration and County management goals:

820.4.1 White birch

White birch (paper birch) is shade intolerant species generally found in stands of timber of similar age. A mineral seedbed appears necessary to regenerate white birch and it is assumed most white birch present on the forest is of fire origin. Drought conditions of 1989 and 1990, coupled with unseasonably warm temperatures and secondary pathogens, resulted in significant mortality of the white birch on the Forest. Existing stands of white birch should be considered for scarification coupled with shelterwood harvests.

820.4.2 Northern red oak

Northern red oak is a shade intolerant to mid tolerant species found in primarily even aged stands. Northern red oak appears to require disturbance to regenerate and deer browsing appears to be a limiting factor on regeneration success. The County is committed to retain as much of the existing acreage of northern red oak as possible. Regeneration efforts will focus on timing soil scarification with good acorn crops and shelterwood harvests. Regeneration may require prescribed burning to release seedlings from competing vegetation.

820.5 INVASIVE PLANT SPECIES OF CONCERN

Invasive plants can cause significant damage to the forest. Invasive species can displace native plants and hinder the forest regeneration efforts. Preventing them from dominating forest understories is critical to the long-term health of the forest. There are a number of invasive plant species in varying densities on the County Forest. Some warrant immediate and continual treatment efforts while others may be allowed to remain due to extent and financial ability to control them. The County will continue to train staff in invasive species identification as well as attempt to secure funding sources to control them as much as is practical. A current list of the

common invasive species found on the Marathon County Forest can be found in Chapter 600, Section 610.5.

820.6 LEGALLY PROTECTED AND SPECIAL CONCERN PLANT SPECIES

There are plants in Wisconsin that are protected under the Federal Endangered Species Act, the State Endangered Species Law, or both. On County Forest, no one may cut, root up, sever, injure, destroy, remove, transport or carry away a listed plant without a valid endangered or threatened species permit. There is an exemption on public lands for forestry, agriculture and utility activities under state law. The County will, however, make reasonable efforts to minimize impacts to endangered or threatened plants during the course of forestry/silviculture activities (typically identified in the timber sale narrative).

The Wisconsin Department Natural Resources Bureau of Natural Heritage Conservation tracks information on legally protected plants with the Natural Heritage Inventory (NHI) program. The NHI program also tracks Special Concern Species, which are those for which some problem of abundance or distribution is suspected, but not yet proven. The main purpose of this category is to focus attention on certain species before they become threatened or endangered.

The County searches the public portal. If something comes up it gets flagged and sent to DNR for further review. The County is committed to reviewing this database for endangered resources that may occur within proposed land disturbing project areas.

820.7 TREE RETENTION GUIDELINES

Silvicultural practices are designed to manipulate vegetation to achieve management objectives. Retention of some trees, both alive and dead, has associated ecological benefits. Marathon County will implement tree retention guidelines consistent with the DNR Silvicultural Handbook (#2431.5)(Chapter 24 – Marking Guidelines) with the following variances:

1. Green tree retention on even-aged harvests varying from 3% - 15% of crown cover or stand area.
2. Retention will occur at the “Harvest Unit” level. Harvest Unit is defined as the stands within a timber sale. Riparian management zones (RMZ) and stands excluded from harvesting (Z prefix stands) occurring within or adjacent to the Harvest Unit can provide retention opportunities.

3. Retention will be encouraged in stands 10 acres in size or less managed as even-aged, but will not be required.

820.8 BIOMASS HARVESTING GUIDELINES

The Purchaser shall comply with all General Guidelines as described in "Wisconsin's Forestland Woody Biomass Harvesting Guidelines" published by the Wisconsin Department of Natural Resources, publication Pub-FR-435-09, unless specifically provided otherwise below. The publication can be found on the Council on Forestry website at http://council.wisconsinforestry.org/biomass/

825 ANIMAL SPECIES MANAGEMENT

For the purpose of this plan, wildlife will include all native birds, mammals, fish, amphibians, reptiles, and insects with a strong focus on the natural communities in which they live. Wildlife biologists will emphasize habitat management that interrelates and benefits wildlife, and complements sound forestry practices. Concerns about biological diversity on the County Forest and how it fits in the regional, continental, and global perspective may cause wildlife management to place increased emphasis on segments of the forest community. Practices such as old-growth, snag and den tree management, access management, forest openings maintenance, oak management, and aspen maintenance, can be priorities in the dynamics of forest management. A primary goal of wildlife management on the Marathon County Forest is to provide a diversity of healthy ecosystems necessary to sustain native populations for their biological, recreational, cultural and economic values. The Forest will be managed primarily to provide habitats for a suite of species rather than focusing on a specific species, with exceptions made for Federal or State listed endangered or threatened species.

