WILDLAND FIRE MANAGEMENT PLAN

WHITTLESEY CREEK
NATIONAL WILDLIFE REFUGE

2009

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WHITTLESEY CREEK
NATIONAL WILDLIFE REFUGE
GREAT LAKES-BIG RIVERS REGION

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1. INTRODUCTION

1.1 PURPOSE AND NEED FOR A FIRE MANAGEMENT PLAN

This document establishes a Fire Management Plan (FMP) for the Whittlesey Creek National Wildlife Refuge (Refuge). The plan is written as an operational guide for managing the Refuge's wildland fire program. It defines actions and policies needed to ensure the safety of employees, visitors, and adjacent landowners and protect resources, given the current understanding of the complex relationships in natural ecosystems. It is written to comply with both Departmental and Service-wide requirements that units with burnable vegetation develop a fire management plan (620 DM 1). The contents are applicable for all the lands administered by the Refuge, including conservation easements (CE's) which are listed on Table 3 in the Environmental Assessment found in Appendix H.

This FMP outlines a program that accounts for the safest, most cost efficient, and ecologically responsible management for all wildland fires. Fire management planning, preparedness, wildland and prescribed fire operations, monitoring, and research will be conducted on a collaborative basis with the involvement of partners when appropriate. This Fire Management Plan provides for firefighter and public safety, identifies values to be protected, while supporting natural and cultural resource management plans. The FMP addresses all potential wildland fire occurrences and may include a range of appropriate management responses.

HISTORIC ROLE OF FIRE

Little is known of the fire history in the vicinity of the Refuge. Since completion of early logging operations was followed by conversion of the land to agriculture, it is unlikely that fire, other than agricultural burning, has been a significant force in the habitat since the mid 1800's. In addition, the portion of the Refuge adjacent to Chequamegon Bay was probably too wet to burn.

Pre-settlement Fire History

Because the area is on the edge of the bay, the natural fire interval would likely be quite long. Forests associated with the region's cool moist climate and poorly drained soils may have had a fire interval approaching 600 years. ***(Some regional forest ecologists call these "asbestos forests")*** Most fires are assumed to be associated with localized blowdowns followed by dry conditions. This would result in fire occurrence being cyclical and driven by climatological conditions. Naturally ignited (lightning) fires are not common in this part of Wisconsin so ignition would be expected to have been anthropogenic.

Based on the vegetative types in the surrounding area, fires were probably infrequent and likely associated with drought conditions. No estimates are available for the real extent of pre-settlement fires.

Post-settlement Fire History

After initial logging, large-scale fires occurred due to abundant slash. Fire suppression began after the logging era when European settlers began to farm the area. However, hay field burns in spring have been and continue to be a common practice. Since a number of

farms in the area have been abandoned, it is reasonable to assume that fire occurrence would show a gradual increase as fuels increase

The accepted fire season in Bayfield County is from mid-April to late May or early June. There is a second season in the fall generally lasting from the first frost until snowfall. This second season is not normally as active as the spring season.

Prescribed Fire History

Prescribed fire would generally be applied during the spring in Refuge habitats. Exact dates would, of course, depend on weather conditions, the desired results and fuel conditions.

As this is a new Refuge there is no prescribed fire history although fire has been used in the past, in conjunction with agricultural operations. Fire was regularly used to reduce weeds and insects maintain an open cover in some grassland areas.

HOW FMP ACHIEVES LAND MANAGEMENT PLAN OBJECTIVES

Local Ecology: Mixed Coniferous and Deciduous Forest

The refuge is located in the Laurentian Mixed Forest Province of Bailey's Ecoregions (Bailey 1976; Bailey 1980). This province is found along the Great Lakes and New England lowlands. Vegetation is dominated by coniferous or deciduous forests. In the Whittlesey Creek watershed, it is not unusual to see mixed deciduous and coniferous forests. White pine (*Pinus strobes*), white spruce (*Picea glauca*) and balsam fir (*Abies balsamea*) are typically intermixed with white (*Betula papyrifera*) or yellow birch (*Betula lutea*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*) and aspen (*Populus sp.*). *–excerpt from 2006 Whittlesey Creek NWR Habitat Management Plan*

The Refuge contributes to conservation goals and objectives by restoring fish and wildlife habitat conditions on these lands that encompass the increasingly rare and endangered ecosystem, the forest/wetland mosaic. The Refuge contains this special mixed coniferous and deciduous forest/wetland ecosystem and will strive to conduct management that will restore and invigorate this entire area. Suppression actions discussed in the FMP will assist in the protection of public and employee safety, human improvements, and natural habitat where necessary. Prescribed fire will contribute to the maintenance of quality wildlife habitat needed to achieve Refuge land management goals and objectives, while also restoring the fragile ecosystem of the Whittlesey Creek watershed.

MEETING REGULATORY REQUIREMENTS AND NEPA

The National Environmental Policy Act (NEPA) requirements of this FMP are covered under the Environmental Assessment (EA) prepared for the FMP. It is the policy of the USFWS to provide opportunities for public participation in management planning. This document will be available for a thirty day comment period following completion of the draft plan.

Refuge lands contain no federally-listed threatened or endangered species at this time. Since the range of the Gray Wolf, Canada Lynx and the Piping Plover overlaps the Refuge, an Intra-Service Section 7 Biological Evaluation was prepared in the event that suitable habitat is found on Refuge Lands. At this time, fire activities will have no effect on threatened or endangered species listed species. (Appendix E). Should the pre-burn reconnaissance indicate T&E presence, an additional intra-Service Section 7 consultation will be initiated. Known locations of State threatened, endangered and special concern plant and animal species, based on National Heritage Inventory data and field observations will be considered in all planning processes. Efforts will be made to determine fire effects on any T&E species present using literature searches, biological consultation and review of existing on-line databases. Lists of Federal and state T&E species potentially present are found in Appendix E.

The Refuge will implement its fire management activities in accordance with the regulations and directions concerning the protection of cultural resources as outlined in Departmental Manual Part 519, Code of Federal Regulations (36 CFR 800), the Archaeological Resource Protection Act of 1979, and the Archeology and Historic Preservation Act of 1974. The National Historic Preservation Act of 1966 (Section 6) will be followed for any fire management activity that may effect historic structures of archeological resources.

Preparation for prescribed fires such as constructing fire lines are subject to Section 106 of the National Historic Preservation Act. The procedures in the Notice dated December 8, 1999, Historic Preservation Responsibilities,@ apply to the planning and preparation for conducting prescribed fires.

Efforts to control wildland fires (including prescribed fires that get out of control) are also subject to Section 106 of the National Historic Preservation Act. We will meet our obligations under this act in the following ways:

When the land to be impacted by a wildfire has been inventoried to identify cultural resources, and the cultural resources have been evaluated as significant according to the criteria for the National Register of Historic Places, the Fire Management Staff will direct ground disturbing fire suppression efforts around (will avoid impacting) historic properties. Evidence of a previously undetected cultural resource may be encountered. The Refuge Manager shall immediately notify the Regional Historic Preservation Officer (RHPO). The RHPO will take immediate steps to have the cultural resource evaluated and protected, as appropriate, to the extent required by law and policy. This may require arranging for a qualified professional to visit and evaluate the site's importance and recommend a course of action. An evaluation and decision on the disposition of the cultural resource should be made within 48 hours of the discovery unless the project's schedule allows greater flexibility.

When the land covered by a wildfire has *not* been inventoried for cultural resources and wildfire suppression activities do result in ground disturbing activities, the following action will be taken: soon after fire control, the Refuge Manager will contact the RHPO to arrange for an archeologist to investigate the disturbed areas to determine if sites were affected.

Station operations and maintenance funds (subactivity 1261) will pay the cost of these activities unless the action is an emergency archeological and historic property survey in

unstable areas prone to further degradation (i.e., erosion) following a wildland fire or in association with an emergency fire rehabilitation treatment. Such emergency archeological and historic property surveys in unstable areas prone to further degradation (i.e., erosion) following a wildland fire or in association with an emergency fire rehabilitation treatment, and archeological, historic structure, cultural landscape, and traditional cultural property resource stabilization and rehabilitation can be funded with emergency rehabilitation funding (subactivity 9262).

SUMMARY OF SIGNIFICANT RESOURCES AND VALUES

Whittlesey Creek is a Class I trout stream and one of the goals of the Refuge is to restore coaster brook trout, a lake-run life form of brook trout. Also, Whittlesey Creek is an important component of the Lake Superior fishery, producing a disproportionate share of Coho salmon in the Wisconsin portion of the Lake Superior Watershed according to a 1992 WIDNR memorandum. A species list compiled from information gathered by the Wisconsin DNR and the Service's Sea Lamprey Management Program identified 21 species of fish, including seven salmonid species in Whittlesey Creek. Whittlesey Creek also supports a recreational fishery, primarily for brook trout (*Salvelinus fontinalis*) and rainbow trout (*Oncorhynchus mykiss*).

The restoration of the northern mixed coniferous and deciduous forests and its associated watershed complex is beginning on the Refuge. Additional acquisition of purchased land subsequently managed with prescribed fire will significantly improve the value of the Refuge lands as a haven for wildlife and plant species. Lands included in the Refuge provide nesting, rearing, hunting, and resting habitat for waterfowl, small and large mammals, a diverse fishery community, and migratory birds. These lands are supporting the fragile wildlife communities that are continually forced out of habitat by the construction of new structures as well as adverse land uses in the nearby areas.

On Service owned lands, structures are being declared excess and sold, or in the case of structures with no saleable value, removed and the site restored. Generally, within 1 year of purchase structures are cleared from the property. There is one metal building proposed for retention and use as storage for Service equipment. Private land within the boundaries contains numerous structures, many storage sheds, old barns and similar buildings.

There is one culturally significant site on the Refuge, a historic trading post site located along the Lake Superior Shoreline. More information about this site can be obtained by contacting the U.S. Fish & Wildlife Service Regional Office Preservation Officer.
In addition, twenty two other properties in Bayfield County had been placed on the National Register of Historic Places. None of the properties are located within the boundaries of the proposed refuge or within Barksdale Township. There were thirteen buildings or farmstead complexes within the proposed boundary when it was established. Six of these have been removed once the Service acquired them. One of the homes remaining may have been the home of Asaph Whittlesey, founder of Ashland, Wisconsin, in 1860, and after whom Whittlesey Creek was named. Also within the proposed boundaries could be the site of the cabin built by Pierre Esprit Radisson in 1664 (Adams 1961 and Vestal 1940).

The Refuge is bisected south to north by an abandoned railroad grade owned by Bayfield County and designated a snowmobile trail. In addition, there is a power line running south to north, east of Terwilliger Road to a substation near the junction of Terwilliger and Cherryville Roads. A high-volume regional natural gas pipeline crosses the refuge from north to south and typical natural gas supply lines also exist.

