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Ottawa National Forest

FINAL Environmental Impact Statement

Executive Summary

*To accompany the Land and Resource
Management Plan*



ABSTRACT

This is a summary of the Final Environmental Impact Statement (FEIS) that accompanies the Ottawa National Forest's 2006 Land and Resource Management Plan (2006 Forest Plan). This summary presents the major findings of the analyses that were used to develop the FEIS.

Final Environmental Impact Statement



Executive Summary

**Baraga, Gogebic, Houghton, Iron, Marquette,
and Ontonagon Counties**

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Introduction

This Summary provides an overview of the Final Environmental Impact Statement (FEIS) for revision of the Ottawa National Forest's Land and Resource Management Plan (Forest Plan).

The Ottawa National Forest (the Ottawa) encompasses nearly one million acres within the western end of Michigan's Upper Peninsula and is comprised of six Ranger Districts. The Ottawa is also home to the J.W. Toumey Nursery, located in Watersmeet, Michigan. The Ottawa boundary encompasses National Forest System (NFS) lands within six counties (Baraga, Gogebic, Houghton, Iron, Marquette, and Ontonagon) of Michigan.

Located a day's drive from several large metropolitan areas, the Ottawa is the focus for management of multiple resources including recreation, timber products, special forest products, and habitat for plants and wildlife. The Ottawa is part of the largest contiguous block of northern hardwoods in the Lake States area and is home to hundreds of lakes and wetlands and thousands of miles of creeks and streams. It is located within the Great Lakes Ecosystem. (Executive Order 13340, Great Lakes Regional Collaboration Final Report 2005). The Ottawa's million acres hold a great variety of animal and plant habitats and populations ranging from common to rare.

Two major sources of direction for this revision effort are the National Forest Management Act (NFMA) and the National Environmental Policy Act (NEPA). Both acts provide guidance on the process of revision and the content for conducting analysis. This Forest Plan revision was prepared under the provisions of the 1982 Planning Rule, as permitted by 36 CFR 219.12[e] of the 2005 Planning Rule. This section of the 2005 rule permits on-going Forest Plan revisions to continue under the provisions of the 1982 Planning Rule until completion. Generally, Forest Plans are to be revised every 10 to 15 years to address changed conditions and incorporate new information. The current Forest Plan for the Ottawa was approved in 1986. Since that time, there have been changes in conditions, shifts in public demands, technological advances, and a better information and understanding of forest ecosystems. These factors are reflected in the issues addressed through this revision.

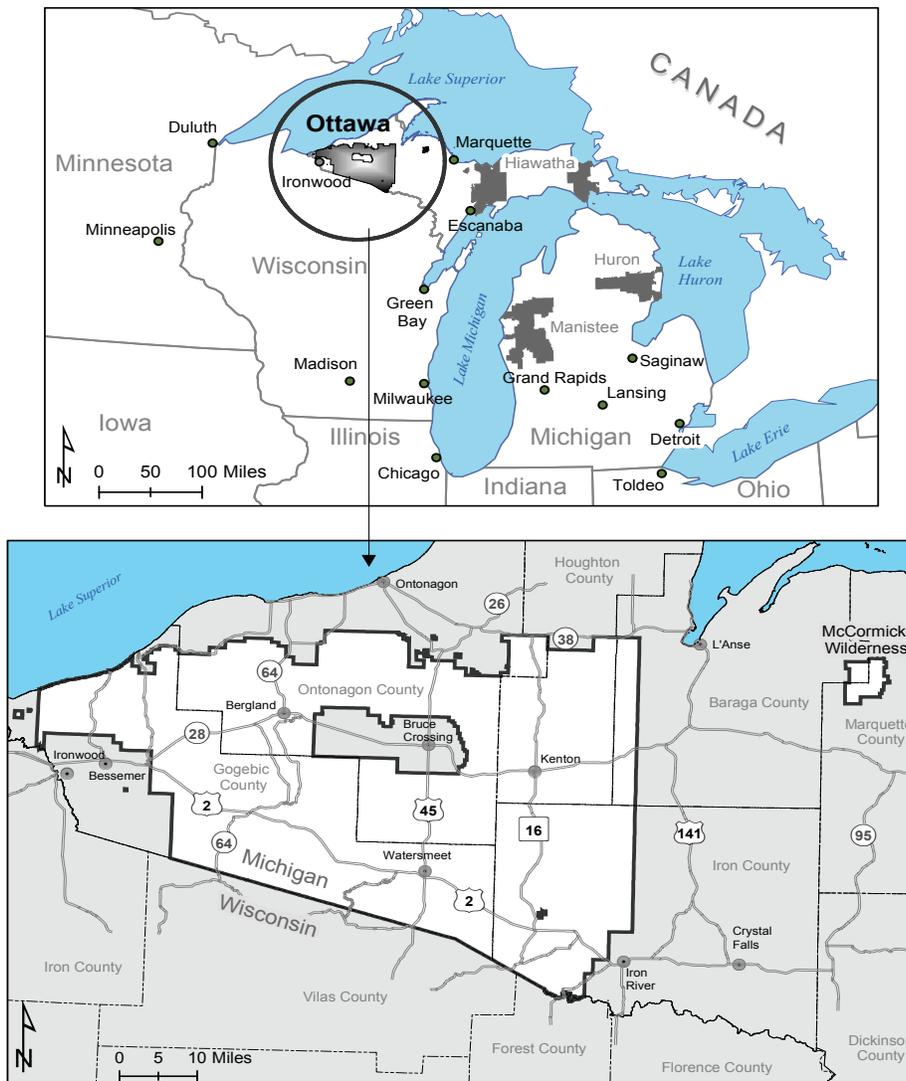
Following the direction of NEPA, the Ottawa conducted an environmental analysis for Forest Plan revision. The Notice of Intent (NOI), published in September 2003, officially announced the proposal to revise the 1986 Forest Plan. A Draft Environmental Impact Statement (DEIS) was published in March 2005. Over 1,600 public responses were received on the DEIS and Proposed Forest Plan. Public input received identified the need for clarifications and other improvements to the analysis and presentation of materials, which has been incorporated into the FEIS and 2006 Forest Plan.

The FEIS states the purpose and need for Forest Plan revision, discloses a description of the issues addressed, presents the alternatives considered to respond to the issues, and documents the analysis of potential environmental effects of each alternative. The

Record of Decision (ROD) will identify the selected alternative, which is the alternative chosen for implementation by the Regional Forester.

Based on the selected alternative, the revised Forest Plan will describe goals and objectives; provide standards and guidelines for achieving the desired conditions; and outline a program for monitoring and evaluating results of implementation.

Figure S-1 Location Map, Ottawa National Forest



Chapter 1 - Purpose and Need

Purpose and Need for Action

The National Forest Management Act of 1976 requires the management of each National Forest to be guided by a Forest Plan. Forest Plans provide strategic direction for all resource management activities. NFMA also directs that Forest Plans be revised at least every 15 years or more frequently when forest conditions significantly change. In addition, the following indicators also direct the need to revise a Forest Plan:

- 1. When conditions of the land or demands from the public have changed significantly.*
- 2. When changes in Agency policies, goals or objectives have a significant affect on Forest programs.*
- 3. When an interdisciplinary team recommends a revision as the result of a monitoring and evaluation process.*
- 4. When new information suggests that a revision is necessary.*

Proposed Action

The Forest Service proposes to revise the 1986 Land and Resource Management Plan (1986 Forest Plan) for the Ottawa National Forest. The Ottawa's Forest Plan was approved in 1986 and has been amended six times.

In conjunction with Forest Service Manuals (FSM) and Handbooks (FSH), the revised Forest Plan (herein referred to as the 2006 Forest Plan) would establish direction for managing natural resources for the next 10 to 15 years on National Forest System (NFS) lands. Direction in these manuals, handbooks, or other Forest Service directives are applied to Forest Plan implementation, but are generally not repeated in the FEIS or the 2006 Forest Plan.

Decisions to be Made

NFMA provides direction for the six decisions that are made in a Forest Plan (36 CFR 219, as permitted by 36 CFR 219.14[e] of the 2005 Planning Rule):

1. Forest-wide multiple use goals and objectives
2. Forest-wide management requirements
3. Management area direction
4. Determining lands suited for timber management and the allowable sale quantity
5. Monitoring and evaluation requirements
6. Recommendations for wilderness and/or wild and scenic rivers

Public Involvement and Cooperative Planning

Throughout the revision process, the Ottawa has been committed to revising the 1986 Forest Plan in collaboration with interested individuals, groups, other government agencies, and local Native American tribes. The Ottawa has used many methods to share information and involve citizens in the Forest Plan revision process, including newsletters, news releases, open houses, public meetings, and the internet.

Issues

A resource management issue is a potential conflict from an effect on physical, biological, social, or economic resources. Issues can describe a problem with a proposed action or can suggest other topics that should be changed or addressed in the Forest Plan. Public involvement, internal discussion, and analysis were used to identify issues in Forest Plan revision.

After reviewing the responses from the public and other government agencies, concerns were identified, and both “Principal Issues” and “Secondary Issues” were developed. Principal issues led to key differences among alternatives. Secondary Issues are important features of each proposed alternative, but differences among alternatives for these issues are limited. The following summaries describe the Principal Issues.

Off-Highway Vehicle Management

Off-highway vehicle (OHV), particularly all-terrain vehicle (ATV), use on the Ottawa and its roadways has changed over the past 20 years. Since the 1986 Forest Plan was adopted, use of OHVs and demand for recreational opportunities has grown.

New and increased demands for OHV access include requests for loop trails and better connectivity to existing trails. As use has grown, impacts from people riding off roads or trails have been observed including threats to soil, water, and the spread of invasive species. User opportunities and resource protection would be improved through changes included in the 2006 Forest Plan.

Hardwood Management

Since implementation of the 1986 Forest Plan, advancements have been made in the knowledge of the suitability of lands for timber production, biological diversity, conditions that support the viability of species, commercial and personal uses, and ecosystem capability. This new information offers the Ottawa an opportunity to better align management prescriptions and hardwood silviculture (e.g., management methods) with ecosystem units which favor its application. As part of the Forest Plan revision process, management area (MA) boundaries and management prescriptions need to be re-evaluated. The diversity of forest types and habitats is important to achieving the desired condition for each MA and for the Ottawa as a whole.

Aspen Management

Aspen is a short-lived, early successional tree species that is primarily a source of pulpwood and provides habitat for a variety of wildlife, including ruffed grouse and woodcock. Management prescriptions are aimed at regenerating aspen to contribute social, economic, and ecological benefits in the region.

The 1986 Forest Plan calls for maintaining 138,000 acres of aspen over the long term, with an average of 16,000 acres of aspen in the 0 to 10-year-old age class at any time. The 1986 Forest Plan also identifies appropriate methods of regenerating various forest types.

Monitoring results from implementation of the 1986 Forest Plan have shown that the current rate of aspen regeneration and desired age classes over the long-term have not been reached. There are several factors associated with this including fewer aspen timber sales, natural succession of aging aspen stands, and improved ecological information used in project decision making. Given this new information, there is a need to re-evaluate the suitable acres on the Ottawa, and to re-evaluate the acreage of aspen to better align management with the ecological capability of the Ottawa.

Long-lived Conifer Management

Long-lived conifers on the Ottawa are broken down into four groups: red pine, white pine, white spruce, and eastern hemlock. Red pine is the most abundant group, making up about one-half of the total acres of long-lived conifers. The Ottawa's component of long-lived conifers provides diversity for a variety of plant and animal communities.

There is a need to align management prescriptions and conifer silviculture with ecosystem units. The diversity of forest types and habitats is important to achieving the desired condition for each MA and for the Ottawa as a whole.

Short-lived Conifer Management

Short-lived conifers provide diversity for a variety of native plant and animal communities. Short-lived conifers on the Ottawa are broken into three groups: jack pine, balsam fir, and lowland conifers. Short-lived conifers make up 18 percent of the forested acres of the Ottawa, with lowland conifers being the most abundant group.

Many of the short-lived conifers on the Ottawa are mature and will naturally succeed to other species, such as long-lived conifers, if not regenerated. There is a need to review and make necessary changes to the vegetation objectives to incorporate species viability needs and biological diversity requirements, as well as address public demands for timber products.

Secondary Issues

Secondary issues are important features of Alternatives 2, 3-Modified and 4, with exception of the issues addressing management indicator species, research natural areas

and wilderness, which are included under all alternatives. Some secondary issues are addressed through development of Forest Plan management direction.