825.1 TECHNICAL PLANNING

Management of wildlife populations on the Marathon County Forest falls under the jurisdiction of the DNR. Planning will be a cooperative effort of the County Forest staff, DNR liaison forester and wildlife manager in formulating management plans and utilizing forest and wildlife management techniques to accomplish desired forest and wildlife management goals.

The wildlife manager will submit an annual wildlife work plan to the Committee for approval by December 1 for each calendar year. The plan will contain specific management practices and locations for proposed projects affecting County Forest. The DNR wildlife work plan will also

indicate new policy directions or policy changes which may affect County Forest (i.e. deer management unit population goals, trail mowing and opening maintenance, wood duck house maintenance) during the plan period.

The Forest Administrator may coordinate other wildlife management projects with the wildlife manager through the Forestry Division annual work plan or individual project requests or proposals approved by the Committee.

825.2 GUIDELINES

DNR operational handbooks including the Public Forest Lands Handbook (2460.5), manual codes and guidance documents are important references and guidelines to utilize in fish and wildlife planning efforts.

825.3 INVENTORY

Habitat needs will be determined by analysis of forest reconnaissance information. Population estimates will be conducted periodically by DNR wildlife, endangered resources personnel, and other trained cooperators. Currently, Department Wildlife staff conduct the following surveys on or adjacent to the Marathon County Forest:

1. Biotic Inventories
2. Summer deer observations
3. Brood surveys
4. Furbearer tracking
5. Bear genetic population
6. Snapshot Wisconsin

825.4 PROJECTS FUNDING

All approved wildlife management projects will be eligible for funding through Wildlife Habitat Grants (nickel an acre), County Fish and Game, their successor programs or other applicable federal, state, or private funding sources. These projects may include: access control or development; cooperative projects on lands adjacent to County Forest which benefit County Forest wildlife populations; inventory, geographic information systems (GIS) and geographic positioning systems (GPS); flowage development; habitat development, maintenance, protection, or restoration; endangered and threatened species management; land acquisition; bow and gun ranges; nature trails; wetland mitigation; or any other wildlife management project approved by

the Wildlife Biologist, Forest Administrator, and Committee.

825.5 RESOURCE MANAGEMENT CONSIDERATIONS FOR WILDLIFE

The following areas of focus are identified for achieving plan objectives and for benefit of wildlife.

825.5.1 General Management Policies

Forest management practices may be modified to benefit wildlife and diversity. The following will be considered when planning for management activities:

1. Even-aged regeneration harvests (clearcuts) should vary in size and shape and include retention considerations.
2. A diversity of stand age, size and species.
3. Mast-bearing trees and shrubs, cavity trees, and an adequate number and variety of snags.
4. Cull trees (future snag or den trees) not interfering with specific high value trees.
5. Timber types, habitat conditions and impacts on affected wildlife.
6. Access management.
7. Best management practices for water quality (BMP's).
8. Opportunities to develop and maintain vertical structure and coarse woody debris.
9. Technical advice for endangered, threatened, and non-game species management.

825.6 IMPORTANCE OF HABITATS

Important habitat types are those cover types known to be of importance to certain native wildlife and whose absence would make that wildlife significantly less abundant. These shortages may be on a local or broader scale. Early, mid, and late successional stages of all forest cover types are important to sustain wildlife populations. The following habitat types can be considered important:

825.6.1 Non-forested wetlands

The Marathon County Forest contains a minimal amount of non-forested wetland types. However, they provide a variety of habitats for common, rare and endangered species. Emergent wetland, sedge meadow, muskeg bog and deep marsh provide habitat for species such as wood turtle, black tern, American bittern, and numerous other species.