Figure 1 - Vicinity Map

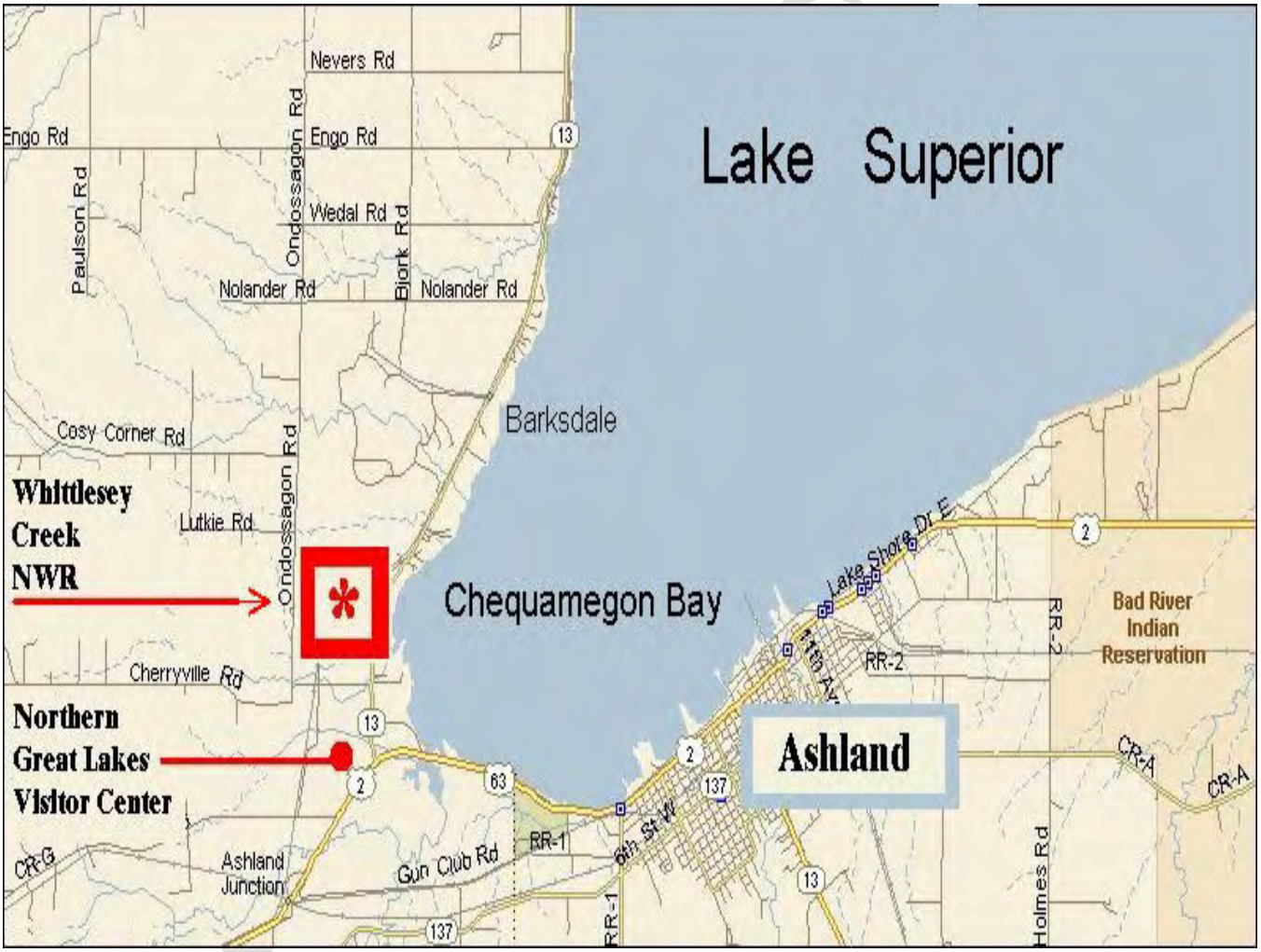
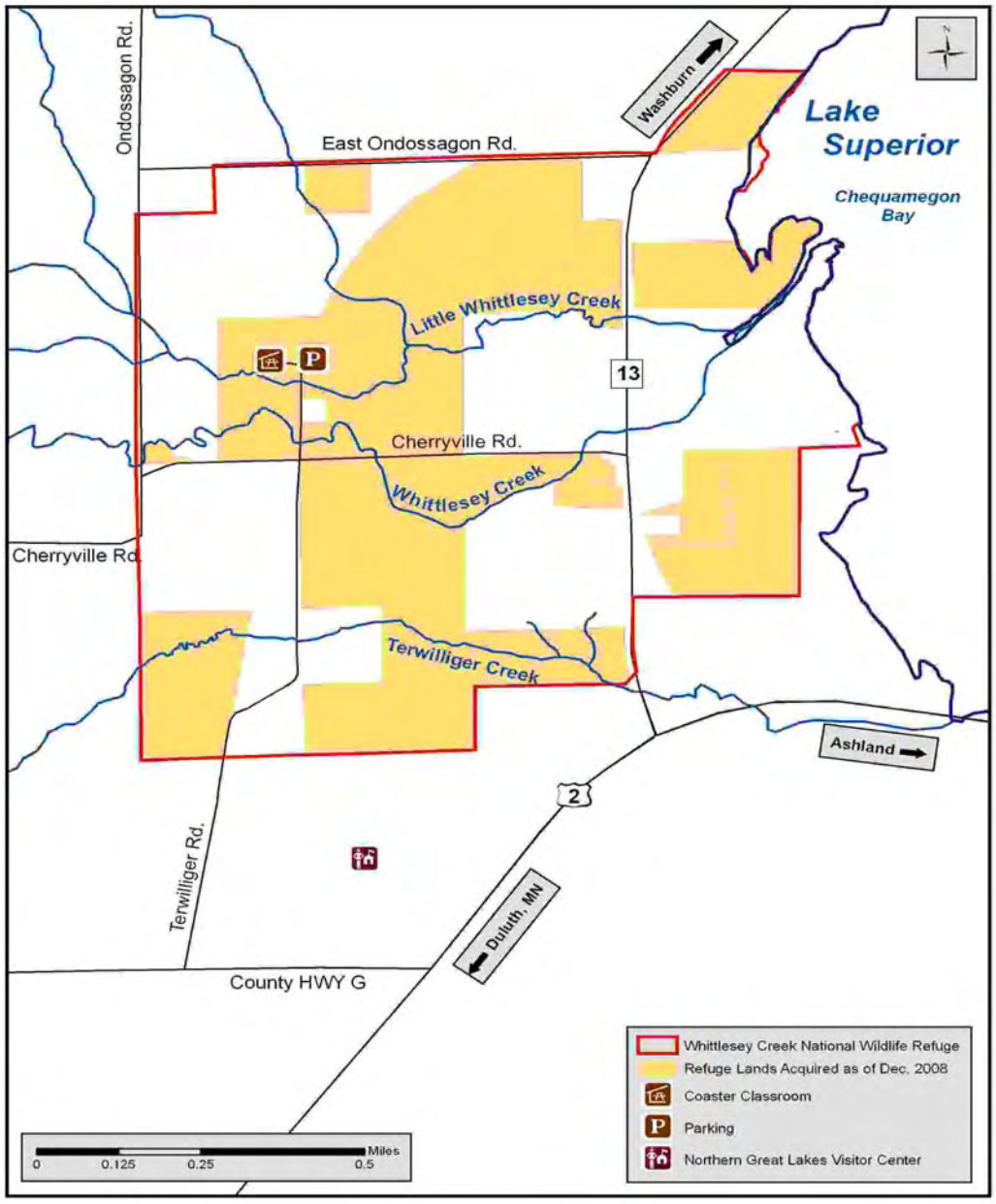


FIGURE 2 WHITTLESEY CREEK NWR MAP



BROAD MANAGEMENT PLAN DIRECTION PERTINENT TO FMP

Management will continue to focus on providing high quality forests, wetlands and grasslands to benefit waterfowl, other migratory birds, and other resident wildlife species. Fire management, particularly the use of prescribed fire, can contribute to this management direction by controlling invasive plants and by providing and maintaining early sucessional stages of vegetation.

LAND MANAGEMENT GOALS AND OBJECTIVES:

The Refuge strives to protect, enhance and restore a natural diversity of habitat types sufficient to maintain healthy populations of native wildlife within the ecosystem. The goals of the Refuge land management program include the following:

1. Strive to maintain diversity and increase abundance of waterfowl and other migratory bird species dependent on habitat historically found on the Lake Superior Coastline and interior northern mixed forests.

2. Conserve, manage, and restore the diversity and viability of native fish, wildlife and plant populations associated with mixed coniferous and deciduous forests.

3. Work in partnership with the Wisconsin DNR on the Lake Superior Shoreline protection groups and others to restore or enhance diverse healthy forests, wetlands, and unique plant communities.

4. Restore, enhance, and protect water quality and quantity that approaches natural hydrologic functions.

5. Provide for compatible wildlife-dependent uses by the public, emphasizing increased public understanding of the mixed coniferous and deciduous forest ecosystem and the mission of the National Wildlife Refuge System.

6. Strive for reduction/control of exotic vegetation (primarily reed canarygrass, timothy grass, and Canada thistle,) and of woody vegetation invasion of grasslands (primarily buckthorn, honeysuckle, willow, alder, etc.)

DESIRED FUTURE CONDITION:

Three main fire management goals exist for the Refuge: the protection of adjacent private property from wildland fire, the proactive reduction of hazardous fuels, and resource management (to renovate, restore, create, or maintain diverse native plant communities to restore and perpetuate indigenous wildlife and habitat).

As habitat is restored to it original state, prescribed fire will be an invaluable tool in the maintenance of these lands. Habitat improvement and associated benefits will be immediately translated to waterfowl, mammals, migratory birds and native ecosystems.

Based on fire effects monitoring and research conducted in similar vegetation types to the grass fields (Fire Effects Information System), it is necessary to apply multiple prescribed burns over a 12-15 year period to achieve many of the above goals and objectives for open grassland habitat. Understory burning in the forests would have a much longer burn rotation due to fuels, and once the units have been established, the burn interval would be determined by monitoring the results of the fire and implementing the effects of fire to work towards meeting the needs of the lands. Due to the absence of fire on Refuge land for such a long time. Burn intervals will need to be determined from close monitoring of

treated areas. The timing of burns will vary according to specific objectives desired. Burning will be conducted during times best indicated by overall project goals and fire effects monitoring science.

2. POLICY, LAND MANAGEMENT PLANNING AND PARTNERSHIPS

2.1 FIRE POLICY

AGENCY SPECIFIC FIRE MANAGEMENT POLICY

Fish and Wildlife Service fire management policy is based on the Departmental Manual (620 DM 1) and the 2001 Federal Wildland Fire Policy. **Firefighter and public safety is the first priority**. All Fire Management Plans and activities must reflect this commitment. With the possible exception of instances where the life of another is threatened, no Service employee, contractor, or cooperator will be purposely exposed to life-threatening conditions or situations (See 241 FW 7).

Only trained and qualified people will be assigned to fire management duties. Fire management personnel will meet training and qualification standards established or adopted by the Service for the position they occupy. Agency Administrators will meet training standards established or adopted by the Service for the position they occupy. Employees who are trained and certified for fire positions will participate in the wildland fire management program as the situation demands. Non-certified employees with operational, administrative, or other skills will support the wildland fire management program as needed. Agency Administrators will be responsible, be held accountable, and make employees available to participate in the wildland fire management program.

Fire management planning, preparedness, wildland and prescribed fire operations, monitoring, and research will be conducted on an interagency basis with the involvement of all partners when appropriate. Every area with burnable vegetation must have an approved Fire Management Plan. Fire Management Plans must provide for firefighter and public safety, identify values to be protected, support land, natural, and cultural resource management plans, and address public health issues. Fire Management Plans must also address all potential wildland fire occurrences and may include the full range of appropriate management responses. Fire Management Plans must be coordinated, reviewed, and approved by the responsible agency administrator, to ensure consistency with approved land management plans.

Fire, as an ecological process, will be integrated into resource management plans and activities on a landscape scale, across jurisdictional boundaries, and will be based upon best available science. All use of fire for natural and cultural resource management requires an approved plan which contains a formal prescription. Wildland fire will be used to meet identified resource management objectives when appropriate.

The Service will employ prescribed fire whenever it is an appropriate tool for managing Service resources and to protect against unwanted wildland fire whenever it threatens human life, property and natural/cultural resources. Once people have been committed to

an incident, these human resources become the highest value to be protected. If it becomes necessary to prioritize between property and natural/cultural resources, this is done based on relative values to be protected, commensurate with fire management costs.

Regions will ensure their capability to provide safe, cost-effective fire management programs in support of land, natural, and cultural resource management plans through appropriate planning, staffing, training, and equipment.

Management actions taken on wildland fires must consider firefighter and public safety, be cost effective, consider benefits and values to be protected, and be consistent with natural and cultural resource objectives. Refuges will work with their local cooperators and the public to prevent unauthorized ignition of wildland fires on Service lands.

Structural firefighting is not the functional responsibility of the Service. Service assistance in structure protection should only be performed on an emergency basis to save lives. (See Fire Management Handbook, 1.5.4) Fire management policies and procedures for safety, training and equipment are mandatory. See 241 FW 7 (Safety Operations - Firefighting), 232 FW 6 (Firefighting Training), and 241 FW 3 (Personal Protective Equipment).

Further clarification and interpretation of policy may be found in Section 1.1.2 of the FWS Fire Management Handbook.