- **Non-native invasive species (NNIS):** Address the spread of invasive plant and animal species on the Forest. Management direction would outline a program to list, inventory, map, treat and monitor NNIS.
- **Canada lynx:** Support the conservation of the federally threatened Canada lynx.
- **White pine and eastern hemlock management:** Emphasize the retention and expansion of white pine and eastern hemlock to provide a diversity of plant and animal communities within northern hardwood stands.
- **Old growth guidelines:** Address the type of management allowable adjacent to old growth stands and incorporate concepts for old growth characteristics.
- **Permanent Forest openings:** Review the role of managed forest openings and adjust the amount of permanent forest openings to better match ecosystem capabilities and opportunities.
- **Fire Management:** Address the role of wildfire and prescribed fire in fire-prone ecosystems.
- **Management indicator species (MIS):** Reassess the Ottawa's current list of species and recommend changing the list based on monitoring results and new information.
- **Research natural areas:** Review and reassess existing candidate areas.
- **Riparian area management:** Provide protection and management within riparian areas to enhance the maintenance of function and structural conditions.
- **Management of dams/Federal Energy Regulatory Commission (FERC):** Address management of existing (not hydro-power) dams on stream and species conditions.
- **Wilderness:** Review the roadless character of the Forest and evaluate roadless areas for wilderness potential.
- **Special interest areas (SIAs):** Evaluate seven areas for inclusion as designated SIAs to recognize values each area presents. Development of new management direction and assignment of a new management area (MA 8.3) on the Ottawa.

Chapter 2 – Alternatives

Introduction

This chapter describes and compares the alternatives considered for the 2006 Forest Plan. NFMA requires that a range of reasonable alternatives be developed and analyzed during the planning process. The Final Environmental Impact Statement (FEIS) explores the differences among management alternatives for the Ottawa.

There are four proposed alternatives in the FEIS. Each alternative has a different approach to managing Ottawa resources for the next 10 to 15 years. Each of these alternatives is a potential Forest Plan that could be implemented if selected.

Developing Alternatives

The Ottawa used an interdisciplinary resource approach when developing the alternatives. Each alternative was designed to respond to public comments and principal issues through a combination of management prescriptions, goals and objectives, and standards and guidelines. This work resulted in four management alternatives.

All alternatives adhere to the concepts of multiple-use and ecosystem management.

Elements Common to All Alternatives

Four alternatives were studied in detail. They have a number of things in common.

Laws, Regulations and Policies

All alternatives were designed to comply with applicable laws, regulations and policies. Specifically, all of the alternatives:

- Meet the management requirements of NFMA (36 CFR 219.27 as permitted by 36 CFR 219.14[e] of the 2005 Planning Rule). These requirements guide the development, analysis, approval, implementation, monitoring, and evaluation of Forest Plans.
- Recognize the unique status of Native American tribes and their rights retained by trust and treaty with the United States, including consultation requirements.
- All alternatives meet minimum health and safety standards.

Wild and Scenic Rivers

All alternatives would manage the designated and study rivers in a manner that would protect and enhance their free flow and outstandingly remarkable values.

Management Indicator Species

Management indicator species (MIS) were reviewed during the Forest Plan revision process. Based on recommendations from Forest specialists, the number of MIS for the 2006 Forest Plan is fewer than the 1986 Forest Plan, and focus on four key habitat elements on the Ottawa. The Ottawa proposes the following species as MIS: ruffed grouse, American marten, cutleaf toothwort and the mayfly/stonefly/caddisfly monitoring index.

Wilderness

The Ottawa currently has three congressionally designated wildernesses: Sylvania, McCormick, and Sturgeon River Gorge.

Forest Service regulations require that during Forest Plan revision, the roadless character of National Forest System lands be inventoried. The entire Ottawa ownership was reviewed during the roadless area inventory process following FSH 1909.12 direction and the Eastern Region Guidelines for Completing Roadless Area Inventories during Forest Plan Revision (USDA FS, 1997b). Included in the inventory were the Trap Hills area and the Norwich Inventoried Roadless Area. The inventory process identified one area, known as Ehlco, to be carried forward to the wilderness evaluation process.

An interdisciplinary team evaluated the Ehlco area for potential wilderness characteristics as outlined in FSH 1909.12, Chapter 7; FSM 1920, Section 1923; and the Eastern Region Guidelines for Completing Roadless Area Inventories during Forest Plan revision (USDA FS 1997). The final wilderness evaluation of Ehlco is documented in Appendix C of the FEIS. The analysis did not reveal compelling features or conditions, to warrant its consideration for wilderness study.

As a result, no additional areas on the Ottawa are being proposed to Congress for wilderness study or designation.

Research Natural Areas

Research Natural Areas (RNAs) are examples of important forest, shrubland, grassland, alpine, aquatic and geologic types that have special or unique characteristics to complete the national network of RNAs. RNAs serve as benchmarks of ecosystem components and function. The Ottawa currently has one designated RNA and two candidate RNAs.

In all alternatives, the Ottawa proposes to continue carrying the Sturgeon River Gorge as a candidate RNA, to remove the Sylvania candidate RNA from consideration, and to retain the existing McCormick RNA.

Management Area Prescriptions

The Forest Plan divides the Ottawa into different management areas, each with a different management area prescription assigned to it. Management area prescriptions provide management direction and emphasize different natural resource attributes and

social/economic values. A set of MA prescriptions were developed and considered for use in each of the four alternatives, including those prescriptions found in the 1986 Forest Plan.

Some of the MA prescriptions in the 2006 Forest Plan have changed little from the 1986 Forest Plan. Those are:

- Wilderness (MAs 5.1, 5.2 and 5.3)
- Semi-primitive motorized and non-motorized areas (MAs 6.1 and 6.2)
- Black River Recreation Area (MA 7.1)
- Wild and Scenic River Designated and Study Rivers (MA 8.1 and MA 9.2)
- Sylvania Perimeter and the McCormick Entrance Area (MA 8.2)

Each MA has a different mix of resource uses. The descriptions in Table S-4 highlight the predominant uses in each MA. The emphasis in each area is not an exclusive use. A detailed description and desired condition for each MA can be found in Chapter 3 of the 2006 Forest Plan.

Alternatives Considered in Detail

The Ottawa developed four alternatives for detailed study. Each alternative stands alone as a potential Forest Plan. Although the alternatives have many things in common, they differ in the emphasis given to particular issues. Alternatives address NFS lands only and are not applied to lands in other ownership within the Ottawa administrative boundary.

Alternative 1

Alternative 1 is the “no action” alternative. NEPA requires that the Forest Service consider this alternative in detail when completing environmental impact statements. No action means that the management direction and management area allocations from the 1986 Forest Plan would be applied through the next planning period. Some adjustments to bring the 1986 Forest Plan into compliance with existing laws and current agency guidelines would be made.

Desired Conditions: This alternative proposes to move the Ottawa toward the desired conditions and overall management themes in the 1986 Forest Plan. Some changes may be made to standards and guidelines and other direction to make them consistent with current laws. Specific levels of resource management treatments or yields have been adjusted to reflect the changes in Ottawa conditions since 1986. Alternative 1 would maintain or improve the habitat for a wide variety of game and non-game species, provide diverse recreation opportunities, and provide for a mix of forest timber products. This alternative would not change OHV access from what is allowed in the 1986 Forest Plan. As such, most of the Ottawa would be open to OHV use, including cross-country travel.

Alternative 2

Desired Conditions: The Ottawa is managed as a core part of one of the largest contiguous blocks of northern hardwoods in the Lake States. Vegetation goals address many forest conditions, but emphasize late successional forest conditions, with older and larger trees. Early successional forests exist in moderate amounts.

Vegetation management would replicate disturbance factors typical of ecosystems of the western Upper Peninsula. These factors include individual or small scale tree blowdown and replacement along with relatively infrequent whole stand replacing wind events. Hardwood selection harvest replicates these small windfalls by creating small gaps in the canopy. Aspen acreage is closer to a natural carrying capacity of the Ottawa's wind, fire and disease conditions. Access for OHVs would be on a modest system of designated trails and road routes. No cross-country travel by OHVs would be allowed, except for administrative use or written authorization.

Alternative 3—Modified

Alternative 3 was modified between the Draft and Final EIS. Changes were made to increase clarity, update information, or respond to public concerns. These include changes to acreage in MA allocations, including MAs 1.1a, 2.1, 2.2, 6.1 and 9.3. Modifications were also made to change the species composition percentage allocations in the desired conditions in aspen within MAs 1.1a and 3.1a; in northern hardwoods within MA 2.2; and in jack pine within MAs 4.1a and 4.2. To increase opportunities for connecting existing routes and general forest access, designation of OHV road routes and trails would include OMLs 1, 2 and 3 roads in consideration of the physical, biological and social concerns. The transportation and OHV discussions were updated to reflect terminology of the Travel Management Rule (USDA Forest Service 2005k). Changes to goals, objectives, standards and guidelines were also made in response to input by local tribes, government agencies and the general public. All changes incorporated into Alternative 3-Modified are within the range of alternatives presented in the DEIS. Chapter 1 of the FEIS fully summarizes the changes made to Alternative 3-Modified.

Desired Conditions: This alternative proposes to provide a diversity of forested types and conditions. Like Alternative 2, this alternative would manage the Ottawa as a core part of the largest contiguous block of northern hardwoods in the Lake States. Vegetative conditions reflect the capability of the forest to provide variety in tree species composition, timber products, wildlife habitat, and overall species richness. Hardwood, conifer, and aspen forests exist in moderate amounts. Access for OHVs would be considered on designated trails, on designated open roads, and on roads closed to highway vehicle traffic. Designation could occur on OMLs 1, 2 and 3 roads. No cross-country travel by OHVs would be allowed, except for administrative use or written authorization.

Alternative 4

Desired Conditions: This alternative emphasizes early successional forests and younger tree species composition and structure within a diverse forest setting. It promotes wildlife habitats favorable to various game and non-game species. This alternative would generally continue the type of vegetative management practices and foster conditions on the Ottawa that have occurred over much of the last century. Access for OHVs would be on designated trails and designated OML 1, 2 and 3 roads. No cross-country travel by OHVs would be allowed, except for administrative use or written authorization.

Alternatives Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the proposed action discussed in the Notice of Intent provided suggestions for alternative methods for achieving the purpose and need.

Some of these alternatives were outside the scope of the proposed changes, duplicative of the alternatives considered in detail, or have components that would cause unnecessary environmental harm. Therefore, a number of alternatives were considered, but dismissed from detailed consideration, including:

- No Harvest Alternative
- Wilderness Alternative
- National Recreation Area Proposal
- No OHV Alternative
- Aspen Alternative

These alternatives and rationale for elimination from detailed study are discussed in Chapter 2 of the FEIS.

Alternative Comparison Tables

Table S-1. Alternative Comparison Table, Estimated Vegetation Management Conditions and Production

Criteria & Indicators	Alternative 1	Alternative 2	Alternative 3-Modified	Alternative 4
Vegetation Management				
<i>Suited Acres allocated to Forest Type</i>				
Vegetation Goals	Vegetation Goals	Vegetation Goals	Vegetation Goals	Vegetation Goals
Aspen/PBirch: 120,000 ac. Pine ¹ : 34,000 ac. Jack Pine: 9,000 ac. Balsam Fir: 6,000 ac.	Aspen/PBirch: 92,000 ac. Pine: 53,000 ac. Jack Pine: 8,000 ac. Balsam Fir: 10,000 ac.	Aspen/PBirch: 109,000 ac. Pine: 52,000 ac. Jack Pine: 10,000 ac. Balsam Fir: 10,000 ac.	Aspen/PBirch: 111,000 ac. Pine: 51,000 ac. Jack Pine: 10,000 ac. Balsam Fir: 10,000 ac.	
Hardwood Management	Hardwood Management	Hardwood Management	Hardwood Management	Hardwood Management
Even-aged: 74,000 ac. Uneven-aged: 130,000 ac. Total: 204,000 ac. % Uneven-aged: 64 %	Even-aged: 40,000 ac. Uneven-aged: 215,000 ac. Total: 255,000 ac. % Uneven-aged: 84 %	Even-aged: 44,000 ac. Uneven-aged: 193,000 ac. Total: 237,000 ac. % Uneven-aged: 81 %	Even-aged: 51,000 ac. Uneven-aged: 163,000 ac. Total: 214,000 ac. % Uneven-aged: 76 %	
<i>Allowable Sale Quantity</i>	1 st Decade 95.6 MMBF 15.5 MMCF 2 nd Decade 107.4 MMBF 17.4 MMCF	1 st Decade 92.6 MMBF 15.0 MMCF 2 nd Decade 121.0 MMBF 19.6 MMCF	1 st Decade 90.1 MMBF 14.6 MMCF 2 nd Decade 134.5 MMBF 21.8 MMCF	1 st Decade 92.6 MMBF 15.0 MMCF 2 nd Decade 125.3 MMBF 20.3 MMCF
<i>Total Suitable Forest Land²</i>	Suited 496,000 ac.	Suited 490,000 ac.	Suited 488,000 ac.	Suited 489,000 ac.