825.6.2 Aquatic habitats

The Marathon County Forest includes 437 acres of lakes, rivers, streams, ponds and other aquatic habitats. Open water provides habitat for species such as wood duck, boreal chorus frog, water shrew and many other species reliant on water related resources.

825.6.3 Riparian and other non-managed areas

Undisturbed shoreline and riparian areas present on the forest and provide habitat for species such as red shouldered hawk, green frog, and woodland jumping mouse.

825.6.4 Early successional forests

Management of aspen, white birch, jack pine and other shade intolerant species creates habitat for a large suite of wildlife species that benefit from early successional forests. On the Marathon County Forest there are currently 14,925 acres of these forest types present. This is a key habitat used for recreational hunting activities providing conditions favorable for American woodcock, ruffed grouse, white-tailed deer and non-game species such as golden-winged warbler, Kirkland's warbler and black-billed cuckoo.

825.6.5 Conifers

Conifers, whether jack pine, white pine, spruce, fir or other types appear to be an important habitat for a number of wildlife species. The Marathon County Forest currently has 1464 acres of coniferous habitat. Connecticut warbler, red crossbill, northern flying squirrel, and many others utilize conifer types. Jack pine areas can be managed to provide temporary barrens habitat providing habitat for Kirtland's warbler and other barren related species.

825.6.6 Oak management

Oak is an important mast producing food source on the forest, providing acorns for a wide variety of game and non-game species. The Marathon County Forest has 2606 acres of oak habitat. It is considered a critical resource to retain on the landscape for both its timber and wildlife value, providing habitat for species such as scarlet tanager, wood thrush, red headed woodpecker, and black bear.

825.6.7 Uneven/all aged management

Management of uneven aged stands provides for multi-storied canopies, diverse age structure and potentially older forest characters. The Marathon County Forest has 1774 acres being managed under an all aged management system. Species such as Canada warbler, little brown bat, black throated blue warbler and many others benefit from these forest type, In addition, numerous amphibian and reptiles utilize these forest types.

825.6.8 Large forest blocks

Large blocks of County Forest provide habitat for numerous interior species. Gray wolf, black throated blue warbler, Canada warbler and least flycatcher are a few examples of animals that rely on these large blocks.

825.6.9 Grasslands, openings, upland brush

Wildlife openings, grass rights-of-way, natural openings, upland brush and other upland open habitats provide for diversity and unique habitats benefitting pollinators, numerous species including upland plover and whip-poor-will. Marathon County Forest currently has 567 acres identified as open grassland or upland brush habitat.

825.6.10 Lowland Brush/Alder

The Marathon County Forest contains 5540 acres of lowland brush/alder stands. Alder benefits many game and non-game species including grouse, American woodcock and others. Shearing tag alder has been an emphasis on the forest to improve habitat for woodcock.

825.6.11 Forest Game Species

The management of forest game (white-tailed deer, ruffed grouse, black bear, turkey, snowshoe hare, and furbearers) is centered on maintaining early successional species such as aspen, jack pine, white birch, and oak; with aspen and oak being the primary species of importance.

Foresters, in concert with wildlife biologists will continue to monitor forest game species and adjust land management prescriptions where appropriate.

825.6.11.1 Beaver Management

The Committee supports allowing beaver and their dams in an amount and in locations where damage to forest productivity, roads, or trout fishery values are not extensive. Where applicable, natural succession to forest types other than aspen will be encouraged next to trout streams.

825.6.11.2 Waterfowl Management

The Committee supports DNR's program to provide and maintain waterfowl flowages on the Nine Mile, Harrison-Hewitt, and Bern Wetland Forest Units for wetland enhancement, waterfowl production, hunting, trapping, and wildlife viewing opportunities they provide. Grasslands next to flowages will be maintained to provide nesting habitat for mallards, blue-wing teal, and grassland birds. Local wildlife managers will work with liaison forester and Forest Administrator in identifying, recommending, and planning projects.

825.7 INTENSIVE WILDLIFE MANAGEMENT PROJECTS

825.7.1 Wisconsin Wildlife Action Plan / Species of Greatest Conservation Need (SGCN)

In addition to species listed as endangered, threatened or special concern within the NHI database, the Department also maintains a statewide list of species of greatest conservation need.