AUTHORITIES FOR FMP DEVELOPMENT

Authority and guidance for developing and implementing this plan are found in:

- Protection Act of September 20, 1922 (42 Stat. 857; 16 U.S.C.594): authorizes the Secretary of the Interior to protect from fire, lands under the jurisdiction of the Department directly or in cooperation with other Federal agencies, states, or owners of timber.
- Economy Act of June 30, 1932: authorizes contracts for services with other Federal agencies.
- Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66, 67; 42 U.S.C. 1856, 1856a and b): authorizes reciprocal fire protection agreements with any fire organization for mutual aid with or without reimbursement and allows for emergency assistance in the vicinity of agency lands in suppressing fires when no agreement exists.
- Disaster Relief Act of May 22, 1974 (88 Stat. 143; 42 U.S.C. 5121): authorizes Federal agencies to assist state and local governments during emergency or major disaster by direction of the President.
- Federal Fire Prevention and Control Act of October 29, 1974 (88 Stat. 1535; 15 U.S.C.2201): provides for reimbursement to state or local fire services for costs of firefighting on federal property.
- Wildfire Suppression Assistance Act of 1989 (P.L. 100-428, as amended by P.L. 101- 11, April 7, 1989).

- Departmental Manual (Interior), Part 620 DM, Chapter 1, Wildland Fire Management: General Policy and Procedures (April 10, 1998): defines Department of Interior fire management policies.
- Service Manual, Part 621, Fire Management (February 7, 2000): defines U.S. Fish and Wildlife Service fire management policies.
- National Wildlife Refuge System Administrative Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd et seq.: defines the National Wildlife Refuge System as including wildlife refuges, areas for the protection and conservation of fish and wildlife which are threatened with extinction, wildlife ranges, game ranges, wildlife management areas and waterfowl production areas. It also establishes a conservation mission for the Refuge System, defines guiding principles and directs the Secretary of the Interior to ensure that biological integrity and environmental health of the system are maintained and that growth of the system supports the mission.
- National Environmental Policy Act of 1969: regulations implementing the National Environmental Policy Act encourage the combination of environmental comments with other agency documents to reduce duplication and paperwork (40 CFR 1500.4(o) and 1506.4).
- Clean Air Act (42 United State Code (USC) 7401 et seq.): requires states to attain and maintain the national ambient air quality standards adopted to protect health and welfare. This encourages states to implement smoke management programs to mitigate the public health and welfare impacts of Wildland and prescribed fires managed for resource benefit.
- Endangered Species Act of 1973.
- U.S. Fish & Wildlife Service Fire Management Handbook.
- National Fire Plan, Departments of Interior and Agriculture, 2001.
- 10-Year Comprehensive Strategy Implementation Plan, Departments of Interior and Agriculture, 2002.
- Draft Cohesive Strategy for Protecting People and Sustaining Resources in Fire-Adapted Ecosystems, Departments of Interior and Agriculture, 2001.

RELATIONSHIP OF FMP TO ENABLING LEGISLATION AND PURPOSE OF UNIT

Lands acquired by the Service for the Refuge will be purchased under the authority of the Migratory Bird Conservation Act and the Emergency Wetland Resources Act of 1986. Land acquisition authority includes the Migratory Bird Conservation Act, Endangered Species Act, Emergency Wetlands Resources Act and the Fish and Wildlife Act. Land management authority, including comprehensive conservation planning, is directed primarily by the National Wildlife Refuge System Improvement Act of 1997.

The Refuge is located in the mixed coniferous and deciduous forests of Northern Wisconsin along the Lake Superior shoreline. The area is a tourism hotspot known for its excellent fisheries provided by Whittlesey Creek's diverse watershed, which is one of the primary habitat management goals of the Refuge. The forest is in need of management to set back invasives and reduce fuel loading to provide the necessary habitat of the north woods ecosystems. The open grass fields are abandoned agricultural fields that have been grossly overtaken by reed canarygrass and timothy grass. These fields, with the introduction of fire, could potentially provide excellent cover for migratory birds in the

area. In addition to the many streams that provide the much needed habitat for the Coaster brook and other trout, the wetlands of the area need to be managed and opened up to provide better nesting habitat for waterfowl. Improving these habitats, while reducing hazardous fuels will be the mission of Refuge staff through the use of this Fire Management Plan as well as objectives directed by the Whittlesey Creek Habitat Management Plan 2006. Work will be done to reestablish species to the area, as well as further encourage populations as the habitat is improved to increase carrying capacity for a stronger and more diverse ecosystem

2.2 LAND / RESOURCE MANAGEMENT PLANNING

The development of the Whittlesey Creek NWR Fire Management Plan (FMP) was brought together by utilizing many of the plans already in place for the Refuge. Currently the Refuge doesn't have a Comprehensive Conservation Plan (CCP) but is working off of an Interim Comprehensive Conservation Plan & Environmental Assessment from 1998; writing the updated CCP is set to begin work in 2012. In addition, the Habitat Management Plan and the Invasive Plants Management Plan from the Refuge were used to support and give cause for the need of a FMP at Whittlesey Creek NWR. Naturally the FMP also follows both regional and national guidelines and policies brought forward from the National Fire Plan

2.3 PARTNERSHIPS

COLLABORATIVE DEVELOPMENT PROCESS FOR LMP AND FMP

The Environmental Assessment (EA), Finding of No Significant Impact (FONSI), and associated Environmental Assessment & Interim Comprehensive Conservation Plan for the acquisition and establishment of Whittlesey Creek NWR serve as the critical management plan and NEPA documentation for the station until a more detailed Comprehensive Conservation Plan (CCP) is prepared (Whittlesey Creek NWR CCP is scheduled for 2012). The EA and the other listed documents also establish the need for fire management planning, the use of prescribed fire and the need to control wildland fire (EA is found in Appendix I).

10 YEAR COMPREHENSIVE STRATEGY CORE PRINCIPLES

Collaboration

For this FMP, collaboration at the local level includes; the Wisconsin Department of Natural Resources, and county and town governments. Adjacent landowners (representative stakeholders) will also be involved.

Priority Setting

Project proposals, primarily related to prescribed fire, will be rated locally for initial priorities. Overall priorities for funding fuel management projects on the Refuge will be established at the regional level with appropriate input from state and local officials in the immediate Refuge area.

The national, uniform guidance for implementing the provisions of the "Collaborative Fuels Treatment" MOU, and to satisfy the requirements of Task e, Goal 4 of the Implementation Plan for the 10-Year Comprehensive Strategy, establish broad, nationally compatible standards for identifying and prioritizing communities at risk, while allowing for maximum flexibility at the state and regional level. Three basic premises are:

- Include all lands and all ownerships.
- Use a collaborative process that is consistent with the complexity of land ownership patterns, resource management issues, and the number of interested stakeholders.
- Set priorities by evaluating projects, not by ranking communities.

REFERENCES:

1. *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment. 10-Year Comprehensive Strategy Implementation Plan.* May 2002. (Goal 4 Task e: "Develop nationally comparable definitions for identifying at-risk wildland urban interface communities and a process for prioritizing communities within state and tribal jurisdiction.") (Available at: http://www.fireplan.gov/reports).
2. *Memorandum of Understanding for the Development of a Collaborative Fuels Treatment Program.* January 13, 2003. (Available at: http://www.fireplan.gov/reports).
3. *Concept Paper: Communities at Risk.* National Association of State Foresters (NASF), December 2, 2002. (Available at: http://www.stateforesters.org/reports).
4. *Wildland/Urban Interface Fire Hazard Assessment Methodology*. NWCG, undated (circa 1997). (Available through the NWCG Publications Management System (PMS), NIFC Catalog number NFES 1597.)

3. FIRE MANAGEMENT UNIT CHARACTERISTICS

3.1 AREA-WIDE CONSIDERATIONS

Interagency Relationships

There is ongoing coordination between USFS, state agencies, county and municipal fire fighting resources regarding wildfire suppression. As the Refuge and adjacent lands are located in areas traditionally affected by naturally occurring fires, local cooperative resources will be utilized by the Refuge for any wildfires on Fish & Wildlife Service property according to Service policy.

Regional Strategies

Current regional fire management policy follows the direction set forth under the National Fire Plan. This includes the umbrella of programs comprising the National Fire Plan; including, the 10 Year Cohesive Strategy Plan, Healthy Forests Initiative, etc.

Other Collaborative Processes

Some opportunities will result from the Region's public review requirements while others derive from local user groups. This plan will be placed out for public review and will collect public comments for a thirty day period to insure local

concerns are addressed and any misconceptions related to use of prescribed fire or wildland suppression actions cleared.

FIRE MANAGEMENT GOALS IN CONTEXT OF LAND MANAGEMENT PLAN (LMP)

The primary fire management goals on the Refuge are to protect public and employee safety from the ravages of wildfire followed by protecting wildlife habitat from degradation as a result of unwanted wildland fire. A secondary goal is the reestablishment of fire as the management tool of choice to control invasive plants and maintain and enhance existing fire-adapted communities. Accomplishing the second goal would also reestablish the expected fire regime and maintain affected communities in a Condition Class 1. Tables 1 and 2 explaining fire regimes and condition class are found under the Fire Management Unit (FMU) Specific Descriptions on page 22.

FMP CONTRIBUTION TO ACHIEVE LMP GOALS

Effective appropriate management responses, taken quickly, will reduce potentially extensive damage (i.e. loss of preferred vegetation to invasive species or loss of soil organic components, etc.) to Complex habitats. The application of prescribed fire will safely and effectively work to achieve stated management goals.

CONTRIBUTION OF WILDLAND FIRE GOALS TO REGIONAL/NATIONAL FIRE PLAN

The wildland fire operations on the Refuge, contribute significantly to all four of the National Fire Plan goals.

1) Improve Prevention and Suppression
   Refuge management will work to train staff and support their efforts to aid in wildland fire activities on a nation level when possible. Wildfire prevention through education (news releases in newspapers and radio, and postings at the visitor center,) will be put into use and expanded upon in the future.

2) Reduce Hazardous Fuels
   By implementing prescribed burn treatments on the Refuge land, it will reduce the number of acres at risk of severe wildland fire, and protect local communities and the environment.

3) Control Invasive Plants and Restore Fire-Adapted Communities
   Prescribed fire application is beneficial for controlling invasive plants and restoring the role of fire in maintaining natural habitat conditions. Restoring fire adapted ecosystems is a major emphasis of the complex fire management program and further meets fuels management goals while reducing fire danger associated with untreated lands.

4) Promote Community Assistance
   Communities assist the Refuge with biomass utilization by haying portions of the Refuge, effectively controlling invasive plants, reducing hazardous fuels and stimulating grassland.

10 YEAR COMPREHENSIVE STRATEGY

Priorities to Protect Communities and Watersheds

With the increased amount of human activity causing fire and heavy fuel loads on Refuge lands, an increased risk from wildland fire escaping from FWS lands is a possibility and could potentially affect a number of local communities.

Collaboration Among Governments and Representative Stakeholders

Fire management planning, preparedness, prevention, suppression, rehabilitation, monitoring, research, and education will be conducted on an interagency basis with the involvement of cooperators and partners whenever possible. This includes member agencies of the Wisconsin Interagency Fire Council (WIFC) and other state, federal, private and non-governmental organizations. By pooling knowledge and expertise, the overall understanding of wildland fire management practices and policies will be continuously improved. Internal and external communication and collaboration will increase the effectiveness of information exchange within all organizations

Performance Measures and Results Monitoring

The primary performance measure applicable to the Refuge involves effective protection of life and adjacent privately owned property. Proactive use of prescribed fire or management of hazardous fuels by other means would be the tools used. Results would be based on values protected or enhanced. Monitoring would include the change or conversion status of fire regime and condition class (FRCC), prevention success, etc.)

COHESIVE STRATEGY ELEMENTS (Draft from USFS accepted by Interior agencies)

Institutional Objectives and Priorities

Whittlesey Creek NWR fire management will emphasize where possible the application of prescribed fire to restore and enhance fire-adapted vegetative communities.

Program Management Budgets and Authorities

Fire program management needs are planned for and reported in the FIREBASE fire planning and budgeting software program. FIREBASE is the official fire planning and budgeting program of the U.S. Fish & Wildlife Service. As fuels program projects and habitat restoration occur, the justification for larger allocations of funding is more readily supported thus allowing for the maintenance of these fire adapted ecosystems.