¹Pine is comprised of red pine, white pine, white spruce and hemlock.

²The acres of land suitable for timber production are estimates of forested acreage within each alternative available for and capable of producing timber products on a regulated basis. These acreages are the basis for the economic efficiency analysis and calculations of long-term sustained yield and ASQ. The suitable forest land acres play an important role as forest managers address the variety of social, economic and ecologic resource issues encountered during Forest Plan implementation.

Table S-2. Alternative Comparison, OHV Management, Estimated Desired Condition of Trails and Routes

Criteria & Indicators	Alternative 1	Alternative 2	Alternative 3-Modified	Alternative 4
OHV Management				
<i>Designated Trail System</i>	Designated trail system allowed	Allow 25-75 miles of new trails/ routes primarily for ATV travel	Allow 25-75 miles of new trails/ routes primarily for ATV travel	Allow 25-75 miles of new trails/ routes primarily for ATV travel
		Priority is to connect existing public designated trail systems.	Priority is to connect existing public designated trail systems.	Priority is to connect existing public designated trail systems.
<i>Objective Maintenance Level 1 Roads:</i>	Open for use 2,300 miles of OML 1 road segments ¹	Minimal amount—only to serve as part of a designated connecting trail.	Up to 2,300 miles of OML 1 roads would serve as part of a designated system.	Up to 2,300 miles of OML 1 roads would serve as part of a designated system.
<i>Objective Maintenance Level 2 Roads:</i>	Open for use 650 miles of OML 2 road segments ¹	Minimal amount—only to serve as part of a designated connecting trail.	Up to 650 miles of OML 2 roads would serve as part of a designated system.	Up to 650 miles of OML 2 roads would serve as part of a designated system.
Road suitable for high clearance vehicles. Road may be open to vehicle traffic or closed to vehicle traffic.				
<i>Objective Maintenance Level 3 Roads:</i>	Not open for use	Minimal amount—only to serve as part of a designated connecting trail.	Up to 420 miles of OML 3 roads would serve as part of a designated system.	Up to 420 miles of OML 3 roads would serve as part of a designated system.
Road that is open and maintained for highway vehicle traffic. May be single or double lane.				
<i>Cross-country</i>	Open for use¹	Not Allowed	Not Allowed	Not Allowed

¹It should be noted that travel across wetland features is a violation of State law (Michigan Compiled Laws 1994c).

Table S-3. Alternative Comparison, Estimated Desired Conditions and Uses for Identified Secondary Issues

Criteria & Indicators	Alternative 1	Alternative 2	Alternative 3-Modified	Alternative 4
Secondary Issues				
<i>Old Growth</i>	<ul style="list-style-type: none"> • Uneven-aged management silviculture would be used within stands immediately adjacent to classified old growth. • Percentage of Old Growth forest varies within MAs 1.1 thru 4.1 and 6.1 and 6.2. • Approximately 156,000 acres 	<ul style="list-style-type: none"> • Maintaining long-lived tree species within stands adjacent to classified old growth would be emphasized. • Approximately 164,000 acres 	<ul style="list-style-type: none"> • Maintaining long-lived tree species within stands adjacent to classified old growth would be emphasized. • Approximately 160,000 acres 	<ul style="list-style-type: none"> • Maintaining long-lived tree species within stands adjacent to classified old growth would be emphasized. • Approximately 161,000 acres
<i>Permanent Forest Openings (PFOs)</i>	<p>Small percentage of MAs in 2.1, 4.2a, 6.1, and 6.2 managed as PFOs. Minor component of PFO in MA 1.1a, 2.2, 3.1a. Greater component of PFO in MA 4.1a (conifer emphasis).</p>			
<i>Non-Native Invasive Species (NNIS)</i>	<ul style="list-style-type: none"> • Emphasis on natural plant re-vegetation and select seeding use of native grasses. Control of insect and disease agents attacking forest tree species. • Treat non-native invasive species infestations; • Maintain list of species of concern; • Treatment based on prioritization; • Conduct inventories; and, • Provide public education 			
<i>Canada Lynx</i>	<ul style="list-style-type: none"> • Goals for early successional, conifers, reforestation and for providing diversity of habitats. • Maintain approximately 90,000 acres of aspen for foraging habitat • Maintain approximately 10,000 acres of jack pine for foraging habitat • From the unsuited land base maintain at least 91,000 acres of lowland conifer and 34,000 acres of short-lived conifer habitat • Maintain approximately 10,000 acres of spruce/fir-aspen forest type for foraging habitat 			
<p>Manage the 256,000 acre Remote Habitat Area (RHA) for low open road density</p>				

Criteria & Indicators	Alternative 1	Alternative 2	Alternative 3-Modified	Alternative 4
Secondary Issues				
<i>Management Indicator Species</i>	4 MIS species: American marten, ruffed grouse, cutleaf toothwort, and mayfly/stonefly/caddisfly suite.			
<i>Fire Management</i>	Emphasize suppression of all fires.	Refine current direction to allow for natural ignitions to burn under the right conditions and use of prescribed fire to meet management objectives.		
<i>Research Natural Areas</i>	Continue to carry the Sturgeon River Gorge as a cRNA. Remove Sylvania cRNA from consideration. Retain existing McCormick RNA.			
<i>Riparian Management</i>	Minimal Plan direction	Include standards and guidelines that enhance protections and guide management decisions in riparian areas.		
<i>Management of Dams</i>	Minimal Plan direction	Include standards and guidelines that would be considered with projects involving existing dams, additions or removals of dams on forest streams.		
<i>Wilderness</i>	No new wilderness recommendations to Congress. Three Congressionally designated wildernesses totaling approximately 50,000 acres.			
<i>Special Interest Areas (SIAs)</i>	NO SIAs		New Management Area (MA 8.3) for 7 SIAs to protect scenic, geologic, botanical, zoological, recreational, or historic values.	

Comparison of Management Acres: Changes to the following table reflects use of the Forest's administrative boundary; realignment of MA boundaries and/or adjustments in MA acreages; completion of the official land survey of the Sylvania Wilderness boundary; double counting of acres where MAs overlap, and rounding of acres. Changes specific to Alternatives 2 through 4 reflect realignment of MA 6.1 and 6.2 for an existing snowmobile trail, the addition of new proposed MAs, and rounding of acres.

Table S-4. Comparison of Management Area Prescription by Alternative (NFS lands)¹

MA	Management Area Emphasis	Acres ²			
		Alt #1	Alt #2	Alt #3 Modified	Alt #4
1.1	Emphasizes early successional ecosystem community types in a roaded natural motorized recreation environment.	82,600	0	0	0
1.1a	Similar to MA 1.1, but with greater emphasis on aspen forest type.	0	53,300	62,200	70,900
2.1	Emphasizes northern hardwoods (50-70% desired vegetative composition) ecosystem using uneven-aged management in a roaded natural motorized recreation environment.	376,100	170,900	285,900	420,800
2.2	Emphasizes northern hardwood (60-70% desired vegetative composition) forest types within a roaded natural motorized recreation environment. Greater emphasis on uneven-aged hardwood management than in MA 2.1.	0	285,500	153,700	0
3.1	Emphasizes a mix of northern hardwoods, softwoods, and aspen vegetative types in a roaded natural motorized recreation environment through even-aged management.	61,500	0	0	0
3.1a	Similar to MA 3.1, but equal emphasis on hardwood and aspen forest types.	0	79,900	87,800	97,800
3.2	Emphasizes a wide variety of vegetative conditions including moderate amounts of early, middle and late successional community types, all within a roaded natural motorized recreation environment.	141,600	0	0	0
4.1	Emphasizes long-lived conifers and associated wildlife habitat in a roaded natural motorized recreation environment through even-aged management.	62,400	0	0	0
4.1a	Similar to 4.1, provides for a mix of aspen, northern hardwoods, and conifer types with emphasis on long-lived conifers. Larger objective for permanent openings.	0	145,100	138,200	123,400
4.2	Emphasizes short-lived conifers while maintaining habitat for associated wildlife in a roaded natural motorized recreation environment through even-aged management.	15,100	0	0	0
4.2a	Similar to MA 4.2, greater provision for permanent openings.	0	6,000	12,900	27,700
5.1 ³	McCormick Wilderness	16,850	16,850	16,850	16,850
5.2 ³	Sturgeon River Gorge Wilderness	14,500	14,500	14,500	14,500
5.3 ⁴	Sylvania Wilderness	18,400	18,400	18,400	18,400
6.1	Emphasizes semi-primitive, non-motorized recreation in a northern hardwoods ecosystem with moderate harvesting of other vegetation types through uneven-aged management.	64,600	57,000	57,000	57,000
6.2	Emphasizes semi-primitive, motorized recreation environment. Maintains high amounts of northern hardwoods, with some aspen.	52,900	52,400	52,400	52,400
7.1	Black River Recreation Area	1,100	1,100	1,100	1,100
8.1	Designated Wild & Scenic Rivers	67,000	67,000	67,000	67,000
8.2	Sylvania Perimeter Area and McCormick Entrance Area	2,500	2,600	2,600	2,600
8.3	Special Interest Areas	0	10,600	10,600	10,600
9.2	Emphasize land and resource conditions that will provide for the interim protection and management of congressionally authorized study river corridors.	8,900	8,900	8,900	8,900
9.3	Minimum management requiring protection and maintenance of environmental values and the health and safety of the public.	7,100	3,200	3,200	3,200

¹ Acreage was updated between the DEIS and FEIS to reflect acres in the administrative Forest boundary.

² Changes in Alternatives 2-4 reflect re-alignment of MA boundaries (MAs 6.1 and 6.2) for snowmobile trail, proposed SIAs and rounding of MA acres. All acre calculations are for National Forest System lands except for MAs 5.1, 5.2 and 5.3, where all acres regardless of land ownership are presented.

³Acres as cited in the 1987 Michigan Wilderness Act.⁴Total acres that fall within the boundary of the Sylvania Wilderness as approved by the Regional Forester on June 16, 2005 (USDA Forest Service 2005p).

Chapter 3 – Affected Environment and Environmental Consequences

Introduction

Chapter 3 describes the physical, biological and social environments of the Ottawa and analyzes how each of the alternatives will affect these environments. Ottawa resources include not only ecosystem components such as soils, vegetation, and wildlife, but also human uses and values such as producing timber and other products, recreation experiences, and recreation access. Each resource subject area is evaluated separately.

Effects Analysis Indicators and Analysis Methods

In preparing the FEIS, the focus was on consequences most likely to occur and why. Not every environmental process or condition on the Ottawa is described in this document because that would be impractical, given the complexity of natural systems. The purpose of the FEIS is to provide a survey of the broader environmental and social factors that are relevant to the programmatic planning process.

Summary of Effects

The following section is a summary of effects described in the FEIS. Each section describes a resource and the direct, indirect, and cumulative effects on the environment that is likely to result from activities and resource output levels of each alternative.

<u>Physical Environment</u>	<u>Biological Environment</u>	<u>Other</u>
Soils	Vegetation	Heritage Resources
Water Resources	Timber Resources	Recreation
Air Quality	Non-Native Invasive Species	Social
Minerals	Native Plants/Plants of Concern	Economics
Transportation	Wildlife	
	Fire Management	
	Special Interest Areas	
	Research Natural Areas	

Physical Environment

The physical environment is comprised of the land, water and air that make up the Ottawa. Natural history events have left the area providing a variety in landforms from old glacial lakebeds to rolling terrain and rocky outcrops. The Ottawa boasts an abundance of water in the form of rivers, lakes, and wetlands.

Soils

Risks to the soil resource are those factors that can impair soil quality. Consequences are diminished capacity of the soil to perform its biologic, hydrologic, and/or other ecological functions, and include such detrimental disturbances as compaction, displacement, puddling/rutting, and erosion. The soil resource was evaluated using OHV access, vegetation management, road density, fire management and special interest areas.

The soil resource is protected and maintained in all the alternatives. Risk of reduced soil quality may vary slightly by alternative, but the overall risk is low for any alternative. Alternatives 1 and 4 have similar and somewhat higher risk to the soil resource; Alternative 1 is likely the highest risk among all alternatives because of the amount and type of OHV access, and for the soil resource, OHV access can be a bigger consideration than vegetation management. Alternative 2 has the lowest risk. Protection for the soil is provided through direction contained in laws, regulations, best management practices, FSM and FSH direction, field guide direction, Forest Plan goals, objectives, standards and guidelines, and contract clauses.