This list includes species that have low or declining populations and may be in need of conservation action. The list includes birds, fish, mammals, reptiles, amphibians and insects that are:

1. Already listed as threatened or endangered
2. At risk due to threats
3. Rare due to small or declining populations
4. Showing declining trends in habitat or populations

The WWAP working list can provide information on how management activities may impact, or in many cases benefit species of greatest conservation need. More information is available on the WWAP website: https://dnr.wi.gov/topic/wildlifehabitat/actionplan.html.

825.7.2 Bern Wetland Management

Marathon County purchased the 269-acre Bern Wetland to develop a waterfowl flowage (impoundment). The DNR is responsible for managing the flowage and maintaining the dam. Forest stands next to the flowage will be managed for a natural appearance. Forest stands will

also be managed to develop old trees and especially maintain trees with cavities for birds and mammals.

825.7.3 Bitzke Waterfowl Management

Bitzke is an area of about 300 acres with flowages (impoundments) developed for waterfowl production and protection as a cooperative project between Marathon County and the Wisconsin Department of Natural Resources with funding from Ducks Unlimited, Wisconsin, Waterfowl Association, Marathon County, and DNR. The Wisconsin Conservation Corps assisted with nature trail development.

Bitzke will be maintained in a condition which will promote the development of a complete wetland ecosystem featuring waterfowl. Interpretive signs, boardwalks, benches, an observation tower, and flowage structures were developed to enhance the use of the area by the public.

The visual horizon (from the top of the observation tower) will be maintained in as naturally appearing conditions as possible. The DNR may use artificial nesting platforms and boxes or other wildlife management techniques.

825.7.4 Ruffed Grouse Area Management

Marathon County in cooperation with the Ruffed Grouse Society and the Department of Natural Resources has developed a special ruffed grouse management area in the Leather Camp Forest Unit north of the Little Eau Claire River (approximately 3,163 acres). The primary intent of this project is to maintain intolerant forest types primarily aspen, in stand sizes less than 20 acres when feasible, with a variety of size and age classes to promote ruffed grouse, American woodcock, and other species associated with the aspen forest.

Marathon County has developed and will maintain a trail system to allow the harvest of small areas. These trails will remain closed to motorized use except for approved snowmobile or ATV trails in winter and by permit for persons with disabilities, or other contract or permit (timber management, beaver control, etc.).

Although aspen management will dominate this area, appropriate aesthetic management practices will be used to reduce negative visual impacts from aspen regeneration harvests if possible.

825.8 FISH AND WATERS MANAGEMENT

Public waters will be managed to provide for optimum natural fish production, opportunities for quality recreation, and healthy balanced aquatic ecosystems. Emphasis will also be placed on land-use practices that benefit the aquatic community. Management of County Forest lands will attempt to preserve and/or improve fish habitat and water quality.

825.8.1 Technical Planning and Surveys

Management of all waters within the County Forest is the responsibility of the DNR. Technical assistance will be provided by the local fisheries biologist. Studies and management will be conducted in the manner described in DNR Fish Management Handbook 3605.9. Water and Population Surveys fall under the jurisdiction of the Department and will be conducted as needed by fisheries biologists.

825.8.2 Special Projects

There have been no special fisheries related projects due to limited water resources on County Forest lands.

825.8.3 Shoreland Zoning

The Marathon County Shoreland zoning ordinance will be followed on all management activities on the County Forest. The ordinance can be found in the appendix.

825.8.4 Access and development

Access and development of County Forest waters will be limited to those activities consistent with the above water management policies.

825.8.5 Important Water Resources

Management activities adjacent to these water resources, or in areas with sensitive soils or severe slopes, should consider measures above and beyond the customary BMP practices. A “soil erosion rates by watershed map” identifying these more sensitive areas of the Forest can be found in the appendix. County staff may work with their liaison forester in cooperation with the local DNR water resources staff to develop site-specific measures where appropriate. An inventory of water resources can be obtained from DNR Water staff for the County.