Social Awareness and Support

The Ashland area is relatively informed on fire management activities due largely to the presence of the U.S. Forest Service with an office in

Washburn and the local DNR Ranger Stations and the outreach they have done in the past. However, not a lot of prescribed fire has occurred in this area so residents and Lake Superior visitors may need educating on the importance of prescribed fire and hazardous fuels reduction treatments.

It will be increasingly important in the future to foster extensive public outreach to build local support for Refuge operations and create local volunteer and support groups. Fire can play an integral role in this outreach through the use of education and demonstration projects.

The Refuge has a Visitor Services Manager located at the Northern Great Lakes Visitor Center. There are two other outreach coordinators available, the FWS National Fire Office in Boise, ID has a National Outreach Coordinator on staff, and the Region has a part time Fire Outreach Coordinator located at the Agassiz NWR in Middle River, MN that can assist in these efforts and provide additional educational media. Region 3 also maintains a "Fire Management in the Midwest" website at: http://www.fws.gov/midwest/Fire/ which is an excellent source of pertinent local fire information.

WILDLAND URBAN INTERFACE

Wildland Urban Interface (WUI) is defined as the area where houses meet or intermingle with undeveloped wildland vegetation. This makes the WUI a focal area for human-environment conflicts such as wildland fires, habitat fragmentation, invasive species, and biodiversity decline. FIREWISE is an excellent community safety program developed to educate the public about the wildland urban interface and corrective measures needed. Additional examples include working toward a comprehensive social awareness and support system to educate the public concerning the benefits of management ignition in fire adapted ecosystems.

A few communities near the Refuge including Ashland, Washburn, and Moquah would be considered communities of concern for Refuge wildfire. Refuge lands contain continuous fuels and have occupied homes in close proximity to them. Interface risks may be mitigated by a combination of mechanical fuel treatments and prescribed fire to reduce and eliminate hazard fuel loading adjacent to private property.

FIRE MANAGEMENT OPTIONS

WILDLAND FIRE MANAGEMENT OPTIONS TO BE IMPLEMENTED

Whittlesey Creek Refuge Management have chosen not to use wildland fire use for resource benefit primarily due to the fact that the refuge land tracts are so small. With continuous fuels surrounding much of the property it would create a high probability of escape to adjacent lands. Likewise, only full suppression will be applied to unwanted wildland fire because of the absence of fire management personnel on refuge staff. Additional fire management considerations follow:

- Manage fire suppression to minimize risks to firefighter and public safety,

- Reduce and maintain fuels (prescribed fire, mechanical treatments) in WUI areas at non-hazardous levels to provide for public and firefighter health and safety,
- Reduce and maintain fuels (prescribed fire, mechanical treatments) in non-WUI areas at non-hazardous levels to provide for firefighter health and safety and to protect habitats critical to endangered species, migratory birds, and ecosystem integrity,
- Use prescribed fire programs to mimic pre-settlement fire intervals and intensities to restore ecosystem integrity and potential endangered species habitat.

Use of foam or retardants will be in accordance with the guidelines found in Appendix B, and under the permission of the Refuge Manager. This will protect sensitive streams, Lake Superior shoreline, wetland water quality, and any fish species present in this watershed.

RATIONALE FOR STRATEGIES TO BE APPLIED TO EACH FIRE MANAGEMENT UNIT (FMU)

An initial action using an appropriate management response is required for every wildfire in or threatening refuge lands. Actual suppression tactics could range from full, aggressive, suppression utilizing direct attack to containment between roads, railroad tracks, open water, agricultural fields or other fuel breaks created by human activity and subsequent burnout. Wildland Fire Use is not an option on any of the Refuge lands due to continuous fuels in close proximity to private lands.

3.2 FIRE MANAGEMENT UNIT- SPECIFIC DESCRIPTIONS

FMU DESCRIPTIONS

All of Whittlesey Creek Refuge and easement lands will be considered one Fire Management Unit. Consistent with FWS policy, all wildland fire will be managed as either wildfire or prescribed fire. Five possible fuel complexes exist: open grasslands (reed canarygrass, and timothy grass), wetlands (cattail, etc.), forest (closed canopy, hardwood litter), forest (closed canopy, conifer needles), and other grasslands (wet meadow, reseeded natives, cool-season grasslands, etc). Topographically the lands involved are generally flat open grass fields, wetlands, and sedge meadows that would be classified as Fire Regime Group 2. The closed forest would be classified as a mix of Fire Regime Group 3 and 4.

Table 1 – Fire Regime Groups

Fire Regime Group	Frequency (Fire Return Interval)	Severity
I	0-35 years	low severity
II	0-35 years	stand replacement severity
III	35-100+ year	mixed severity
IV	35-100+ year	stand replacement severity
V	>200 years	stand replacement severity

Additional physical and biological descriptive information for the Refuge is found in Appendix D.

The Refuge is a combination of Condition Class 1 and 2 with Condition Class 1 being dominant, as defined in Table 2. Fire may be needed more in the future as more and more invasives cause the condition class to change. As reported earlier in this plan very little is known about the fire history on the Refuge so vegetation, soils, and climate are the main factors used to determine the condition class of the refuge lands. Due to the wetter climate and poorly drained soils associated with the proximity of Lake Superior most likely the natural fire interval would be quite long in any of the forested areas (50 years or more). And in any of the now open areas, there may have been some agricultural burning, but it wouldn't have been a significant force in sustaining or maintaining the natural habitat. Furthermore, lightning fires are very uncommon ignition sources for fires in this part of Wisconsin. Based on the overall vegetation type found in the area most fires would be assumed to be associated with drought conditions or human caused.

Table 2 – Condition Class Explanation

Condition Class	Fire Regime Example Management Options
Condition Class 1	Fire regimes are within an historical range and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range. Where appropriate, these areas can be maintained within the historical fire regime by treatments such as fire use.
Condition Class 2	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range. Where appropriate, these areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be restored to the historical fire regime.
Condition Class 3	Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range. Where appropriate, these areas may need high levels of restoration treatments, such as hand or mechanical treatments, before fire can be used to restore the historical fire regime.

Potential Fire Behavior

The predominant vegetation types on the Refuge are mixed hardwood and coniferous and in this vegetation type, the primary carrier of the fire is litter beneath the timber stand. Depending on the time of year, this fuel type is broken down into the following Northern Forest Fire Laboratory (NFFL) fuel models:

- Fire Behavior Fuel Model 8 describes a deciduous broadleaf forest with an overstory in full leaf and a compact litter layer. The litter layer is primarily compressed leaves and twigs. Little undergrowth is present in the stand. This fuel model best describes fuel conditions found in the summer.

- During the fall and early winter this vegetative type is best described as **NFDRS** Fuel Model E (Fire Behavior Fuel Model 9). Long-needle pine stands and hardwood stands with loosely compacted needle and leaf litter are typical. This is the primary fuel model present during the fall and spring fire season and during periods of late summer drought.

Other fuel models are present and are described below.

- Perennial grasses which are about a foot tall and associated with scattered prairies, old field sites, and pasturelands. This fuel type is best described as Fire Behavior Fuel Model 1.

- Wetlands, in some cases choked with cattail and rushes; and in some cases native upland grass communities three feet tall or more. Fire behavior can be estimated using Fire Behavior Fuel Model 3. Fire behavior in wetlands primarily composed of sedges and other aquatic plants less than one foot in height can be computed using Fire Behavior Fuel Model 1.

- Areas with low brush where the fire is carried in the surface fuels that are made up of litter cast by the shrubs and grasses or forbs in the understory are described as Fire Behavior Fuel Model 5.

- Areas where fires carry through the shrub layer such as hardwood shrub is described as Fire Behavior Fuel Model 6.

With the exception of marsh or grass fires that can burn extremely hot, fires are typically of low intensity, especially in NFFL Fuel Models 8 and 9. Winds play a large role in overall fire behavior. Dead and down fuel can contribute to an increase in expected fire behavior and intensity, this can lead to torching and spotting. This also holds true for periods of drought, especially during late summer and early fall. The expected fire spread and behavior characteristics for selected fuel models under normal and extreme conditions are outlined in the following Table:

Table 3- Expected Fire Behavior

Fire Behavior	Factors	Fuel Model	Flame Length *feet*	Rate of Spread *Ch/hr*	Characteristics
Normal	WS:5 mph FM:8%	1	4.0	78	Even under conditions of light winds and reduced slopes, flames can move quickly through this fuel type
Intense to Extreme	WS:8 mph FM:3%	1	8.0	307	Under windy conditions when fuel moistures and humidity are low, rapid rates of spread can be expected.
Normal	WS:5 mph FM:8%	2	6.0	35	May include clumps of fuel that generate higher intensities and may produce firebrands. Fire intensities can lead to short-range spotting and torching of individual trees that can make control difficult.
Intense to Extreme	WS:12mph FM:3% LFM:90%	2	15	213	Fires exceed the upper limit of control by direct attack. Torching and long-range spotting are very likely.
Normal	WS:5 mph FM:8%	3	12	104	Fires in this fuel are the most intense of the grass group and are influenced by the wind.
Intense to Extreme	WS:12mph FM:3%	3	28	490	Under the influence of wind. The wind will drive the fire into the upper heights of the grass and across standing water.
Normal	WS:5 mph FM: 8% LFM:100	5	4.0	18	Fires occurring under normal conditions are not very intense because the highly flammable foliage does not contribute to fire intensity and they tend to remain surface fires.
Intense to Extreme	WS:10mph FM:3% LFM:90%	5	11	79	Fuels with flammable foliage such as mature laurel will exhibit torching and increase intensities that may make direct attack difficult, if not impossible.
Normal	WS:5 mph FM: 8% LFM:100	6	6.0	32	Fires being pushed by moderate winds (8mph) carry through the shrub layer where the foliage is more flammable than Fuel Model 5. Will drop to the ground at low wind speeds or at openings in the stands.
Intense to Extreme	WS:10mph FM:3%	6	11	112	Fires exceed the ability to control by direct attack. Under windy, dry conditions, spotting can lead to escaped fires.
Normal	WS:5 mph FM: 8%	8	1.0	1.6	Fires in this fuel type tend to be slow moving ground fires with low flame lengths. Heavy concentrations of fuels may flare up.
Intense to Extreme	WS:10mph FM:3%	8	2.0	7.0	Under periods of severe weather involving high temperatures, low humidity, and high winds, fires can exhibit fire behavior including rapid moving ground fire, total duff consumption, and possible torching and crown fires.
Normal	WS:5 mph FM: 8%	9	2.6	7.5	Fires occurring in this fuel type tend to exhibit a moderate rate of spread. Intensities will increase as fire enters brushy areas that support leaves or pine needles.
Intense to Extreme	WS:10mph FM:3%	9	6.0	36	Rates of spread often increase when winds are higher due to spotting caused by rolling and blowing leaves. Torching out, spotting, and crowning may be encountered during drought conditions.

Source: Aids to Determining Fuel Models for Estimating Fire Behavior (Anderson 1982), and BEHAVE (Andrews 1986)

FMU OBJECTIVES, STANDARDS, GUIDELINES OR DESIRED FUTURE CONDITION WITH STRATEGIES

FMU Strategic Objectives

1) Provide for firefighter safety and safety of Refuge visitors, neighbors, cooperators, and personnel.

2) The Refuge will utilize the appropriate management response to suppress all wildland fire, including lightning ignitions occurring within the boundaries of any Refuge lands.

3) The goals of this program are to reduce the risk from unwanted wildland fire to values such as structures and private property, and to simulate the frequency and effects of historical fires, at times and in places when safety and control can be assured.

4) Prescribed fires will be used to accomplish resource management objectives, such as restoring and maintaining oak savannas or creating wildlife habitat, and achieving fuel hazard reduction objectives, such as reducing fuel ladders and downed wood debris. To the maximum extent possible, this program will try to simulate the effects of the historical fire regime on the plant and animal communities within unit boundaries.