Water Resources

Watersheds within the Ottawa are generally in good condition. Effects on watershed and riparian resources generally vary by the degree to which management activities are projected to occur over time under each alternative. Forestwide desired conditions and objectives set the tone for managing specific resources and management area direction further defines how resources will be managed. Even with these over-arching principles and with the application of standards and guidelines, there is a small risk that unavoidable effects to water and riparian resources may occur as a result of implementing projects. Water resources were evaluated using OHV access, aspen management, riparian protection, dam management and roads.

OHV Access

The existing OHV use within the Ottawa has had impacts on aquatic ecosystems and water quality due to inappropriate stream crossing structures or inadequate approaches to existing appropriate crossing structures. The proposed changes in OHV management direction in Alternatives 2, 3-Modified, and 4 are designed to control OHV access through designated trails and routes. Designated trails and routes could be maintained or improved to accommodate OHV use and limit impacts to aquatic resources. Alternative 1 has the greatest risk of sedimentation related to OHV use in comparison to the other three alternatives. However, the overall effects on the aquatic resources are estimated to be small.

Aspen

Aspen forests are primarily managed and retained by clearcutting when the stands are mature. When more than 60% of a watershed is cleared or when forests are in a young condition, flow changes can occur which can result in stream channel alterations causing impacts to aquatic resources. The key proposed changes in aspen management in Alternatives 2, 3-Modified, and 4 that would influence water quality and flow would be to establish a threshold limit for the amount of open land and young forest condition to avoid adversely impacting low water regime and channel stability.

In all alternatives, the risk of approaching the threshold is expected to be low given recent analysis outcomes and projected management activities in the future.

Riparian Areas

Since the establishment of the Ottawa in 1931, riparian areas and aquatic systems have been in a recovery mode. As forests have re-grown, some riparian functions have been restored. The 1986 Forest Plan lacks clear riparian direction that ties to the full suite of riparian structure and function. The key proposed changes in riparian management direction in Alternatives 2, 3-Modified, and 4 are designed to maintain or restore healthy riparian conditions that support terrestrial and aquatic species, improve understanding of riparian structure and function, and provide direction for some activities that may affect riparian areas.

Recent research, including information describing a variety of riparian functions and riparian connections within the landscape is incorporated into Alternatives 2, 3-Modified, and 4. Future managers would be better equipped to adequately protect riparian and aquatic resources, which would continue to recover over time.

Dam Management

There are currently five functioning dams within the Ottawa under National Forest management. These dams are various ages, were constructed for different purposes, and are in various conditions. There are also numerous dam remnants from the early logging days (e.g., late 19th and early 20th century), some of which partly influence channel and/or floodplain functions. These dams occur on NFS and private lands. The key proposed changes in dam and impound management direction in Alternatives 2, 3-Modified, and 4 would manage rivers and streams to mimic natural flow patterns and have appropriate quantity, quality, and timing of flow sufficient to maintain channel integrity and support aquatic biota. This direction would also provide direction for gradual draw-downs during maintenance or decommissioning of dams to minimize stream channel impacts, discourage the construction of new dams, and remove old dams that are no longer serving a purpose.

Under Alternative 1 there would continue to be no definitive direction for dam management. Flows could be managed in a way that would risk adversely impacting channels, aquatic species and their habitats, and recreational values.

Roads

Ottawa roads are used in a variety of ways, such as for recreation, timber harvest, hunting, and fishing access. The Ottawa's transportation system for the more developed OML (Objective Maintenance Level) 3, 4 and 5 roads is in place and road maintenance or improvements occur annually. Improvements are made to the closed OML 1 and 2 roads where needed when they are re-opened for management activities such as timber sales. Many improvements reduce sedimentation and risk of culvert failures with large storm events.

Road maintenance may vary by alternative in general proportion to the allowable sale quantity (ASQ) as roads are used for timber sales. The risk of stream sedimentation is proportional to the amount of road use. Since OML 1 and 2 roads make up the majority of the transportation system, and are heavily utilized in timber management, a greater portion of these roads may be utilized in those alternatives with higher ASQs. In the short-term (1st decade), although the ASQ differences are minor, Alternative 3-Modified may have the least sediment yield risk into streams and Alternative 1 may have a slightly higher sediment yield risk. In the long-term (3rd decade), based solely on ASQ, Alternative 1 would have the least amount of sediment yield risk and Alternative 2 would have the highest risk. However, differences among the alternatives are small and overall effects to aquatic resources would be negligible.

Air Quality

Air quality within the Ottawa is generally good. Although ground level ozone may reach moderate levels in the western Upper Peninsula on some summer days, all areas of the Ottawa meet EPA air quality standards. Compliance with state and federal air quality regulations will ensure that future forest management activities under any of the alternatives would continue to protect air resources on the Ottawa and not contribute to air quality degradation off the Ottawa.

Air quality was evaluated using wildfires and road management, as these activities have the potential to affect air quality on the Ottawa. Regardless of the minimal anticipated effects to air quality, all prescribed fires would be conducted according to an approved burn plan that would include measures to minimize smoke problems. The Ottawa has a base road system for public access and forest management in place. None of the alternatives propose a sizable road building program and no air quality related effects would be expected related to road construction.

Minerals

The long history of mining in Michigan's Upper Peninsula pre-dates the establishment of the Ottawa and has resulted in the majority of minerals being privately owned. In fact, only about 18% of the minerals on NFS lands are owned by the federal government.

Minerals were evaluated using the change between the 1986 Forest Plan and the revised Forest Plan for the proposal of a new management area (MA 8.3, Special Interest Areas), which is included in Alternatives 2, 3-Modified and 4. Very few of the minerals in MA 8.3 are federally owned. Any mineral exploration or development of US minerals that

disturbs the surface would not be permitted in this management area. Only about 84 acres out of approximately 834 acres (10%) of the US minerals under the proposed MA 8.3 would potentially be impacted by allocating a portion of the Ottawa to Special Interest Areas. Private minerals would not be impacted under any alternative.

Transportation

No changes to the transportation system have been proposed during Forest Plan revision. However some of the management direction changes that are proposed could have impacts on the transportation system. Factors that have potential to impact the transportation system on the Ottawa include OHV use, management area allocations, and road maintenance frequency. See Table S-2, *Alternative Comparison, OHV Management, Estimated Desired Future Condition of Trails and Routes*.

OHV Use

Alternative 1 provides OML 1 and 2 roads to be open for OHV use in addition to cross-country OHV use. OHV use could result in more time and effort spent on bringing roads back up to standard, especially given the expected increase in future OHV use.

In Alternative 2, given the limited OHV emphasis, the least amount of the Forest transportation system would be used by OHVs. The amount of design improvements and road maintenance due to OHV use would be the least of all alternatives.

Alternatives 3-Modified and 4 could allow OHV use on OML 1, 2, and 3 roads. All available road miles would be considered; however, road mileages designated for OHV use could be less than the total mileage of these roads on the Ottawa. This could result in a potential for the greatest number of miles needing design improvements and the greatest amount of road maintenance needed of any of the alternatives.

Management Area Allocation

Acres allocated to management areas change by alternative, resulting in the number of acres assigned to a particular road density objective changing.

Alternative 1 has the highest potential road density of all the alternatives. Alternative 2 has the next highest potential road density. Alternative 3-Modified is only slightly less in potential than Alternative 2. Alternative 4 has the lowest potential for road density of all the alternatives. However, the difference between the potential road mileages from Alternative 1 to 4 is only about 53 miles. Therefore, the effects of the different allocations of Ottawa acres to management areas are minimal.

Maintenance Frequency

Ottawa roads used for timber harvesting could require increased maintenance. The allowable sale quantity (ASQ) for timber for the four alternatives ranges between 90.1 MMBF and 95.6 MMBF during the 1st decade of Forest Plan implementation. Alternative 3-Modified represents the low end of that range and Alternative 1 represents the high end. Alternatives 2 and 4 have the same ASQ. This range means that, for the short-term (next 10 years), Alternative 1 could be expected to have the most impact on

forest roads, and particularly maintenance needs, and Alternative 3-Modified would have the least.

Biological Environment

Vegetation

Approximately 905,000 acres of the Ottawa are forested. The present Ottawa is predominantly a deciduous forest. At the time of initial European settlement, the dominant vegetation on the Ottawa was sugar maple, eastern hemlock, and yellow birch. These species occurred on moist sites. On drier sites red pine, white pine, red maple, northern red oak, and some eastern hemlock occurred. Northern white cedar and balsam fir were also found on the Ottawa. Records indicate that composition for many tree species on the Ottawa is similar to before European settlement. However, the abundance of a few species has changed substantially. Numbers of red maple and aspen have greatly increased, while numbers of white pine and eastern hemlock have been greatly reduced.

Northern Hardwoods

Northern hardwood stands would be managed using the silvicultural system that is appropriate for the site based on Ecological Landtype Phase (ELTP) capabilities, site-specific considerations, and long-term management objectives for the area. In all alternatives northern hardwoods would be managed to restore conditions to those more representative of native vegetation and to return to more resilient, complex, and mature forests.

Alternative 1 would have the least amount of northern hardwood acres and the lowest percent of managed uneven-aged forest of the alternatives. Alternative 1 would have the most horizontal diversity by having a mix of young and old hardwood stands.

Alternative 2 would have the highest amount of northern hardwood acres and the highest percentage of managed uneven-aged forest mainly because it would have the highest acreage of MA 2.2. The result being more of the Ottawa having multiple tree canopies in each stand, more vertical diversity within each stand, and less horizontal diversity across the landscape.

Alternative 3-Modified was developed to respond to public concerns by increasing the amount of northern hardwoods available for uneven-aged management. This alternative would have less uneven-aged management than Alternative 2, mainly because it would have fewer acres of MA 2.2, but would have more uneven-aged management than Alternatives 1 and 4. Alternative 3-Modified would have the second highest amount of selection harvests. Alternative 3-Modified would also likely have the second lowest amount of species diversity.

Alternative 4 would have less uneven-aged management than Alternatives 2 and 3-Modified. Alternative 4 would have the second highest amount of shelterwood cutting, which would result in the second highest amount of horizontal diversity by having a mix of young and old hardwood stands. Alternative 4 would also likely have greater tree

species diversity by having more mid-tolerant hardwood species as a result of more even-aged management than Alternatives 2 and 3-Modified. Alternative 4 would maintain the second lowest number of northern hardwood acres.

Aspen/Paper Birch

Aspen stands were less abundant before European settlement than today. Today's acreage of aspen in the Lake States is largely due to the extensive disturbance rendered by turn-of-the-20th-century logging. Although aspen acreage has declined in the Lake States since the 1960's, it remains the region's second most prevalent forest type. Aspen and paper birch are shade intolerant and require disturbances such as clearcutting, ground scarification, wind, or fire to become established and to be maintained. See Table S-5, *Estimated Number of Acres Managed for Aspen/Paper Birch* below for the estimated number of acres managed for aspen by alternative.

All alternatives would manage and maintain a significant acreage of aspen equal to about 10% of the total Ottawa acreage. Alternative 1 would maintain both the most acres of aspen, and the highest amount of large contiguous blocks of aspen forest. Alternative 2 would maintain the least amount of aspen acres, and have the fewest large blocks of contiguous aspen forest, with emphasis on maintaining more, smaller blocks of aspen. Alternative 3-Modified would maintain the second lowest amount of aspen acres; have fewer large blocks of contiguous aspen forest than Alternative 1 and similar to Alternative 2, it would emphasize maintaining smaller blocks of aspen. Alternative 4 would maintain the second highest number of acres of aspen acres. However, Alternative 4 would have fewer large blocks of contiguous aspen forest, and more, smaller blocks of aspen than Alternative 1.

Table S-5. Estimated Number of Acres Managed for Aspen/Paper Birch

	Alternative 1	Alternative 2	Alternative 3-Modified	Alternative 4
Average Annual Regeneration Harvest	2,100	1,300	1,700	1,800
Suitable Acres Managed Long-Term for Aspen/Paper Birch	120,000	92,000	109,000	111,000

Source: Estimates based on modeling and analysis described in Appendix A of the FEIS.

Short-Lived Conifers

Short-lived conifer forest composition is similar to historical numbers. Short-lived conifers, like jack pine, are usually managed using even-aged management. Short-lived conifers on acres suitable for timber management would be relatively minor components of all other management areas. All alternatives would maintain about the same amount of short-lived conifers acres as reflected in Table S-6, *Estimated Number of Suitable Acres Managed for Short-lived Conifers*.

Table S-6. Estimated Number of Suitable Acres Managed for Short-lived Conifers

	Alternative 1	Alternative 2	Alternative 3-Modified	Alternative 4
Jack Pine	9,000	8,000	10,000	10,000
Balsam Fir	6,000	10,000	10,000	10,000

Source: Estimates based on modeling and analysis described in Appendix A of the FEIS.