825.8.6 COUNTY FOREST STREAMS

MARATHON COUNTY FOREST STREAMS				
FOREST UNIT	STREAM NAME	LEGAL	LENGTH *	DESCRIPTION
Bern Wetland	Trib. To Black Creek	Sec. 29,30 T30N-R3E	.94 mi.	Warm - flowage
Harrison-Hewitt	Skulen Pond Creek	Sec.7,17,20,30,T30N-R9E	3.60 mi.	Warm - flowages
Harrison-Hewitt	Trappe River	Sec. 3, T30N-R9E	.77 mi.	Warm
Kronenwetter	Johnson Creek	Sec. 24, T27N-R8E	2.66 mi.	Warm
Kronenwetter	Johnson Creek	Sec. 18, 19, T27N-R9E		
Kronenwetter	Sampson Creek	Sec. 11, 12, T27N-R8E	2.06 mi.	Warm
Leather Camp	LittleEauClaire River	Sec. 12, T26N-R8E	1.00 mi.	Warm
Miller	Big Sandy Creek	Sec. 18, T29N-R9E	.28 mi.	Warm
Nine Mile	Four Mile Creek	Sec. 36, T28N-R6E	.39 mi.	Cold, Class 2 Trout Stream
Nine Mile	Four Mile Creek	Sec. 1, T27N-R6E	.18 mi.	Cold, Class 2 Trout Stream
Nine Mile	Four Mile Creek	Sec. 5,6, T27N-R7E	1.24 mi.	Cold, Class 2 Trout Stream
Nine Mile	Black Creek	Sec. 28,33, T28N-R7E	2.17 mi.	Cold, Class 2 Trout Stream
WI River Unit	WI River	Sec. 13,14,24, T30N-R7E	1.16 mi.	Warm
TOTAL			16.45 mi.	
*Length estimated from Marathon County GIS Basemap				

830 EXCEPTIONAL RESOURCES, UNIQUE AREAS

Exceptional resources include such things as wild rivers and lakes, natural areas, ruffed grouse management areas, Karner blue butterfly recovery areas, areas of unique geological features, historical, and archeological sites. It is the policy of Marathon County to manage these type resources to enhance and protect their individual exceptional features.

See 300.2.6 Fish and Wildlife on descriptions of the ruffed grouse management area in Leather Camp and the Bern Wetland and Bitzke.

830.1 AREAS RECOGNIZED BY STATE OR FEDERAL GOVERNMENT

The areas that have been recognized by State or Federal Government are listed below with management prescriptions if applicable.

830.1.1 Wisconsin State Natural Areas

The County Forest manages a variety of property designations. The State Natural Area (SNA) system represents the wealth and variety of Wisconsin's biological diversity. SNA's are unique in that they can exist as stand-alone properties or be designated within the boundaries of another property type. DNR Bureau of Natural Heritage Conservation staff will work cooperatively with the County Forest by coordinating educational, monitoring, and research activities. Management will protect the unique character of the area. Presently, there are no State Natural Areas on the County Forest. However, the importance of State Natural Areas has been recognized on County Park property by cooperating with department staff in designating and managing 105 acres at Big Eau Pleine Park and 40 acres at Eau Claire Dells Park for SNA sites.

830.1.2 Species Concentration Areas

In cooperation with the Wisconsin Department of Natural Resources a series of flowages were developed primarily to benefit waterfowl. In 1985 the DNR designated the Bitzke Flowages as a waterfowl refuge to provide resting areas for migrating birds. In 2022, DNR determined that the Bitzke Flowages no longer required refuge status and this designation was lifted.

830.1.3 Endangered Species Habitats

Marathon County will take steps necessary to protect habitat for species that are identified as rare, threatened, endangered or greatest conservation need.

830.1.4 Rare communities

Nine Mile Forest contains a large wetland and shrub carr complex. Characteristics include an A rank reach of fast, soft, cold water stream and large areas of B ranked northern sedge meadow and shrub carr. It is unlikely that any active forest management will occur in this area and Best Management Practices for water quality will be applied when conducting management around the wetland.

830.2 AREAS RECOGNIZED BY COUNTY OR LOCALLY

Marathon County may contain areas that are locally considered exceptional or unique. Some are recognized by other agencies, while others are designated only within this Plan. These resources may include wild rivers, lakes, natural areas, geological features or historical/archeological sites.

830.2.1 Forests with Old Growth Characteristics

Presently, there are no known old growth stands on the County Forest.