5) Prescribed fire will be used according to a pre-determined set of parameters and will be ignited under specific prescriptions. The required prescriptions are described in the burn unit's prescribed fire plan. Prescribed fires may be carried out at any time of the year when conditions are within prescription and operations will not conflict with wildland fire suppression activities.

6) Priorities for use of prescribed fires will be determined by the length of time since previous burns, vegetative conditions, topographic advantages, current fuel loading, and personnel and logistical requirements. To the extent feasible, prescribed fires are conducted with the direct aid and cooperation of any agency or agencies whose lands are contiguous with the burn unit.

7) Mechanical fuel treatment methods, including powered hand tools or machinery, will be used in place of, or in combination with, prescribed fire in areas where prescribed fire alone is not the safest or most effective treatment or is otherwise unfeasible.

4. WILDLAND FIRE OPERATIONAL GUIDANCE

APPROPRIATE MANAGEMENT RESPONSE

PROGRAM DIRECTION

The 1995 Federal Wildland Fire Management Policy, as revised (2001), mandates that "public and firefighter safety is the first priority in every fire management activity." This important element of policy will be emphasized during all fire management operations and continuously addressed.

The safety of FWS firefighters and cooperators involved in fire management activities is of primary concern. **Only trained and qualified personnel holding current Incident Qualification Cards (commonly referred to as "red cards"), that meet the minimum qualifications established in PMS 310-1, will be assigned to fire suppression or prescribed fire duties**. Cooperating local agencies (Fire Departments) who respond for initial attack purposes will meet their agencies qualifications as stated by General Agreement with their respective departments. Fire management personnel will be issued personal protective equipment and will be trained in its proper use. No FWS employee, contractor or cooperator will be purposely exposed to life threatening conditions.

The primary threat to firefighter safety is from fast moving wildland fires that can quickly overtake and trap firefighters. **Fireline supervisors will identify escape routes and safety zones and designate lookouts. All fire suppression personnel will maintain open lines of communication and know where escape routes and safety zones are located.** Spot weather forecasts should be requested early-on during initial attack to gain insight into the possibility of shifting winds from approaching fronts and other weather related phenomena.

Smoke from wildland fires and prescribed fires are a recognized health concern for firefighters. Prescribed burn bosses and wildland fire incident commanders must plan to minimize exposure to heavy smoke by incorporating the recommendations outlined in the publication Health Hazards of Smoke (Sharkey 1997), which is available from PMS or the Missoula Technology and Development Center.

FWS policy does not permit wildland firefighters to fight structure fires and other fires routinely fought by structural fire resources, such as fires involving hazardous materials and vehicle fires. FWS policy permits FWS wildland firefighters to assist in the suppression of structure and other non-wildland fires by suppressing a wildland fire associated with the incident.

As noted above, an initial action using an appropriate management response is required for every wildfire in or threatening refuge lands. Actual suppression tactics could range from full, aggressive, suppression utilizing direct attack to containment between roads, railroad tracks, open water, agricultural fields or other fuel breaks created by human activity and subsequent burnout. Wildland Fire Use is not an

option on any of the Refuge lands due to continuous fuels in close proximity to private lands.

PREPAREDNESS

Preparedness is the work accomplished prior to fire occurrence to ensure that the appropriate response, as directed by the Fire Management Plan, can be carried out. Preparedness efforts are generally accomplished in time frames outside normal fire season dates.

Prevention and Community Education

A program of internal and external education (news releases in newspapers and radio, community town-hall style meetings, presentations at schools and local organizations) regarding potential fire danger may be implemented. Visitor contacts, bulletin board materials, handouts and interpretive programs can be utilized at the Northern Great Lakes Visitor Center to increase visitor and neighbor awareness of fire hazards.

During periods of extreme or prolonged fire danger emergency restrictions regarding Refuge operations or area closures may become necessary. Such restrictions, when imposed, will generally be consistent with those implemented by cooperators.

Community Assistance and Grant Programs

The Whittlesey NWR does not have dedicated wildland fire staff, and so depends on rural fire departments to assist with wildland fire protection. The Rural Fire Assistance Program has allowed the Service to assist rural departments to increase the level of preparedness and safety, improving fire protection on both national wildlife refuges and surrounding communities. As the refuge grows through land acquisition, FWS staff will notify eligible cooperators of potential grant opportunities. (In 2004 refuge staff secured $18,000 from RFA to fund wildland fire PPE for the Ashland Fire Dept.)

Training and Qualifications

Fish and Wildlife Service policy sets training, qualification and fitness requirements for all wildland firefighters and prescribed fire positions. All personnel involved in fire management functions will be provided with the training required to meet Service qualification standards for the position they are expected to perform. As suppression will be supplemented by the state and/or local fire departments, their qualification requirements will be accepted in accordance with existing national level agreements/guidance.

Annual Fireline Safety Refresher Training is required for all personnel participating in fire suppression or prescribed fire activities that may be subject to assignments on the fireline. The Refresher is 8 hours in length, and will have a currency of 12 months. A web site titled “Wildland Fire Refresher Training Annual Refresher

(WFSTAR)" is available to assist in this training. Annual Fireline Safety Refresher Training must include the following core topics:

- Entrapments – Use training & reference materials to study the risk management process (as identified in the Incident Response Pocket Guide) and rules of engagement (e.g., LCES, 10 & 18, Look Up – Look Down – Look Around).

- Current Issues – Review and discuss identified "hot topics" and "national emphasis topics". Review forecasts and assessments for the upcoming fire season and discuss implications for firefighter safety.

- Fire Shelter – Review and discuss last resort survival. Conduct "hands-on" fire shelter inspections. Practice shelter deployments in applicable crew/module configurations.

- Other Hazards & Safety Issues – Additional hazard and safety subjects, which could include SAFENET, current safety alerts, site/unit specific safety issues and hazards.

Physical Fitness

Agency administrators are responsible for ensuring the overall physical fitness of firefighters. The agency administrator may authorize employees who are available and/or serving in wildland or prescribed fire positions that require a physical fitness rating of arduous, one hour each day for fitness conditioning.

Work Capacity Test

The Work Capacity Test (WCT) is the official method of assessing wildland firefighter fitness levels. All personnel involved in fire management activities will meet the fitness standards established by the Service and Region. Additional policy guidance and forms regarding the WCT can be found in the Interagency Standards for Fire & Fire Aviation (the Redbook), and the USFWS Fire Management Handbook.

Medical Examinations

Agency Administrators and supervisors are responsible for the occupational health and safety of their employees performing wildland fire activities, and may require employees to take a medical examination at any time. Implementation of the Federal Interagency Wildland Firefighter Medical Qualification Standards for arduous duty and for all employees and AD/EFF who participate in wildland fire activities requiring a fitness level of moderate or light was implemented in 2007. Additional policy guidance and forms regarding Medical Examinations can be found in the Interagency Standards for Fire & Fire Aviation (the Redbook), and the USFWS Fire Management Handbook.

Incident Qualification and Certifications System (IQCS)

The Incident Qualification and Certifications System (IQCS) is the Department Of the Interior's (DOI) fire qualifications and certification record keeping system. The master file report provided by the IQCS meets the agency requirement for maintaining fire qualification records. The system is designed to provide managers at the local, state/regional, and national levels with detailed qualification, experience, and training information needed to certify employees in wildland and prescribed fire positions. The IQCS is a tool to assist managers in certification decisions; it does not replace the manager's responsibility to validate that employees meet all requirements for position performance based on standards. A hard copy file folder will be kept for each employee. The contents will include, but are not limited to: training records for all agency required courses, evaluations from assignments, position Task Book verification, yearly updated IQCS forms, and an Individual Employee Master File Report from IQCS.

The Incident Qualifications and Certification Card (Red Card)

The agency administrator (or delegate) is responsible for annual certification of personnel serving in wildland and prescribed fire positions. Agency certification is issued annually in the form of an Interagency Incident Qualification Card (Red Card), which certifies that the individual is qualified to perform in a specified position. The Red Card must be reviewed for accuracy and signed by the agency administrator or delegated official. The agency administrator, fire manager, and individual are responsible for monitoring medical status, fitness, training, and performance, and for taking appropriate action to ensure the employee meets all position performance requirements.

Training, medical screening, and successful completion of the appropriate WCT must be properly accomplished. All Red Cards issued to agency employees, with the exception of EFF-paid or temporary employees at the FFT2 level, will be printed using the DOI IQCS. Red Cards issued to EFF or temporary employees at the FFT2 level may be printed at the local level without use of the IQCS. Each agency will designate employees at the national, regional/state, and local levels as Fire Qualifications Administrators, who ensure all incident experience, incident training, and position Task Books for employees within the agency are accurately recorded in the IQCS. All records must be updated annually or modified as changes occur. Red Card certification will have a 12-month currency.

Supplies and Equipment

Due to the small size of the unit, limited staff size and no fire history in the recent past, there are no plans to establish a Refuge cache or purchase fire equipment. Prescribed fire needs, when necessary, will be provided by the St. Croix WMD. Additional equipment and supplies are available through cooperators and the interagency cache system.

When sufficient staff is available and fire management operations are the norm rather than the exception, Normal Unit Strength and equipment needs will be examined. At

that time, cache facilities will be considered and requests for funding entered into FIREBASE.

Detection

Wildland fires in this portion of Wisconsin have traditionally been reported by the public with occasional WIDNR or U.S. Forest Service detection flights when fire danger conditions are very high to extreme. Because this unit is small, the public is expected to provide initial fire reporting.
Since this is a mixed coniferous and deciduous forest with open grasslands and sedge meadows, drought conditions could pose potential for fire to become established and spread rapidly. Monitoring the fire danger ratings posted by nearby DNR stations will provide insight into fire potential. Fire preparedness may entail providing additional detection during extreme fire danger or in the event of a local arson problem.

The Fire Management Plan does not discriminate between human-caused and lightning-caused fire. All wildland fires will be suppressed. However, detection shall include a determination of fire cause. Moreover, human-caused fires will require an investigation and report by law enforcement personnel. For serious human-caused fires, including those involving loss of life, a qualified arson investigator will be requested.

Staffing Priority Levels

Due to the staff size, limited historic fire weather, size of the unit and other considerations, staffing classes will be obtained from the WIDNR.

In conjunction with Local, Regional and National Preparedness Levels, fire prevention actions will mirror those of the U.S. Forest Service on nearby lands. A Step-up Plan for prevention actions is found below

Due to limited Refuge personnel, the step-up plan only addresses public and visitor information needs. Adjective class will be obtained from WIDNR to insure consistency of information provided to the public.

Table 4- Step up Actions for public information on wildfires

Adjective Class	Step up Actions
Low	No special public information efforts
Moderate	No special public information efforts
High	No special public information efforts
Very High	Personal contacts with visitors, bulletin board materials, and handouts will be utilized to increase visitor and neighbor awareness of fire hazards.
Extreme	During periods of extreme or prolonged fire danger, emergency restrictions regarding Refuge operations, or area closures may become necessary. Such restrictions, when imposed, will be consistent with those implemented by cooperators.

INITIAL ATTACK

All fires occurring on the Refuge lands will be supervised by a qualified incident commander (IC). The IC will be responsible for all management aspects of the fire. If a qualified IC is not available locally, one will be ordered through the Wisconsin Interagency Coordination Center. All resources will report to the IC (either in person or by radio) prior to deploying to the fire and upon arrival to the fire. The IC will be responsible for: (1) providing a size-up of the fire to dispatch as soon as possible; (2) determine the resources needed for the fire; and (3) advising dispatch of resource needs on the fire.

The IC will receive general suppression strategy from the Fire Management Plan, but appropriate tactics used to suppress the fire will be up to the IC to implement. Minimum impact suppression tactics (MIST) will be used whenever possible.

The Refuge terrain and hydrology may limit the effectiveness of local fire department equipment. The DNR may have the appropriate soft ground equipment needed to suppress the fire, or the equipment could be ordered from other FWS stations throughout the state for suppression needs.

Suppression Considerations

1) The streams on the Refuge are the most sensitive resource to protect. Ground disturbance (use of tractor plows etc.) should be kept at least 300 feet from stream banks. In addition, aerial retardants and foams will not be used within 300 feet of any waterway as described in the Guidelines for Aerial Delivery of Retardant or Foam Near Waterways (Appendix B).