Most of the short-lived conifer species numbers are relatively stable with the exception of jack pine. Without disturbance, jack pine will convert to other species. Many jack pine stands on the Ottawa have already converted to red pine stands. Because a high proportion of the jack pine on the Ottawa is already old and deteriorating, some acres are expected to be lost within the next few decades. Much of the jack pine on the Ottawa is on suited lands, and with intensive management, this forest type could be maintained.

Long-lived Conifers

Long-lived conifer composition on the Ottawa has changed dramatically compared to historical numbers. This is due to heavy logging at the turn-of-the-20th-century. Long-lived conifers have a distribution of all age classes on the Ottawa. One exception is the high amount of red pine in the 60-69 year age class resulting from Civilian Conservation Corps (CCC) plantings. Long-lived conifers are usually managed using even-aged management techniques.

All alternatives were designed to maintain or increase the acres of long-lived conifers. Each management area has a different desired vegetation composition percentage for the different forest types from a high to moderate to low emphasis.

Table S-7. Estimated Number of Suitable Acres Managed for Long-lived Conifers

Alternative 1	Alternative 2	Alternative 3-Modified	Alternative 4
34,000	53,000	52,000	51,000

Source: Estimates based on modeling and analysis described in Appendix A of the FEIS.

Alternative 1 would maintain the fewest acres of long-lived conifers, largely because it has the fewest acres with long-lived conifer emphasis (MA 4.1) and the highest emphasis on managing aspen.

Old Growth

Old growth is a term used to describe a forest that is in the mature and older stages of forest development. The majority of stands on the Ottawa are second growth stands. Many hardwood stands are beginning to develop more structure, function, and composition, as trees continue to grow and mature. In order for a stand to be classified as old growth, the stand must contain a large tree component and other old growth characteristics outlined in Chapter 2 of the 2006 Forest Plan.

In all alternatives, stands would be classified as old growth in patterns and arrangements that provide for the desired spatial arrangement within the management area and across

the landscape. It is projected that between 17-18% of the forested lands, or 156,000 to 164,000 acres (based on the range offered by alternatives), on the Ottawa would become old growth over the next 100 years.

Since a large portion of the old growth on the Ottawa is located in wilderness and Wild and Scenic River corridors, there would be little difference among the alternatives in the amount of old growth. As forests mature over the next several decades, the number of acres of old growth would also increase.

Forest Health

All alternatives would emphasize maintaining a healthy forest. Silvicultural treatments would be similar in all alternatives. Silvicultural practices and integrated pest management techniques would be used in all alternatives to maintain or improve forest health.

Timber Resources

Timber harvesting not only provides jobs and supplies wood products to the nation, but it is also used to restore and maintain forest health, meet vegetation diversity objectives, improve wildlife habitat and meet other Forestwide goals and objectives.

Lands Suitable for Timber Production

As part of the Forest Plan revision process, a suitability analysis was conducted to determine how much land is suitable for timber production. The analysis determined the land base on the Ottawa that is biologically and physically capable of producing timber. Lands withdrawn from this base include administrative sites, developed campgrounds, water, non-forested lands, wilderness, steep slopes, etc. Based on this analysis, the tentatively suited land base for timber management varies by alternative as reflected in the following table.

Table S-8. Acres of Land Suitable for Timber Production by Alternative*

Alternative 1	Alternative 2	Alternative 3-Modified	Alternative 4
496,000	490,000	488,000	489,000

*Estimates based on modeling and analysis described in Appendix A of the FEIS.

All alternatives have approximately the same amount of acres of land that are suitable for timber production. Alternative 1 has no special interest area designations.

Projected Harvest Acres and Volumes

Projected amounts and types of timber management activities (e.g., timber harvesting, site preparation for planting, reforestation, and timber stand improvement) as well as species product mixes were estimated for each alternative. The estimated total acres under harvest are similar among alternatives with single-tree selection harvest being the most common silvicultural activity. Planting and release activities are similar among alternatives with the majority of planting focused on long-lived conifers, especially white pine. Most stands on the Ottawa are naturally regenerated following timber harvest.

Allowable Sale Quantity

The allowable sale quantity (ASQ) is the maximum quantity of timber that may be sold from the area of suitable land covered by a forest plan for a specified time period. This quantity is usually expressed on an annual basis as the “average annual allowable sale quantity.” Actual sell volumes could be less, but the average would not exceed the maximum sell volumes that are displayed in Table S-9, *Allowable Sale Quantity for the First Two Decades by Alternative (MMBF/year)* below.

Table S-9. Allowable Sale Quantity for the First Two Decades by Alternative (MMBF/Year)

Decade	Alternative 1	Alternative 2	Alternative 3-Modified	Alternative 4
1	95.6	92.6	90.1	92.6
2	107.4	121.0	134.5	125.3

Source: Estimates based on modeling and analysis described in Appendix A of the FEIS.

Alternative 1 proposes the highest maximum timber volume for the first decade. This is, in part, a result of Alternative 1 having the highest amount of aspen regeneration harvests in the first decade, which would result in the highest per acre yields.

Alternatives 1 and 4 would have fewer acres of hardwood being treated in the first two decades of Forest Plan implementation and would produce slightly lower amount of hardwood pulpwood and hardwood sawlogs than the other alternatives.

Alternative 2 (along with Alternative 4) would have the second highest maximum timber volume (ASQ) for the first decade. Alternatives 2 and 3-Modified would have the most hardwood acres being treated in the first two decades of Forest Plan implementation, which would produce the highest amount of hardwood pulpwood and hardwood sawlogs.

Alternative 3-Modified would have the lowest maximum timber volume for the first decade, but by the second decade, the yield would be the highest of all alternatives.

Special Forest Products

The Ottawa provides a variety of personal and commercial use special forest products including firewood, Christmas trees, conifer boughs, and other miscellaneous products. Special forest product removal is not permitted in wilderness, Forest Service administrative sites, and developed recreation sites. Personal use firewood is the most common special forest product permit issued and supply usually exceeds demand.

All alternatives would provide similar amounts of sustainable personal and commercial use special forest products.

Non-Native Invasive Species (NNIS)

Non-native invasive species (NNIS) are those plant and animal species which are not indigenous to the western Upper Peninsula, and which aggressively compete for space and resources with native species. Each alternative has aspects that present higher or

lower risk for spreading NNIS. Factors evaluated for NNIS were risk of spread, OHV access, vegetation management and permanent forest openings.

Although Alternative 1 is expected to have a lower risk of spreading NNIS by timber harvest related activities, it is expected to have the highest risk among the alternatives for spreading NNIS by other activities. Conversely, Alternatives 2, 3-Modified, and 4 are expected to have higher risk of spreading NNIS during timber harvest activities, and lower risk for spreading NNIS by other activities.

Alternative 1 does not include new management direction for an integrated NNIS control program. Some level of inventory, prevention, treatment and monitoring would still occur, but it would be less than what would occur under Alternatives 2, 3-Modified and 4. Alternatives 2, 3-Modified, and 4 include management direction for an integrated NNIS control program. This translates to a reduced risk of spread of NNIS, more control actions, and potentially a lesser acreage of NNIS infestations than under Alternative 1.

Native Plants and Plants of Management Concern

Native plants on the Ottawa include trees, shrubs/vines, and herbs as well as nonvascular plants. Of the many relatively common native plants, eight plants or plant groups were identified as species of management concern. Factors evaluated were those that have the potential to affect the native plant populations include human-caused disturbances such as timber harvest and road construction; deer herbivory; and non-native invasive species.

Causes for local declines include human-caused disturbance, such as timber harvest and road construction. The amount and spatial arrangement of timber harvest units could affect plants by direct damage to plants, changes in light regime and changes in soil conditions.

White-tailed deer are known to consume many species of plants, and their food preferences vary by season and locality. Impacts of browsing include changes in plant species density and height growth; reduced species diversity; and increases in less preferred and browse-resistant species. Rare plant populations can be managed to mitigate site-specific impacts from deer herbivory (for example, using fencing, altering type and timing of timber harvest). This option for site protection would not vary by alternative. Deer herbivory is likely to also continue, with negative and cumulative effects, especially on northern white cedar and eastern hemlock persistence.

Select harvest of certain species (e.g., princess pine, blueberries, cedar posts, birch bark, and wild rice) can be expected to continue.

In general, management direction that is proposed for Alternatives 2, 3-Modified, and 4 should benefit plants of management concern. Alternative 1 could also benefit paper birch given the greater emphasis on early successional species.

Wildlife

The Ottawa has a rich diversity of wildlife with more than 300 wildlife species believed to be resident on the Ottawa. The number of wildlife species found on the Ottawa and their population levels are determined to a large degree by the amount, quality and variety of habitats available. Wildlife species discussed include management indicator species, threatened and endangered species, Regional Forester's sensitive species, other key species of concern, and game animals. Factors affecting species populations are prey availability, human and natural predation, weather, diseases, and natural population cycles.

Lakes and streams on the Ottawa produce a wide variety of fishing opportunities as well as habitat for numerous aquatic animal and plant species. Factors that can affect fisheries habitat include sediment delivery to streams, loss of shade, and lower than desired levels of both small and large woody debris.

Management Indicator Species

Management indicator species (MIS) are used as a means of monitoring the effect management activities are having on species viability. Species are chosen based on their ability to represent the needs of other species in similar habitats and as an indicator of management effects. Species were also chosen based on recommendations from the Michigan DNR and local tribal government.

The MIS list for the revised Forest Plan alternatives consists of: ruffed grouse (recommended for selection as an indicator of management effects on the amount and quality of aspen habitats); American marten (recommended for selection as an indicator of management effects on conifer habitats); cutleaf toothwort (a plant recommended for selection as an indicator species for management in northern hardwoods); and the mayfly-stonefly-caddisfly suite (recommended for selection to serve as an indicator for cold water streams and riparian areas).

Ruffed Grouse

Management activities under all alternatives vary for each habitat type. Aspen acres are expected to be reduced from current levels in total acres managed, which would have a corresponding impact on the grouse population. The Ottawa's long-term carrying capacity for grouse is expected to be reduced under all alternatives.

American Marten

All four alternatives would classify much of the core marten habitat, lowland conifers, and eastern hemlock as unsuited land, and this would remain quality marten habitat over the long-term. Marten population would be expected to be stable under Alternatives 1 and 2, but would be expected to increase in the long-term under Alternatives 3-Modified and 4.

Cutleaf Toothwort

Under any of the typical hardwoods silviculture treatments, the northern hardwood cover type persists, and continues to provide potential habitat for cutleaf toothwort and other ground flora. Of the alternatives, Alternative 1 is projected to have the smallest amount of hardwoods under management and have the lowest potential effect on populations and habitat of cutleaf toothwort. Of the alternatives, Alternative 2 is projected to have the largest acreage of hardwoods under active management and therefore, would have a higher potential than any other alternative for some level of effect on toothwort populations from timber management. However, MIS monitoring and habitat objectives are designed to prevent substantial declines in the MIS or the species it represents. Increased hardwood management (timber harvest) has the potential to impact the cutleaf toothwort. In addition, OHV access and non-native invasive species can also impact this management indicator species.

Mayfly/Stonefly/Caddisfly Suite

Alternatives that propose to maintain riparian process, structure and function would benefit the mayfly-stonefly-caddisfly suite. OHV access and management direction for dams also benefit this management indicator species. However, all alternatives are expected to improve habitats for this suite of species. Alternative 1 would be at a slower rate of improvement than Alternatives 2, 3-Modified, and 4.

Threatened and Endangered Species

Threatened and endangered species on the Ottawa include the gray wolf and bald eagle. The 2006 Forest Plan would also include management direction to develop and manage habitat for Canada lynx and Kirtland's warbler on the Ottawa, although there is no documented evidence that either species occurs within the Ottawa proclamation boundary at this time. The Forest Service is directed to manage habitats for all existing species in order to maintain viable populations, to conduct activities that assist in the identification and recovery of threatened and endangered species, and to avoid actions that may cause a species to become threatened or endangered.

Gray Wolf

Alternative 1 has the highest number of total acres managed even-aged and it would likely produce the highest numbers of wolf prey species, such as beaver and white-tailed deer. Alternatives 2, 3-Modified, and 4 all propose lower amounts of even-aged, management than does Alternative 1. Of these three, Alternative 4 proposes the highest amount. Thus, all of these alternatives would likely produce less forage habitat for deer and beaver than would Alternative 1. However, all three of these alternatives would emphasize restoration of long-lived conifer types, particularly eastern hemlock and white pine, which is lacking in Alternative 1. These conifer types would help maintain important thermal cover habitat for deer, which would benefit wolves.