830.2.2 Wildlife Sites (Hibernacula, Rookeries, Special Habitats)

Presently, there are no known wildlife sites as referenced above known on the County Forest.

830.2.3 Savannas, Barrens, etc.

Presently, there are no savannas or barrens on the County Forest.

830.2.4 Geological Features of Significance

Presently, there are no known geological features of significance on the County Forest.

830.2.5 Waterfalls, Wild Rivers, Wild Lakes

Presently, there are no known waterfalls, wild rivers or wild lakes on the County Forest.

830.2.6 Unique Forest Types

There are numerous scattered eastern hemlock stands on the County Forest ranging from less than one to more than ten acres. These stands will be managed to protect and regenerate this species if possible.

The County Forest may contain some individual white pine relics that will not be harvested unless are diseased or pose a significant hazard to forest users.

Nine Mile Forest contains approximately 48 acres of natural origin red pine that will continue to be actively managed.

830.2.7 Locally Significant Sites

Presently, there are no known locally significant sites known on the County Forest.

It is the policy of Marathon County to manage these type resources to enhance and protect their individual exceptional features. A review of the State Historical Society databases will be conducted on all timber sales.

830.3 CULTURALLY SIGNIFICANT SITES

830.3.1 Burial mounds, cemeteries

Presently, there are no known burial mounds or cemeteries on the County Forest.

830.3.2 Logging Camps, Dams

Presently, there are no documented logging camps on the County Forest. One low hazard dam at Bern Forest Unit is owned by Marathon County and cooperatively managed with DNR as a waterfowl flowage. A Memorandum of Agreement between the County and DNR is in place.

830.3.3 Landmarks

Presently, there are no special landmarks on the County Forest.

852.3.4 Other

A review of the DNR intranet site that houses archeological and historical data was conducted for any significant sites on the County Forest. No "hits" on County Forest were found. Additional specific information will be gathered during the implementation of individual projects.

835 AESTHETICS

Public perception of forestry has changed over the last planning period and in general it appears that the public is much more accepting of the visual impact of sound forestry. In response to this, aesthetic management planning is intended to be much more simplified in this Plan.

835.1 AESTHETIC MANAGEMENT

Aesthetic management techniques may be applied in areas of high visibility or high public use. Altered management, visual screens, slash disposal, conversion to other species, no cut zones or other methods may be employed, depending on the circumstances of the specific site.

835.2 AESTHETIC MANAGEMENT ZONES

Aesthetic Management Zones include areas where there may be high levels of public presence because of scenic attraction, or some use of the area that would be enhanced by special timber management practices.

835.2.1 Aesthetic Management Zone Examples

1. Park and recreation areas, including access routes

2. Lakes and rivers with significant recreational use
3. Roads with heavy traffic or scenic drive.

835.2.2 Aesthetic Management Prescriptions/Options

1. Adjustment timing of timber harvesting
2. Slash restrictions/requirements
3. Staggered Harvests / Visual Screens
4. Forced conversion to longer lived species
5. Irregular harvest lines, interrupted sight distances
6. Tree plantings randomly placed

840 LANDSCAPE MANAGEMENT

The County will make efforts to evaluate surrounding landscapes while managing the County Forest. The County will strive to provide management that compliments the landscapes, but also try to provide for resources or forest types that are lacking or declining within surrounding landscapes.

840.1 CONSERVATION OF BIOLOGICAL DIVERSITY

For the purposes of this plan, biological diversity will be interpreted to reference the variety and abundance of species, their genetic composition, and the communities, ecosystems, and landscapes in which they occur. Forest management activities on the Marathon County Forest enhance biological diversity by managing for a wide variety of habitat types, age structures and by attempting to perpetuate and protect declining forest types.

840.2 HABITAT FRAGMENTATION

For the purposes of this plan, habitat fragmentation is interpreted as conversion of forests to land uses other than forestry. Lands enrolled in the County Forest Law help protect against habitat fragmentation. A continued program of encouraging land acquisition within the forest blocking boundary is intended to decrease the conversion of forest land to other uses. The adoption of management plans and strategies developed cooperatively with neighboring forest owners and managers will help to consider fragmentation on a landscape level.