2) Utilize existing roads and trails, bodies of water, areas of sparse or non-continuous fuels as primary control lines, anchor points, escape routes, and safety zones.

3) When appropriate, conduct backfiring operations from existing roads and natural barriers to halt the spread of fire.

4) Use burnouts to stabilize and strengthen the primary control lines.

5) If the use of heavy equipment is warranted, upon approval of the Refuge Manager, construction of control lines will border existing roads where possible.

6) Constructed fireline will be rehabilitated after the fire.

7) The Incident Commander will choose the appropriate suppression strategy and technique. As a guide: On low intensity fires (generally flame lengths less than 4 feet) the primary suppression strategy will be direct attack with hand crews and

engines. If conditions occur that sustain higher intensity fires (those with flame lengths greater then 4 feet) then indirect strategies which utilize back fires or burning out from natural and human-made fire barriers may be utilized. Those barriers should be selected to safely suppress the fire, minimize resource degradation and damage, and be cost effective.

EXTENDED ATTACK

Additional qualified resources will be requested directly from USFWS stations in Wisconsin and Wisconsin Interagency Coordination Center (715-358-6863).

Whenever it appears a fire will escape initial attack efforts, leave Service lands, or when fire complexity exceeds the capabilities of command or operations, the IC will take appropriate, proactive actions to ensure additional resources are ordered. The IC, through dispatch or other means, will notify the Zone FMO of the situation. The Zone FMO will assist the Refuge Manager in the completion of a Wildland Fire Situation Analysis (WFSA) and Delegation of Authority.

Mop-up and Rehabilitation

The IC will be responsible for mop-up and rehabilitation actions on Refuge fires. Refuge fires will be monitored until declared out.

OTHER MANAGEMENT CONSIDERATIONS

Clean Air Act

The areas surrounding the Refuge are Class II air quality areas. No Class I areas such as federal wilderness or national parks are in close proximity to the Refuge. Wildland fires are expected to be of short duration with minimal effects on long-term air quality. Prescribed fire use on the Refuge will not reduce air quality but will meet all current air quality standards. Most of the fire management units to be burned will be of small size limiting the volume of smoke produced by prescribed fire.

The goal of a responsible smoke management program is to achieve the Complex's land management objectives while minimizing undesirable impacts. Smoke and fire management priorities are the same. Firefighter and public safety is the first priority. Personal property and natural resource protection is the second priority. Firefighter safety standards come from the Occupational Safety and Health Act with OSHA having primary act implementation responsibility. OSHA typically adopts standards developed by experts in the area of interest. In the case of wildland fire that includes the organizations like the National Wildfire Coordinating Group and the National Fire Protection Association. In the Service, the Office of Safety and Health is responsible for integrating OSHA policies, procedures, and guidance into Service management operations. Exposure to carbon monoxide and individual particulate matter compounds in wildland fire smoke are of primary firefighter safety interest. Limiting firefighter exposure to smoke is the best way to improve a firefighter's working environment. This is best done by operations planning and crew rotation.

Public health and welfare standards come from the Clean Air Act. The Environmental Protection Agency (EPA) is responsible for establishing policy and guidance which are used by the individual states to develop specific State Implementation Plans (SIPs) and Smoke Management Programs (SMPs). It is the SIPs and SMPs that establish the legal standards for Service operations. At the time this document was produced, the State of Wisconsin was still in the process of developing a SIP or SMP. Of the criteria pollutants in smoke, particulate matter is of most concern to public health. The EPA has established National Ambient Air Quality Standards (NAAQS) for Particulate Matter. They are set for both 10 and 2.5 micron size categories.

Emissions and NAAQS exceedances from prescribed and wildland fires used to achieve refuge objectives are addressed by the Interim Air Quality Policy on Wildland and Prescribed Fire. The states use these policies and other information to develop SIPs/SMPs which become the public health standard that Service smoke management plans must address.

The EPA has also established visibility and regional haze standards to protect public welfare. The Interim Air Quality Policy on Wildland and Prescribed fire does apply to visibility and regional haze, but the Natural Events Policy does not. Both natural and anthropogenic emission sources contribute to visibility impairment and regional haze. The states use the Interim Air Quality Policy on Wildland and Prescribed Fire and other information to develop SIPs/SMPs which become the public welfare standard Service smoke management plans must address.

Along with conforming with public health and welfare standards, smoke management responsibilities also includes protecting public safety and reducing nuisance impacts from the smoke.

Smoke management strategies vary widely in their applicability and effectiveness by vegetation type, burning objective, region of the country, and whether fuels are natural or activity-generated. When fire is used to reduce fuel loadings, eliminate an undesirable species, dispose of biomass waste, facilitate timber harvest, etc., these strategies can be very effective in both conforming to State standards and meeting Refuge management objectives.

When fire is needed for ecosystem maintenance or restoration, especially those ecosystems that are fire adapted or maintained, these strategies are less applicable because they all alter the ecosystem's fire regime (intensity, frequency, seasonally, or spatial distribution). Altering an ecosystem's fire regime is manifested by changes in community structure and function and species diversity and distribution to some degree and is well documented.

4.1 PRESCRIBED FIRE

LONG-TERM PROGRAM OBJECTIVES

The two primary program objectives of prescribed fire use will be the reduction of hazardous fuels in the vicinity of Refuge land boundaries to protect adjacent improvements and the restoration of the native ecosystem. Resource management prescribed fire is used to renovate, restore, create, or maintain diverse, native plant communities and to restore and perpetuate indigenous wildlife and wildlife habitat.

Prescribed Fire Safety

In order to reduce safety hazards to the public, all public access into the burn units will be closed the day of the burn. Fire crews will be briefed that they are to keep the fire area clear of people except for Service firefighters and cooperating fire crews.

Smoke mitigation and management will be included in the prescribed burn plan and is the responsibility of the burn boss. Smoke from a Refuge fire could impair visibility on roads and become a hazard. Actions to manage visibility may include: use of road guards and pilot car, signing, altering ignition techniques and sequence, halting ignition, suppressing the fire, and use of local law enforcement as traffic control. (Smoke hazards are a special concern for planes using the local municipal airport located approximately 3 miles southeast of the refuge.)

The safety of burn crew members must also be considered when conducting Wildland Urban Interface (WUI) burns. The roadways and associated traffic flow along lines can create the hazard of fast-moving vehicles during firing and holding operations. Another common hazard is non-natural items in and around the burn units (trash piles, tires, unknown containers, debris near adjacent structures, etc.) and even the potential for drug manufacturing supplies and byproducts. Powerlines, gaslines, propane tanks and other utility infrastructure are common and also demand increased vigilance.

Station firefighters should receive additional training that pertains specifically to safety concerns in the WUI. It is recommended under this FMP that pre-burn briefings include these safety topics, as well as others specific to each burn unit.

ANNUAL PREPARATION

Planning for each burn season begins the year prior to that season. Prescribed fire projects will be planned by the unit's biologist and fire manager with assistance from the Zone FMO based on the goals and objectives in this plan and the land management objectives in the Habitat Management Plan. Budget requests will be prepared and submitted, by assigned deadlines, into FIREBASE. The Prescribed Burn Boss will conduct a field reconnaissance of the proposed burn location with the FMO/Prescribed Fire Specialist time permitting, and appropriate staff to discuss

objectives, special concerns, and gather all necessary information to write the burn plan. After completing the reconnaissance, a Prescribed Burn Boss qualified at the expected level of complexity will write the prescribed burn plan.

REQUIRED STAFFING

Personnel needed to conduct the prescribed fires on the Refuge will come from St. Croix WMD and Whittlesey Creek NWR staff, AD firefighters, other FWS units and other NWCG- trained firefighters (BIA, NPS, and BLM). As part of the planning process, the prescribed burn boss will determine for each individual burn, the numbers and types of positions required. Depending on qualifications and the nature of current and future cooperative agreements or MOUs, both state agency and local fire department personnel may be participants.

SENSITIVE RESOURCE CONSIDERATIONS

T & E Species

Federally listed and State listed threatened or endangered species are not likely to be found on the Refuge but an intra-Service Section 7 consultation for tree and shrub removal for mixed coniferous and deciduous forests with open grasslands and sedge meadows on refuge lands has been initiated at the time of this writing(see Appendix I). Should reconnaissance prior to treatment indicate T&E presence, an additional intra-Service Section 7 consultation may be required. Depending on access conditions, mechanical treatments can usually be timed to mitigate adverse effects on listed species.

Cultural Resources

There is one culturally significant site on the Refuge, a historic trading post site located along the Lake Superior Shoreline. More information about this site can be obtained by contacting the U.S. Fish & Wildlife Service Regional Office Preservation Officer.

In addition, twenty two other properties in Bayfield County had been placed on the National Register of Historic Places. None of the properties are located within the boundaries of the proposed refuge or within Barksdale Township. There were thirteen buildings or farmstead complexes within the proposed boundary when it was established. Six of these have been removed once the Service acquired them. One of the homes remaining may have been the home of Asaph Whittlesey, founder of Ashland, Wisconsin, in 1860, and after whom Whittlesey Creek was named. Also within the proposed boundaries could be the site of the cabin built by Pierre Esprit Radisson in 1664 (Adams 1961 and Vestal 1940). The Refuge Manager considers potential impacts of management activities on historic properties, archeological sites, traditional cultural properties, sacred sites, human remains and cultural materials (excerpts taken from 2006 Whittlesey Creek Habitat Management Plan).

Air Quality

Combustion of fuels during prescribed fire operations may temporarily impact air quality, but the impacts are mitigated by small burn unit size and the distance from population centers. Refuge staff will work with neighboring agencies and in

consultation with State air quality personnel to address smoke issues that require additional mitigation. In addition prescribed burning will not take place on days where air quality is at an unhealthy level.

Individual prescribed burn plans address smoke management specific to each burn. Smoke management elements required in each burn plan include; identification of smoke sensitive targets and hazards, distance to smoke sensitive targets and hazards, action necessary to prevent adverse impacts to targets and hazards, allowable wind direction, types of fuels, size of burn, and a calculated dispersal category.

PRESCRIPTION REQUIREMENTS

Prescription elements in each individual prescribed fire plan should describe in detail the acceptable ranges of fire behavior and parameters of weather and fuel moisture content or other site variables. Smoke management requirements including duration of production and dispersal patterns are also required. The use of fire behavior and smoke management prediction aids (e.g., BEHAVE, RXWINDOW, nomograms,) is recommended. Measures of desired results should also be included, i.e. percent of litter removed, number of brush stems killed, season of burns, etc.

PRESCRIBED FIRE PLAN ELEMENTS

The prescribed fire plan is a site specific action plan describing the purpose, objectives, prescription, and operational procedures needed to prepare and safely conduct the burn. The treatment area, objectives, constraints, and alternatives will be clearly outlined. No burn will be ignited unless all prescription parameters of the plan are met. Fires not within those parameters will be suppressed. As part of the plan, minimum contingency resources will be listed.

Prescribed Fire Plans will follow the format contained in the Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide. Each burn plan will be reviewed by the Project Leader and/or Biologist, Zone FMO, and Burn Boss. The Project Leader has the final authority to approve the burn plan. The term burn unit refers to a specific tract of land to which a prescribed burn plan applies. Smoke management will be addressed in accordance with state regulations as described in the State of Wisconsin Smoke Management Plan. .

DOCUMENTATION AND REPORTING

Effects Monitoring

Monitoring of prescribed fires is intended to provide information for quantifying and predicting fire behavior and its ecological effects on Refuge resources while building a historical record. Monitoring measures the parameters common to all fires: fuels, topography, weather and observed fire behavior. In addition, ecological changes such as species composition and structural changes in vegetation will be monitored after a fire. This information is very useful in fine-tuning/modifying the prescribed burn program to meet future condition treatments

that will meet habitat restoration goals and objectives. During prescribed burning, monitoring should include mapping, weather, site and fuel measurements and direct observation of fire characteristics such as flame length, rate of spread and fire intensity. Operational monitoring provides a check to insure that the fire remains in prescription and serves as a basis for evaluation and comparison of management actions in response to measured, changing fire conditions, and changes such as fuel conditions and species composition. Monitoring actions are addressed in the Prescribed Fire Plan as illustrated in Appendix C. At a minimum, monitoring should include before and after burn photo documentation from fixed points.