Kirtland's Warbler

Alternative 1 would provide long-term opportunities to maintain more jack pine in MA 4.2 than Alternative 2 (in 4.2a). More acres in jack pine would increase the opportunity to provide at least some suitable Kirtland's warbler habitat, and an increased chance for a

Kirtland's warbler occurrence on the Ottawa. All of the alternatives show about the same number of suited acres allocated to the jack pine, varying between 8,000 to 10,000 acres. The effect is a long-term reduction in the number of acres of jack pine on the Ottawa in all alternatives. The likelihood of any alternative providing enough suitable habitat to sustain a breeding population of Kirtland's warbler on the Ottawa is low.

Canada Lynx

All four alternatives maintain lynx habitat suitability on the Ottawa. Alternatives 2, 3-Modified, and 4 include additional management direction that would ensure provision for quality and arrangement of lynx foraging and denning habitats.

Bald Eagle

All alternatives contain a common set of nest site protection measures. A viable, well-distributed population of eagles, in both the short-term and the long-term, is expected for all alternatives.

USDI Fish and Wildlife Service Consultation

A full analysis of effects to Threatened and Endangered species is documented in the Biological Assessment prepared for the Forest Plan revision process (USDA Forest Service 2005h). The USDI Fish and Wildlife Service prepared a Biological Opinion for Alternative 3-Modified, which stated their concurrence with the management strategies and effects analyses for the four T&E species as was discussed in the Biological Assessment (USDI Fish and Wildlife Service 2006a).

Regional Forester's Sensitive Species

The Regional Forester's Sensitive Species (RFSS) list was created as a tool to achieve species and population viability and avoid trends that could lead towards federal listing as threatened or endangered under the Endangered Species Act. Of the entire RFSS list, the following species are highlighted and there is a measurable change in forest habitat expected either due to management actions or natural succession: spruce grouse (inhabits northern coniferous-forested ecosystems), northern goshawk (utilizes a variety of vegetation types, including conifer, aspen, and northern hardwood stands), red-shouldered hawk (prefers mature upland hardwood forests with seasonal or permanent ponds or streams), black-backed woodpecker (associated with boreal coniferous forests), and the four-toed salamander (requires a moist, deciduous forest).

Spruce Grouse

All alternatives maintain similar amounts of short-lived conifers as a part of the Ottawa's long-term desired condition. Implementation of standards and guidelines in Alternatives 2, 3-Modified, and 4 designed to improve conditions for Canada lynx, would be expected to provide more early-seral conifer habitats, and improve other important habitat parameters to benefit spruce grouse.

Northern Goshawk

Goshawks would remain viable on the Ottawa under each of the four alternatives. Alternative 2 is likely to be the least favorable to goshawks over the long-term, as it would have the greatest decline in foraging habitat. All four alternatives would provide abundant goshawk nesting habitat in the future.

Red-shouldered Hawk

All four alternatives would provide an abundant amount of habitat for the red-shouldered hawk over the long-term, due partly to the large amount of northern hardwoods on unsuited lands that would increase in value as habitat for this species over time. As the Ottawa is on the fringe of the range for this species, however, the outcome that could be expected under any alternative is for the species to persist here in low numbers. Alternatives 2, 3-Modified, and 4 contain management direction related to protection of riparian habitats that are important to this species, such as woodland ponds and streams. From this perspective, these three alternatives would all be preferred over Alternative 1.

Black-backed Woodpecker

Overall, habitat quality for this species should increase over time on the Ottawa in all alternatives, except Alternative 2 due to a decreased amount of lands allocated to MA 4.2a. In addition, the aging of the forest in general (suited and unsuited lands), which would occur under any alternative, would tend to favor this species.

Four-toed Salamander

Alternatives 2 through 4 all contain standards and guidelines, which serve to protect riparian areas, including the woodland ponds and linear wetlands that this species utilizes for breeding. Any of these three alternatives would be preferred over Alternative 1. Overall, habitat quality for this species should increase over time on the Ottawa, regardless of which alternative is selected. This would be expected due to the large portion of the Ottawa classified as unsuited land, much of which would eventually succeed into late-seral hardwood forests with downed logs, moist conditions, etc., favored by this species. In addition, the aging of the Ottawa in general (suited and unsuited lands), which would occur under any alternative, would tend to favor the species.

Other Key Species

Other key species include the barred owl and game species (white-tailed deer, ruffed grouse, American woodcock, black bear, snowshoe hare, waterfowl, aquatic furbearers, terrestrial furbearers, and game fish).

Barred Owl

The emphasis on even-aged management in Alternatives 1 and 4 would make these alternatives somewhat less favorable to barred owls overall, since regenerating stands lack the large-diameter trees needed by the species for nesting and foraging. Alternative 2 would likely provide the most suitable habitat overall for the barred owl, since it would result in the most acres with a continuous or near-continuous canopy of older, larger trees. Alternative 3-Modified, 4, and 1 would follow in that order. New management

direction in Alternatives 2, 3-Modified, and 4 related to retention of snags and downed woody debris would also help maintain or enhance habitat features that are important to barred owls.

Game Species

Upland hunted species (which includes white-tailed deer, grouse, woodcock, snowshoe hare, and black bear) attain their highest densities in areas with ample young regenerating forests. Over the next decade, most acres of existing dense young forest on the Ottawa are expected to begin reaching an age where they are less suitable for these species. All alternatives are projected to have fewer acres of early seral forests than currently exist on the Ottawa. The carrying capacity for upland game species reliant on early successional habitats is expected to decline in proportion to the declines in acreage. However, none of the upland game species are expected to be at risk of a loss of viability under any of the alternatives.

Habitat conditions for fish, waterfowl and aquatic furbearers are expected to improve more rapidly under Alternatives 2, 3-Modified, and 4. These improvements would include increased recruitment of wood to streams, lakes, and wetlands; more shade and litter fall; cooler water temperatures, and less sediment delivery. Though these differences are expected, tangible effects of the additional riparian protection would not be apparent on the Ottawa for many years. Riparian conditions on the Ottawa are slowly improving, via natural processes from the wholesale and unmanaged logging that occurred 80-100 years ago. Additional direction in Alternatives 2, 3-Modified, and 4 would be expected to hasten the recovery process, compared to Alternative 1.

Riparian Species of Viability Concern (SVC)

Riparian SVC are those species that use riparian areas for a portion of their lives. These species were evaluated using vegetation management and OHV access. Under Alternative 1, riparian area boundaries are set at a uniform 100 feet regardless of adjacent lands. The width of the riparian corridor under Alternatives 2 through 4 would be determined by ecological function, type of feature being protected, and adjacent ELTP characteristics. Infrequent, small openings would be created as needed to provide habitat for opening dependent riparian species, such as American woodcock.

Alternative 1 has the potential for the most risk for SVC because it also allows cross-country travel OHV travel. Alternatives 2 through 4 would result in less risk because cross-country OHV travel would not be allowed. Alternative 2 would pose the least risk for SVC because it proposes the smallest designated OHV trail system with only a minimal amount of OMLs 1, 2 and 3 road segments open to serve as connector routes to established trail/routes (e.g., two State of Michigan east/west, multiple-use trails). Alternatives 3-Modified and 4 would include consideration of all OML 1, 2 and 3 road segments (2300 miles of OML 1 road segments; 650 miles of OML 2 road segments; and 420 miles of OML 3 road segments) for recreational designated OHV use.

Fire Management

Fire has always been a part of the ecosystem. The incidence and extent of wildfire on the Ottawa is historically low due to a moist regional climate, the prevalence of hardwood forests, low ignition sources, and an aggressive fire suppression program. Factors used to evaluate fire management included the incidence of wildfire on the Ottawa from recreational activities/OHV access, and forest vegetation.

Alternatives 2 through 4 propose to allow fire to more closely play its ecological role where appropriate and authorized. In addition, the Ottawa would develop a prescribed fire program, which emphasizes the ecological values of fire in fire-prone ecosystems and minimizes the cost in treating unnatural fuel accumulations.

Special Interest Areas

Special interest areas are designated to recognize special values of certain areas that may not qualify for other designations (such as research natural areas or wilderness). Special interest areas may be designated for scenic, geological, botanical, zoological, paleontological, archaeological, or recreational values, or combinations of these values. These areas occur in a variety of places on the Ottawa.

Under Alternative 1, no special interest areas would be designated. The main effect of non-designation is lack of recognition of special features and the opportunity to interpret these sites for public education. Alternatives 2 through 4 would designate seven special interest areas. Designation would recognize the special features and add protections, although in most cases, there would be little actual change in land management.

Research Natural Areas

Research natural areas (RNA) are part of a national network of natural areas designated in perpetuity for research and education and/or to maintain biological diversity on NFS lands. In all alternatives, the Ottawa proposes to continue to carry the Sturgeon River Gorge as a candidate RNA, to remove the Sylvania candidate RNA from consideration, and retain the existing McCormick RNA.

A review of the candidate RNAs was completed and is documented in Appendix I of the FEIS. The review determined that the Sylvania cRNA vegetation alliances are mostly represented at least once elsewhere in reference sites on the Winegar Moraine. Therefore, Sylvania cRNA was dropped as a potential research reference site. The review found that vegetation alliances in Sturgeon River Gorge cRNA are mostly not represented elsewhere in a preserve on that ecological subsection. This candidate was therefore carried forward in Alternatives 1 through 4. There are no differences among the alternatives relative to research natural areas. Maintaining the Sturgeon River Gorge as a cRNA should have little or no impact on other land uses. Removing the Sylvania cRNA from consideration should have little or no impact, as the area would continue to be managed as part of the Sylvania Wilderness.

Establishment of the Sturgeon River Gorge candidate RNA is not proposed concurrent with Forest Plan revision. The Forest Service Research branch will need to determine the priority of this candidate for establishment into the RNA system.

Other Resources

The Ottawa contributes to local communities by providing for a range of uses, forest setting, visitor experiences, products and services. At just under one million acres, the Ottawa is a large supplier of public recreation opportunities.

Heritage Resources

Heritage resources (defined as cultural, historical, archaeological, ethnographic and tribal) represent past human activities or uses and, by their nature, are considered an irreplaceable and nonrenewable resource if not managed for preservation over the long-term.

Applicable law, policy and direction provide the basis for the protection of heritage resources. Activities are subject to regulations outlined in Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and as promulgated by 36 CFR 800, to address affects to the heritage resources. In addition, heritage resource management activities such as inventory, analysis, stabilization, restoration, and public interpretation are present in all alternatives.

Protection measures would be applied equally in Alternatives 1 through 4, and therefore effects to heritage resources are anticipated to be low.

Recreation – OHV Use

More people use the Ottawa for outdoor recreation than for any other purpose. Visitors participate in a wide variety of activities; however, with the exception of OHV use, very few changes to the recreation program were proposed during the Need for Change process. Factors that have the potential to affect OHV use on the Ottawa include changes in access, designation of OHV trails and road routes, and connectivity to other trails and road routes. Table S-2, *Alternative Comparison, OHV Management, Estimated Desired Future Condition of Trails and Routes* displays the differences among alternatives that were analyzed during the preparation of the FEIS. The FEIS and this Executive Summary display the effects of OHV use on other resources in their respective section (e.g., soils, watersheds, transportation, non-native invasive species, heritage resources, and social and economic stability).

At present, the majority of the Ottawa (about 80%) is in the roaded natural category of the ROS. One of the characteristics of this ROS setting is strong evidence of designated roads. Road densities vary by MA and range from 1.5 miles per square mile to 4 miles per square mile. Across the entire Ottawa, about 80% of the Forest is within ¼ mile from an OML 1, 2, 3, 4 or 5 road, federal, state or county road. Overall, there are about 3,730 miles of roads managed as part of the Ottawa transportation system (OML 1-5).

Alternative 1 would use the existing direction in the 1986 Forest Plan. Approximately 2,950 miles of road would be open for use, using OML 1 and 2 roads. However, it should be noted that travel across wetland features is a violation of State law (Michigan Compiled Laws 1994c). Combined with open cross-country use, this alternative provides the greatest opportunities for access to OHV users compared to the other alternatives. However, compared to the other alternatives, Alternative 1 provides the least emphasis on designated recreational trails. Alternative 1 does not allow for OHV use on OML 3 roads, making loop opportunities and trail and route connections to state, county or other public designated systems difficult.

Alternative 2 would designate two north/south connectors to the existing Michigan State east/west multi-use trails providing approximately 25-75 miles of access. Cross-country (off-road/off-trail) access would not be allowed. Compared to the other alternatives, this alternative provides the least amount of access but provides for recreational trail opportunities. Most OML 1, 2, and 3 roads across the Ottawa would be closed to OHV use unless identified as part of the designated OHV trail/route. Although this alternative provides for connections to the Michigan State routes, it also provides the least amount of opportunity to connect to other trails and routes, especially to county designated roads.