Reporting

All costs of planning, implementation and first order, post-fire, monitoring will be charged to the appropriate cost code. This data may be tracked in several locations including FIREBASE, the National Fire Plan Operations and Reporting System (NFPORS) as well as the Federal Financial System. Detailed cost tracking provides for constantly improving cost estimates for budget purposes. Data from the burns will also be put into Fire Management Information System (FMIS) and into Incident Qualification Certification System (IQCS) for personnel qualification tracking information.

PUBLIC INFORMATION/INTERACTION

Whittlesey Creek NWR is a unique refuge due to the long-term goals of land acquisition and expansion as well as easement responsibilities. Arguably, many pieces of the Whittlesey Creek NWR lands might be classified as being situated in the wildland-urban interface. Private property surrounds refuge lands, public roadways create property lines, farmsteads and communities lie in close proximity of much of the refuge lands. Further complications can be found when dealing with smoke dispersion. Located in such a pristine area as the Lake Superior Shoreline much controversy could arise from smoke issues related to both prescribed and wildland fires. Larger land bases provide a larger base to distribute smoke, whereas these small refuge parcels are not large enough to absorb or buffer the properties in the immediate vicinity.

Particular care must be given to notifying surrounding landowners, township officials and motorists on adjacent roads. Prior to each burn, a public information effort must be made: door-to-door canvassing, highway signs notifying motorists of a managed burn (versus a reportable wildfire) and news releases become more crucial to the success of the overall prescribed fire program on the Refuge. In addition, posting notices in the Northern Great Lakes Visitor Center informing the public of upcoming burns and the effects to be expected with using prescribed fire as a management tool for hazardous fuels reduction as well as habitat management.

4.2 FUEL TREATMENTS

MECHANICAL FUEL TREATMENTS

Mechanical fuel reduction is the use of mechanical equipment (i.e. chainsaws, dozers, rubber tired skidders, chippers, mowers, etc.) to cut and remove, or prepare for burning, woody fuels. Mechanical treatments are intended to help in achieving resource management goals and objectives, most often a combination of ecosystem restoration and reduction of high hazard fuel loadings. Mechanical fuel treatments must be described in a fuels project plan. The plan will contain a prescription defining goals, objectives, and treatment methods employed to achieve the objectives.

Mechanical fuel treatment is often used in conjunction with prescribed fire treatments. High hazard fuel conditions can be reduced while meeting structural objectives in areas immediately adjacent to infrastructure values (Wildland Urban Interface) or on boundary areas through a mix of mechanical treatment and prescribed fire. Mechanical treatment can be used as the primary method of reaching structural goals while prescribed fire actually removes and eliminates the hazardous fuels.

Sensitive resources on the refuge will be considered before using mechanical treatments to ensure that the treatments won't negatively impact the vegetation or cause erosion along the streambeds located on the refuge. Different types of equipment will be used according to the project site to minimize damage resulting from mechanical treatments.

LONG-TERM PROGRAM OBJECTIVES

The primary program objective is the reduction of hazardous fuels to protect adjacent landowners and values at risk. Restoration of fire-adapted ecosystems and other historic plant communities are also an important consideration when evaluating projects.

ANNUAL PREPARATION

The first step in planning for annual projects will be to consult the Project Tracking Sheet for the Whittlesey Creek NWR (see Appendix G). The purpose of this form is to ensure no planning/documentation steps are missed for mechanical projects. Review of proposed projects to ensure that damage would be minimal will be part of the planning process. What can be critical is the timing of the mechanical treatment to ensure that soil compaction and disturbance does not occur during wet season or times of high precipitation. Under the guidelines of the Regional Fire Management office, all work done on the refuge concerning fuels reduction projects will be done in accordance with Fish & Wildlife Service Policy as outlined in the Whittlesey Creek NWR Fire Management Plan.

REQUIRED STAFFING

The required number of personnel will be used to meet the work plan and job hazard analysis provisions.

SENSITIVE RESOURCE CONSIDERATIONS

See the sensitive resource considerations portion contained above in Prescribed Fire Section for more information on actual considerations to be taken. Depending on the type of mechanical operation, disking, mowing, chipping etc., ground disturbance may occur. The reconnaissance conducted as part of the planning process will identify potential cultural sites and they will be surveyed in accordance with Regional Office guidance.

Federally listed and State listed threatened or endangered species are not likely to be found on the Refuge but an intra-Service Section 7 consultation for tree and shrub removal for mixed coniferous and deciduous forests with open grasslands and sedge meadows on refuge lands has been initiated at the time of this writing(see Environmental Assessment Appendix I). Should reconnaissance prior to treatment indicate T&E presence, an additional intra-Service Section 7 consultation may be required. Depending on access conditions, mechanical treatments can usually be timed to mitigate adverse effects on listed species.

Air quality is not expected to be affected by mechanical fuels treatments. Some fugitive dust may be generated over the immediate area. It is not expected to be of a quantity or duration to contribute to regional haze conditions.

RESTRICTIONS

Work Areas

Some areas near the streambeds may be restricted for use of equipment due to erosion and damage to the watershed. Restrictions may also apply to any areas where there would be ground disturbance

Equipment

There are no restrictions on types of equipment that may be used. Common agricultural and forestry equipment and implements would generally be used in fuel management operations.

Seasonal

Depending on the season and precipitation levels, operations would be timed to reduce potential for ground disturbance. The only other seasonal restriction involves delay of operations until ground nesting is essentially complete.

DOCUMENTATION AND REPORTING

Effects Monitoring

Monitoring of fuels treatments is intended to provide information on which fuel treatments were most effective on each species for future habitat management projects. Documentation with before and after aerial photos will give clear comparisons of what the treatments did or did not achieve in the way of fuel reductions. Site inventories may also be conducted to get accurate information on the populations of both native and invasive species in the treatment areas.

Reporting

All costs of planning, implementation and first order, post-fire, monitoring will be charged to the appropriate cost code. This data may be tracked in several locations including FIREBASE, the National Fire Plan Operations and Reporting System (NFPORS) as well as the Federal Financial System. Detailed cost tracking provides for constantly improving cost estimates for budget purposes.

PUBLIC INFORMATION/INTERACTION

Whittlesey Creek NWR is a unique refuge due to the long-term goals of land acquisition and expansion as well as easement responsibilities. Arguably, many pieces of the Whittlesey Creek NWR lands might be classified as being situated in the wildland-urban interface. Private property surrounds refuge lands, public roadways create property lines, farmsteads and communities lie in close proximity of much of the refuge lands. Further complications can be found when dealing with tree removal. Located in such a pristine area as the Lake Superior Shoreline much controversy could arise from removal of trees for habitat management from an area that has been historically forest dominated. The public may not be knowledgeable of the positive effects that such management practices may provide to the natural ecosystem.

Particular care must be given to notifying surrounding landowners, township officials and motorists on adjacent roads. In addition, posting notices in the Northern Great Lakes Visitor Center informing the public of upcoming projects and the effects to be expected with mechanized equipment as a management tool for hazardous fuels reduction as well as habitat management.

4.3 Emergency Stabilization and Burned Area Rehabilitation

Service emergency stabilization and burned area rehabilitation supplemental policy is in the Service Manual 095 FW 3.9 with Service specific policy guidance and programmatic procedures provided in the FWS Fire Management Handbook - Chapter 11, and Septermber 5, 2007, Emergency Stabilization Cost Containment Memorandum. Other policy guidance and references include: Department Manual 620 DM 3 and the Interagency Burned Area Emergency Response Guidebook and Interagency Burned Area Rehabilitation Guidebook.

After the fire is declared out, all flagging, litter and trash associated with the suppression operations will be removed. Firelines will be rehabbed and erosion control devices installed as necessary. Brush will be scattered and stumps will be flush cut and covered with soil. Plow furrows will be rehabilitated by rolling the materials back into the furrow. Public use trails will be patrolled and measures taken to ensure public safety.
The severity of the burn and the resulting impacts will dictate the need to re-seed or reestablish native plant species. Although the likelihood of the need is considered to be quite low, before any action is taken a rehabilitation plan will be prepared and approved in accordance with Park Service policy.

Emergency Stabilization and Rehabilitation (ESR) funds can be used to repair damage caused by the fire itself as follows:

- Health and safety (imminent danger or immediate threat to life and property)
- Municipal water source loss of capacity (not water quality)
- Threatened and endangered species habitat treatments (not enhancements)
- Cultural site treatments to prevent further erosion (not inventory or mitigation of site)
- Treatments to prevent invasive plant establishment
- Resource protection treatments (site stabilization of soil)

Funds to repair or replace fire damaged infrastructure will come from non fire sources. ESR funds, if approved, are available for the first two years after the fire is declared out. Rehabilitation extending beyond two years is not considered an emergency. Long term rehabilitation will be funded from non fire funding sources.

4.4 PREVENTION, MITIGATION, AND EDUCATION

ORGANIZATION AND BUDGET

STAFFING

Whittlesey Creek NWR has no fire funded positions at this time. All fire management roles will be filled by St. Croix WMD staff and Regional Fire Management Staff.

CURRENT LEVEL

Regional Fire Management Coordinator (RFMC):

The RFMC provides coordination, training, planning, evaluation and technical guidance to the region, and is available to provide assistance for intra-agency and interagency fire management needs. The RFMC will be informed of all wildfire suppression activity occurring on Service lands. As conditions warrant, he/she may request fire personnel from stations to meet suppression needs elsewhere. He/she similarly may be called upon to gather additional resources to implement the regions fire management program. (621 FW 1.5E)

Zone Fire Management Officer (ZFMO):

This resource is shared by the stations within a designated geographic zone. The ZFMO advises the fire staff and Refuge Managers, as requested, relative to fire planning, pre-suppression, suppression and prescribed burning. ZFMOs assist in intra-agency and interagency fire management and they can represent the assigned zone and coordinate fire related activities with: other zones, RFMC, and local, state and other federal fire organizations. Zone FMOs review annual prescribed burn plans for the assigned zone. As needed, they assist in developing fuel management and prescribed fire projects; and coordinate mobilization of the zones Service resources for off-station assignments. (621 FW 1.5.G)

The following positions are in place at St. Croix WMD and are funded from St. Croix WMD budgets, currently no fire funded positions are in place for Whittlesey Creek NWR.

Refuge Manager:

The Refuge Manager is responsible for the full range of management duties within the station, including planning and implementing an effective fire management program on lands under their jurisdiction. In conjunction with complex fire specialists, they determine the level of fire management effort required to meet fire management objectives at their station. The appropriate action will be taken by the manager for fires on Service lands: including delegation of authority, approval of agency advisors, implementing the Wildfire Situation Analysis (WFSA) and approval of prescribed fire operations. The Manager will make available for dispatch to off-station/interagency wildland and prescribed fire management operations, all personnel hired in dedicated, fire-funded positions. (621 FW 1.5F)

Prescribed Fire Specialist (PFS):

The PFS has primary responsibility to oversee the fire program management on the complex. They direct field operations for implementing and carrying out the Fire Management Plan and are responsible for the day-to-day implementation of the fire suppression program, ensuring fire readiness of unit personnel, supplies, equipment and apparatus. The PFS serves as prescribed burn boss and as Initial Attack Incident Commander on wildfires. The PFS determines funding for normal unit strength and prescribed fire activities and they prepare the complex's annual prescribed burn program. The Complex PFS is responsible for scheduling and implementation of management-ignited prescribed fire needs.

Fire Technician:

This position is responsible for maintenance of fire equipment and maintaining an inventory of the fire supplies. The Technician relays this information to the PFS to determine needs for the fire cache. The Technician also assists the PFS and Complex staff with planning and implementation for the fire program. The Technician serves on prescribed fire crews and as a national wildfire resource, as qualified. The Complex currently has one six-month permanent staff position and two eight-week seasonal positions.

LEVEL NEEDED TO ACHIEVE WILDLAND FIRE MANAGEMENT GOALS

At this time there are no qualified firefighters employed by the Whittlesey Creek National Wildlife Refuge. In order to better meet the needs of the Whittlesey Creek NWR additional funding may be necessary for complex employees to cover the planning and implementation of the fire management program at Whittlesey Creek NWR. The current funding level for the Refuge could be improved by adding funding for a complex fire program technician position to handle program needs as well as administrative and outreach programs.