Alternatives 3-Modified and 4 would designate two north/south connectors to the Michigan State east/west multiple-use trails similar to Alternative 2. In addition, these alternatives would consider designating up to 3,370 miles of OML 1, 2, and 3 roads for OHV use (see Table S-2). Cross-country use would not be allowed. Alternatives 3-Modified and 4 are similar to Alternative 1 in the consideration of OML 1 and 2 roads. They are different in that they would not provide for cross-country use, but would provide for designations on OML 3 roads, which are not allowed in Alternative 1. Alternative 3-Modified and 4 would provide more access as compared to Alternative 2.

Social

The Ottawa contributes in a variety of ways to the social sustainability of local communities by providing for a range of uses, forest settings, visitor experiences, products and services. Forest Plan revision may affect this mix of uses, values, products and services. Local communities have an interest in forest management decisions that may affect the type of uses, products and services that the Ottawa could provide.

Analysis of alternatives evaluated changes in Forest access and the remote character of the Ottawa. In general, each alternative proposes change from the existing condition and moves the Ottawa toward the desired conditions of the alternative. People would respond to changes according to their values, needs, and desires. Visitors who value conditions similar to the existing condition would likely appreciate Alternative 1. Alternatives 2, 3-Modified, and 4 would provide for different settings as compared to the existing conditions.

Changes in Forest Access

The use of OHVs provides visitors easy access to remote areas of the Ottawa; allows them to experience more of the Ottawa by covering more area in a shorter time.

However, negative social effects may also result from motorized recreation for those seeking solitude or engaging in non-motorized activities. Alternatives 2, 3-Modified and 4 increase protections to forest soils, water, and reduce the spread of non-native invasive species that can be associated with OHV use by prohibiting cross-country use. In all alternatives, the areas, roads, or trails where OHV use is allowed or prohibited, applies to everyone. Impacts to people with disabilities utilizing OHVs are similar to all other visitors utilizing OHVs in that they would be allowed only on roads and trails designated for OHV use. However, administrative use of OHVs would be provided in all alternatives. It provides efficiency for carrying out project tasks by field-going personnel, volunteers, and contractors involved in Forest Service related work.

Alternatives 3-Modified and 4 provide for the most road route access opportunities. Mixed uses on roads carry the potential for user conflicts and safety concerns. Safety concerns are the greatest particularly on OML 3 roads as these roads are maintained for passenger vehicle traffic and also receive commercial logging traffic. User conflicts on the roads can occur with motorized and non-motorized traffic on lower standard roads as well. Since Alternatives 2 through 4 would prohibit cross-country travel by OHVs, some hunters that use OHVs for baiting, to retrieve big game, and for other related activities during the hunting seasons may be impacted.

Remote Character of the Ottawa

The Ottawa has a character of scenic beauty that is unique for the Upper Midwest. Visitors have a perception of remoteness when entering the Ottawa. All alternatives would manage for a range of diverse landscapes and natural-appearing settings. All of the alternatives would generally maintain or enhance the remote character of the Ottawa, but to varying degrees. Alternative 1 would allow cross-country OHV access, which may result in some impacts to remoteness particularly if an increase in OHV use is seen. An increase in the use of OHVs down lower standard roads or travel off the roads and trails during cross-country travel could also impact a visitor's sense of remoteness.

Alternative 2 would emphasize a smaller designated OHV trail system, with an emphasis on providing ATV connector routes, and no cross-country use would help maintain a more remote forest setting for those people seeking a more natural experience. Alternative 3-Modified and 4 would also provide the connector routes, as well as a system of designated OHV road/routes on some OML 1, 2 and 3 road segments. There could be increased activity and noise from OHV on some OML 1, 2, and 3 roads; however, not allowing cross-country use would help enhance the remote character.

If the use of OHVs is no longer allowed off a designated trail system, some hunters may choose to hunt in more accessible areas, which could result in perceptions of crowding. However, some hunters have expressed a desire for more remote hunting experiences and have stated their hunting experience has been negatively impacted by the use of OHVs by others.

Economic Effects to Local Communities

The Ottawa provides multiple economic benefits to Michigan and surrounding states. Economic benefits contributed to the region from the National Forest include market and non-market opportunities such as timber, minerals, tourism, sightseeing, hunting and fishing. Forest Plan decisions, when implemented, can contribute to economic benefits by providing for a range of uses, values, products, and services.

The analysis of alternatives for economic stability for Forest Plan revision reviewed several quantitative indicators such as employment and income by Forest Service program area, major industry and county income from National Forest revenues (25% payments).

Analyses suggest that Alternative 2 has the highest number of overall jobs, and jobs associated with the timber program. It also estimates the highest overall labor income of all four alternatives. This is in part due to the high ratio of sawtimber to pulpwood products estimated to be produced and used within industry.

The analysis of 25 % payments indicates there would be modest changes in the amount of federal revenue available by alternative. Alternative 2 is estimated to have the highest revenue and return to counties. However, Alternatives 1, 3-Modified and 4 have very similar estimates. Change in federal revenue would affect some counties more than others.

To Find Out More

The Ottawa is committed to helping individuals and groups understand the impact the 2006 Forest Plan may have on activities. Full sets of all official documents may be found in the following locations:

- Local college libraries: Gogebic Community College, Michigan Technological University and Northern Michigan University
- On our website: www.fs.fed.us/r9/ottawa
- On CD-ROM available at local Forest Service Offices

If you would like to request CD-ROM or hard copy versions the full set of documents, or have questions regarding the Forest Plan and would like to speak with a Forest Service employee, see the following list of Ottawa National Forest offices:

Supervisor's Office

Forest Supervisor
E6248 US Hwy. 2
Ironwood, MI 49938
906.932.1330

Bessemer Ranger District

District Ranger
500 North Moore Street
Bessemer, MI 49911
906.932.1330

Iron River Ranger District

District Ranger
990 Lalley Road
Iron River, MI 49935
906.265.5139

Kenton Ranger District

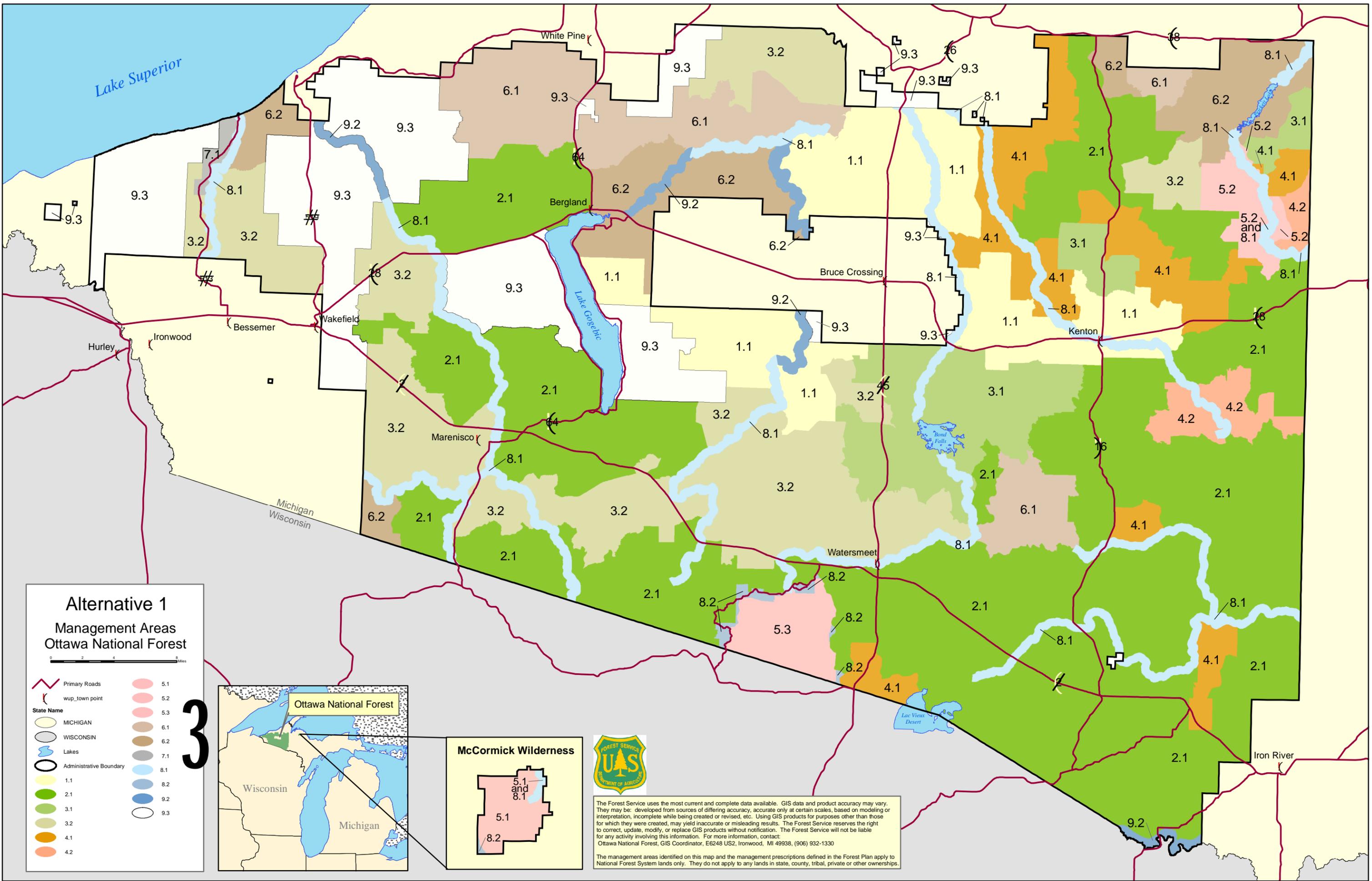
District Ranger
4810 E. M28
Kenton, MI 49967
906.852.3500

Ontonagon Ranger District

District Ranger
1209 Rockland Road
Ontonagon, MI 49953
906.884.2085

Watersmeet Ranger District

District Ranger
E24036 Old US 2 East
Watersmeet, MI 49969
906.358.4551

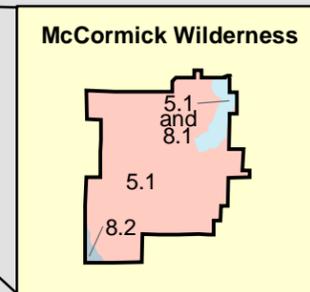


**Alternative 1
Management Areas
Ottawa National Forest**

0 2 4 8 Miles

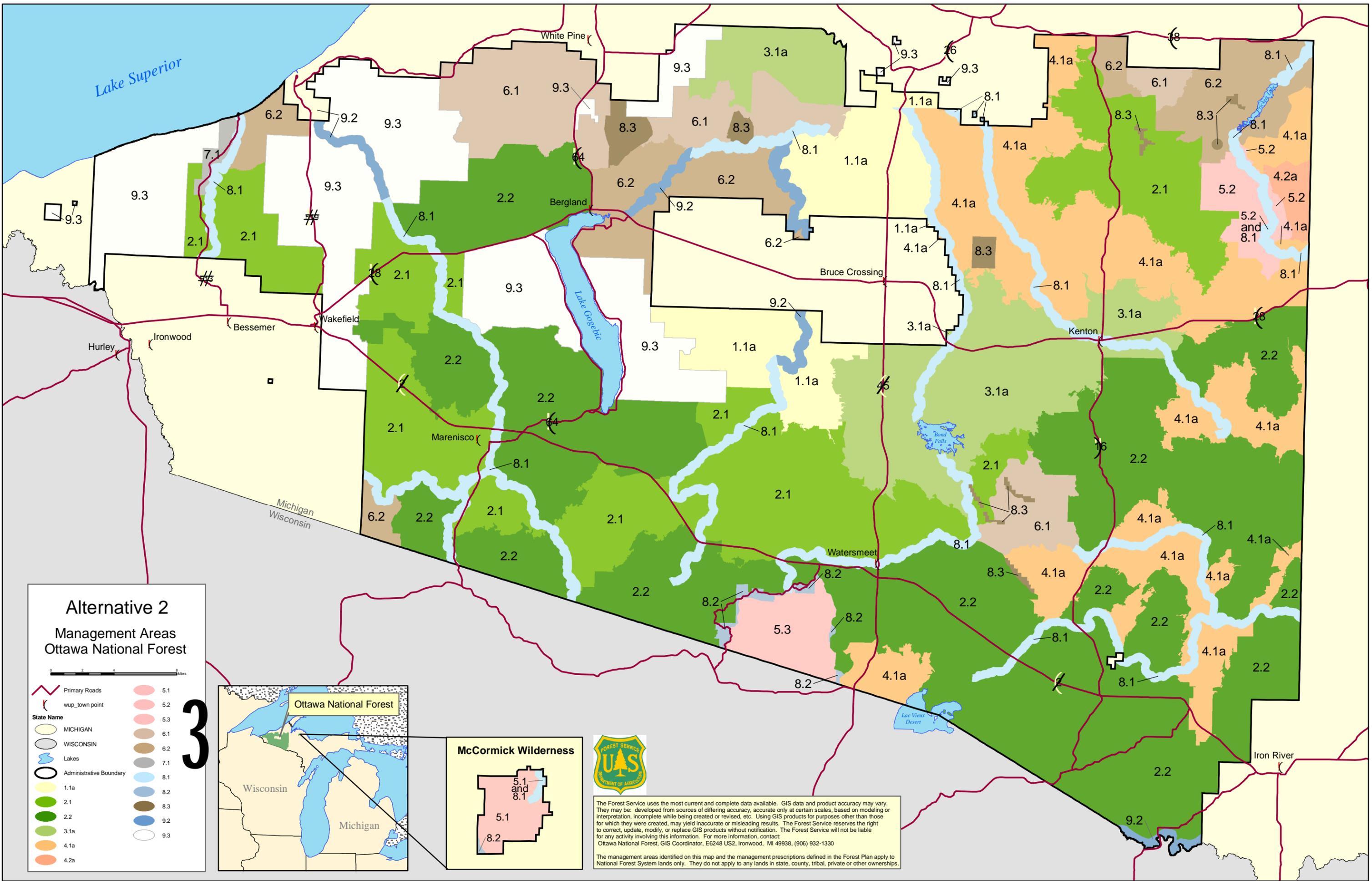
- Primary Roads
- wup_town point
- State Name**
- MICHIGAN
- WISCONSIN
- Lakes
- Administrative Boundary
- 1.1
- 2.1
- 3.1
- 3.2
- 4.1
- 4.2
- 5.1
- 5.2
- 5.3
- 6.1
- 6.2
- 7.1
- 8.1
- 8.2
- 9.2
- 9.3

3



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The management areas identified on this map and the management prescriptions defined in the Forest Plan apply to National Forest System lands only. They do not apply to any lands in state, county, tribal, private or other ownerships.

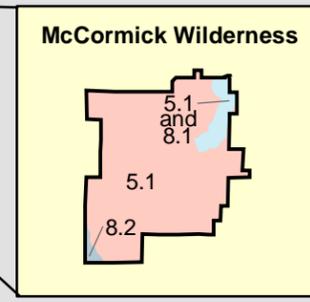


Alternative 2 Management Areas Ottawa National Forest

0 2 4 6 Miles

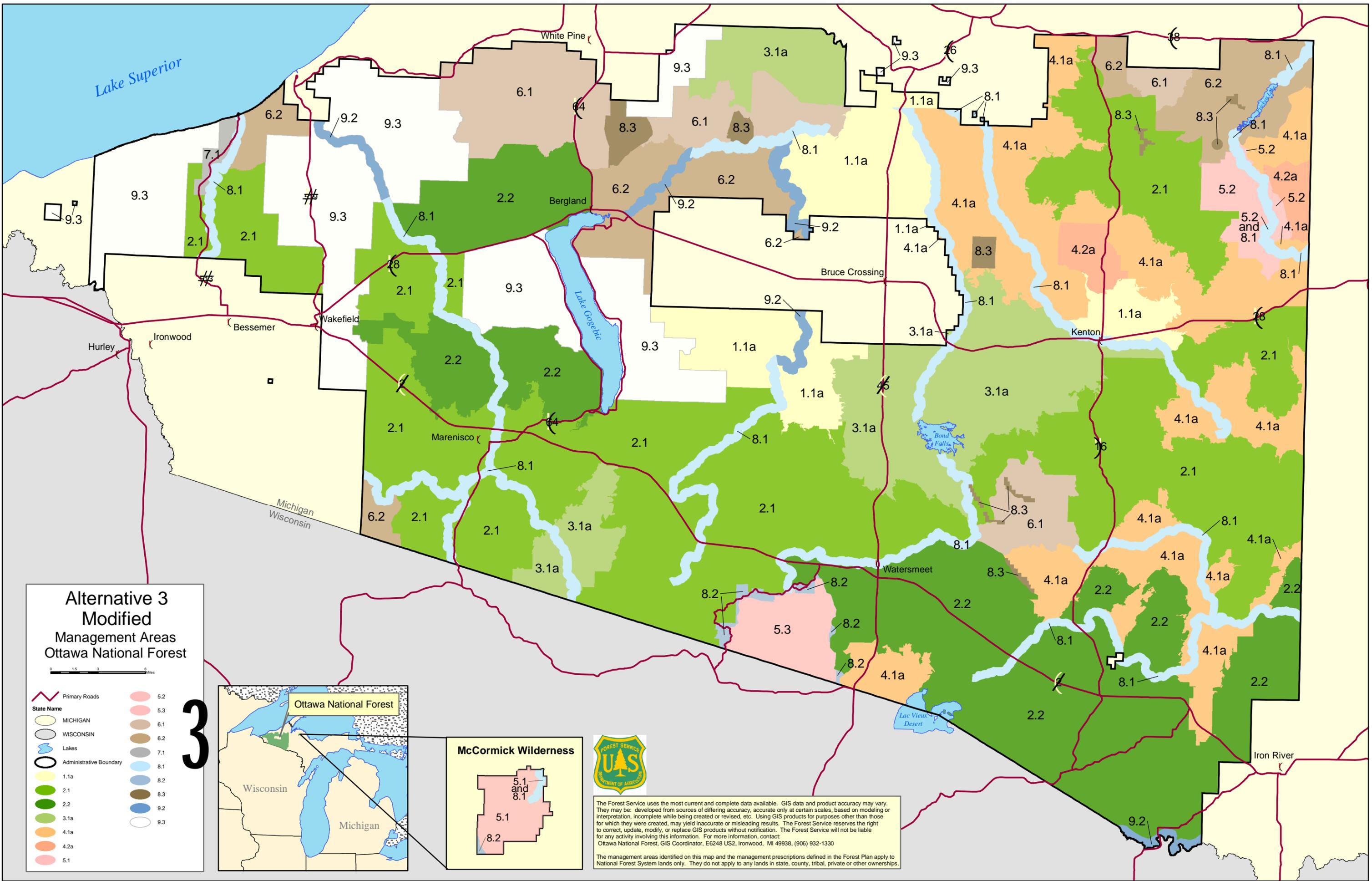
Primary Roads	5.1
wup_town point	5.2
State Name	5.3
MICHIGAN	6.1
WISCONSIN	6.2
Lakes	7.1
Administrative Boundary	8.1
1.1a	8.2
2.1	9.2
2.2	8.3
3.1a	9.3
4.1a	
4.2a	

3



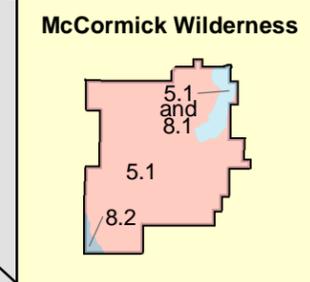
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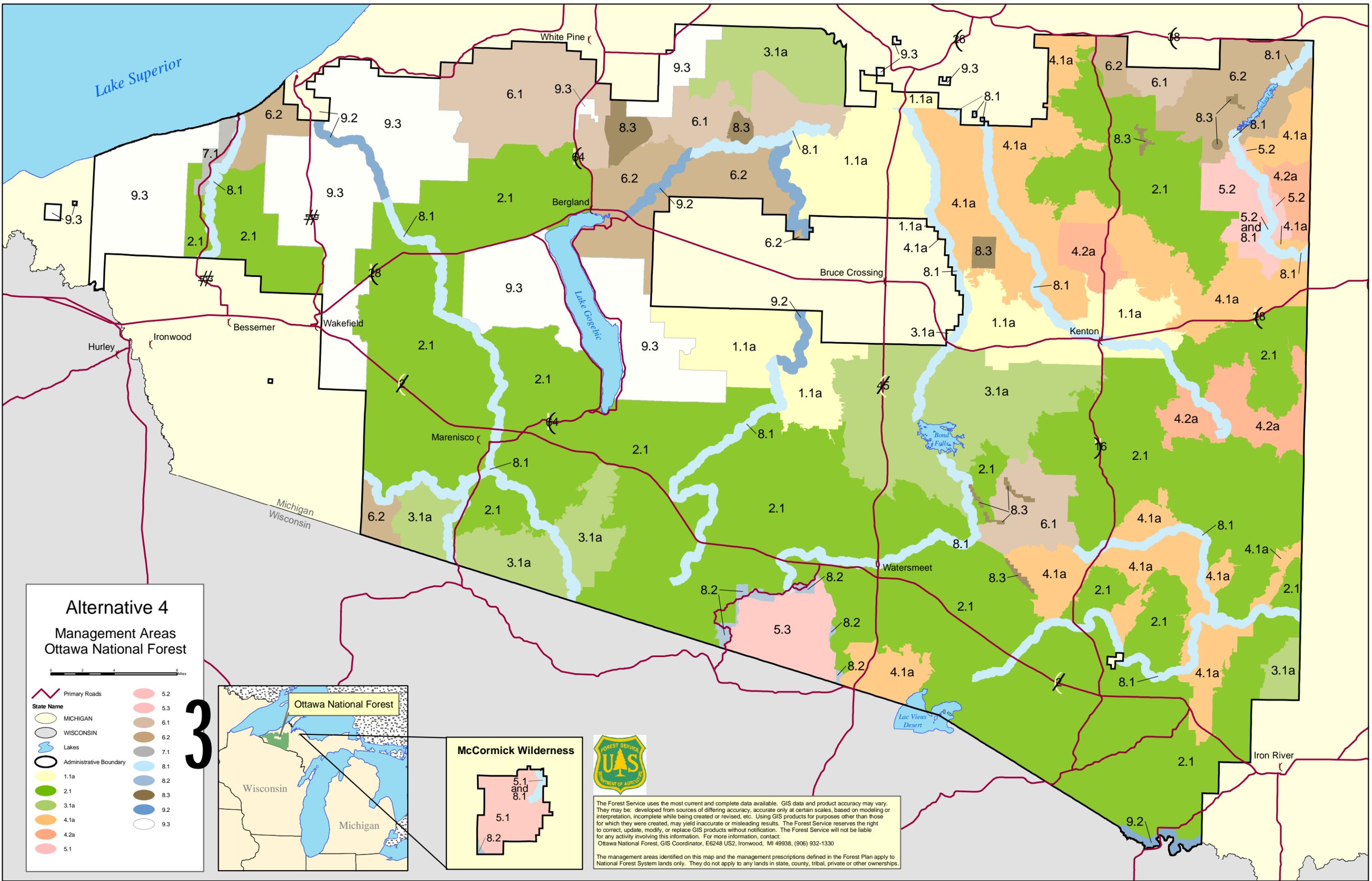
Alternative 3 Modified Management Areas Ottawa National Forest

- 0 1.5 3 6 Miles
- Primary Roads
 - 3**
 - State Name**
 - MICHIGAN
 - WISCONSIN
 - Lakes
 - Administrative Boundary
 - 1.1a
 - 2.1
 - 2.2
 - 3.1a
 - 4.1a
 - 4.2a
 - 5.1
 - 5.2
 - 5.3
 - 6.1
 - 6.2
 - 7.1
 - 8.1
 - 8.2
 - 8.3
 - 9.2
 - 9.3



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Alternative 4
Management Areas
Ottawa National Forest

0 2 4 8 Miles

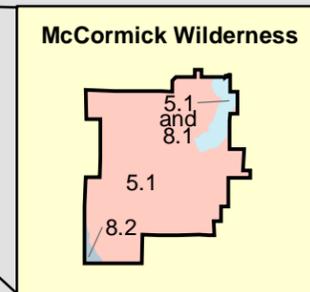
Primary Roads

State Name

- MICHIGAN
- WISCONSIN
- Lakes
- Administrative Boundary

1.1a	5.2
2.1	5.3
3.1a	6.1
4.1a	6.2
4.2a	7.1
5.1	8.1
	8.2
	8.3
	9.2
	9.3

3



The Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. They may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc. Using GIS products for purposes other than those for which they were created, may yield inaccurate or misleading results. The Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. The Forest Service will not be liable for any activity involving this information. For more information, contact: Ottawa National Forest, GIS Coordinator, E6248 US2, Ironwood, MI 49938, (906) 932-1330

The management areas identified on this map and the management prescriptions defined in the Forest Plan apply to National Forest System lands only. They do not apply to any lands in state, county, tribal, private or other ownerships.

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