FUNDING

Currently the FWS uses the FIREBASE program for staffing analysis and budget development. At this time there are no fire funded positions at Whittlesey Creek NWR. The St. Croix WMD will be responsible for all fire operations and administrative work to be done on the refuge. It was proposed that St. Croix and Whittlesey Creek be considered as one complex for all fire management aspects. Fire Program Analysis (FPA) is a new interagency budget and analysis program under development. The Complex will use FPA when it comes online.

LEVEL NEEDED TO ACHIEVE WILDLAND FIRE MANAGEMENT GOALS

Current funding should be considered the minimal necessary to achieve wildland fire management goals.

ADDITIONAL SUPPORT

The current funding level for the Refuge could be increased by allocating funds to Whittlesey Creek NWR for Wildland Urban Interface issues and hazardous fuels reduction projects for prescribed fire and or mechanical operations. As the Refuge has no equipment or fire qualified staff, the Ashland City Fire Department will handle structural fires. WIDNR will generally handle wildland fires, and provide fire suppression services on the Refuge with more cooperators becoming available for larger fires.

COOPERATIVE AGREEMENTS

The Whittlesey Creek National Wildlife Refuge and concerned easements are almost entirely surrounded by private lands, with some state and federal lands nearby. Historically the Refuge has not had much of a threat of wildland fires due to the moist climates, poorly drained soils and fuel types found on the Refuge property. However, should wildfire occur, the Refuge would work with local cooperators to suppress any wildland fire on Refuge property. Currently there is an agreement in place with the Ashland City Fire Department to provide for wildfire suppression on Refuge lands. Additional agreements with other cooperators may be developed as new land acquisitions extend to other fire protection zones. Agreements will be used to specify cooperator's role, response areas, communication frequencies, and suppression rates.

INTERAGENCY COORDINATION

Cooperative agreements with various federal, state and local agencies generally provide that resources of each agency are available to assist in initial attack efforts. As the Refuge has no equipment or qualified staff, the Ashland City Fire Department for structural fires; and the WI DNR and the Ashland City Fire Department for wildland fire, will generally provide suppression services for the Refuge.

Whittlesey Creek will use the Incident Command System (ICS) as a guide for fire line organization. Qualifications for individuals are per DOI Wildland Fire Qualifications and Certification System, part of National Interagency Incident Management System (NIIMS) and the National Wildfire Coordinating Group (NWCG) Wildland and Prescribed Fire

Qualification Guide (PMS 310-1). Depending on fire complexity, some positions may be filled by the same person.

Primary fire suppression cooperators, with contact numbers, are listed in the table below.

Table 5 - Cooperators

WIDNR, Washburn	(715) 373-6165
Ashland Fire Department	(715) 682-7052
Washburn Fire Department	(715) 373-6168

5. MONITORING AND EVALUATION

MONITORING

PRESCRIBED FIRE

Minimum Levels

At a minimum, permanent photo points should be installed and documented. Before and after photos will document the overall visual changes following prescribed fire operations. Future possibilities also include the use of annual infrared aerial photography to document and record vegetation changes over time due to the use of prescribed fire.

Intermediate Levels (example: NPS Fire Monitoring Handbook, 2001)

The National Park Service Fire Monitoring Handbook provides a reference to follow for monitoring guidance prior to the planned development of a Region 3 Fuel and Fire Effects Monitoring Handbook or Field Guide. Monitoring at levels 1 and 2 is preferred as a minimum level. A full PDF file version of the NPS Monitoring Handbook may be downloaded from the internet or a hardcopy may be obtained by contacting the National Park Service National Fire Office in Boise, ID.

Maximum Levels

If and when it becomes feasible, fire monitoring should become part of a comprehensive refuge monitoring program. All monitoring, (i.e. species surveys, water level monitoring, vegetation changes, fire effects, etc.) would be integrated into one program supporting adaptive management. The current FWS Promises Team efforts in this arena are addressing these needs. Specifically, the Wildlife and Habitat Promises Team recommendations WH8 Develop refuge inventory and monitoring plans for species; WH9 Design or use existing databases to analyze and archive information; and WH10 Develop systematic habitat monitoring programs directly meet these integrated fire management needs.

NON-FIRE TREATMENTS

Minimum Levels

As a minimum, permanent photo points should be installed and documented. Before and after photos will document the overall visual changes following mechanical operations.

Volume/Weight Removed Measures

At a higher level, information about the volume or weight of biomass removed is valuable to quantify treatment effects. Records of biomass removal are valuable for tracking ecosystem management.

EVALUATION

WILDLAND FIRE SUPPRESSION OPERATIONS

Review of Outside Resource Performance

Evaluation of outside resources (state agencies, other overhead or resources) will occur in accordance with guidance in the Fire Management Handbook, Section 3.6, Reviews.

Review of Internal Refuge Actions

Evaluation of Refuge suppression actions, if any, will be handled the same as the review of outside resource performance. The guidance found in the Fire Management Handbook, Section 3.6, Reviews will be followed.

EFFECTIVENESS OF PRESCRIBED FIRE OPERATIONS

The effectiveness of prescribed fire operations will be judged using the monitoring results developed in the section on monitoring above.

NATIONAL WILDLAND FIRE PERFORMANCE MEASURES

Projects or activities that relate to the National Fire Plan would be entered into NFPORS and reported through that system. It is expected that pre-settlement a Fire Regime I, probably with most ignitions anthropogenic in nature, existed. The current condition class of the Refuge is estimated as a combination of Condition Classes 1, 2 and 3.

6. GLOSSARY–USE NWCG ON-LINE GLOSSARY FOR COMMON TERMS

7. APPENDICES

APPENDIX A: REGIONAL REQUIREMENTS FOR NHPA

Preparation for prescribed fires such as constructing fire lines are subject to Section 106 of the National Historic Preservation Act. The procedures in the Notice dated December 8, 1999, "Historic Preservation Responsibilities," apply to the planning and preparation for conducting prescribed fires.

Efforts to control wildland fires (including prescribed fires that get out of control) are also subject to Section 106 of the National Historic Preservation Act. We will meet our obligations under this act in the following ways:

When the land covered by a wildfire has been inventoried to identify cultural resources, and the cultural resources have been evaluated for significance according to the criteria for the National Register of Historic Places, the Fire Management Officer will direct ground disturbing fire suppression efforts around (will avoid impacting) historic properties. Nevertheless, evidence of a previously undetected cultural resource may be encountered. The project leader shall immediately notify the Regional Historic Preservation Officer (RHPO). The RHPO will take immediate steps to have the cultural resource evaluated and protected, as appropriate, to the extent required by law and policy. This may require arranging for a qualified professional to visit and evaluate the site's importance and recommend a course of action. An evaluation and decision on the disposition of the cultural resource should be made within 48 hours of the discovery unless the project's schedule allows greater flexibility.

When the land covered by a wildfire has not been inventoried for cultural resources and wildfire suppression activities do result in ground disturbing activities, we will take the following action. Soon after fire control, the project leader will contact the RHPO to arrange for an archeologist to investigate the disturbed areas to determine if sites were affected.

Refuge operations and maintenance funds (sub-activity 1261) will pay the cost of these activities unless the action is an emergency archeological and historic property survey in unstable areas prone to further degradation (i.e., erosion) following a wildland fire or in association with an emergency fire rehabilitation treatment. Emergency archeological and historic property surveys in unstable areas prone to further degradation (i.e., erosion) following a wildland fire or in association with an emergency fire rehabilitation treatment, and archeological, historic structure, cultural landscape, and traditional cultural property resource stabilization and rehabilitation can be funded with emergency rehabilitation funding (sub-activity 9262).

APPENDIX B: ENVIRONMENTAL GUIDELINES FOR FOAM/RETARDANT USE

The following guidelines should be followed to minimize the likelihood of retardant chemicals entering a stream or other body of water.

- During training or briefings, inform field personnel of the potential danger of fire chemicals, especially foam concentrates, in streams or lakes.
- Locate mixing and loading points where contamination of natural water, especially with the foam concentrate, is minimal.
- Maintain all equipment and use check valves where appropriate to prevent release of foam concentrate into any body of water.
- Exercise particular caution when using any fire chemical in watersheds where fish hatcheries are located.
- Locate dip operations to avoid run-off of contaminated water back into the stream.
- Dip from a tank rather than directly from a body of water, to avoid releasing any foam into these especially sensitive areas.
- Use a pump system equipped with check valves to prevent flow of any contaminated water back into the main body of water.
- Avoid direct drops of retardant or foam into rivers, streams, lakes, or along shores. Use alternative methods of fire line building in sensitive areas.
- Notify proper authorities promptly if any fire chemical is used in an area where there is likelihood of negative impacts.
- While it is preferable that drops into or along any body of water not occur, it is possible that the fire location and surrounding terrain make it probable that some retardant may enter the water. The person requesting the retardant (such as the incident commander) must balance the impacts on the environment, i.e., potential fish kill, with the resources and values to be protected from the fire.

APPENDIX C: PRESCRIBED FIRE DOCUMENTS

Prescribed Fire Plan Format

PRESCRIBED FIRE PLAN

ADMINISTRATIVE UNIT(S): _____

PRESCRIBED FIRE NAME: _____

PREPARED BY: _____ _____

Name & Qualification

TECHNICAL REVIEW BY: _____ DATE: _____

Name & Qualification

COMPLEXITY RATING: _____

APPROVED BY: _____ DATE: _____

Agency Administrator

ELEMENT 2: AGENCY ADMINISTRATOR PRE-IGNITION APPROVAL CHECKLIST

Instructions: The Agency Administrator's Pre-Ignition Approval is the intermediate planning review process (i.e. between the Prescribed Fire Complexity Rating System Guide and Go/No-Go Checklist) that should be completed before a prescribed fire can be implemented. The Agency Administrator's Pre-Ignition Approval evaluates whether compliance requirements, Prescribed Fire Plan elements, and internal and external notifications have been or will be completed and expresses the Agency Administrator's intent to implement the Prescribed Fire Plan. If ignition of the prescribed fire is not initiated prior to expiration date determined by the Agency Administrator, a new approval will be required.

YES	NO	KEY ELEMENT QUESTIONS
		Is the Prescribed Fire Plan up to date? *Hints: amendments, seasonality.*
		Will all compliance requirements be completed? *Hints: cultural, threatened and endangered species, smoke management, NEPA.*
		Is risk management in place and the residual risk acceptable? *Hints: Prescribed Fire Complexity Rating Guide completed with rational and mitigation measures identified and documented?*
		Will all elements of the Prescribed Fire Plan be met? *Hints: Preparation work, mitigation, weather, organization, prescription, contingency resources*
		Will all internal and external notifications and media releases be completed? *Hints: Preparedness level restrictions*
		Will key agency staff be fully briefed and understand prescribed fire implementation?
		Are there any other extenuating circumstances that would preclude the successful implementation of the plan?
		Have you determined if and when you are to be notified that contingency actions are being taken? Will this be communicated to the Burn Boss?
		Other:

Recommended by: _____ Date: _____
FMO/Prescribed Fire Burn Boss

Approved by: _____ Date: _____
Agency Administrator

Approval expires (date): _____

ELEMENT 2: PRESCRIBED FIRE GO/NO-GO CHECKLIST

	YES	NO
A. Has the burn unit experienced unusual drought conditions or contain above normal fuel loadings which were not considered in the prescription development? If NO proceed with checklist., if YES go to item B.		
B. If YES have appropriate changes been made to the Ignition and Holding plan and the Mop Up and Patrol Plans? If YES proceed with checklist below, if NO STOP.		

YES	NO	QUESTIONS
		Are ALL fire prescription elements met?
		Are ALL smoke management specifications met?
		Has ALL required current and projected fire weather forecast been obtained and are they favorable?
		Are ALL planned operations personnel and equipment on-site, available, and operational?
		Has the availability of ALL contingency resources been checked, and are they available?
		Have ALL personnel been briefed on the project objectives, their assignment, safety hazards, escape routes, and safety zones?
		Have all the pre-burn considerations identified in the Prescribed Fire Plan been completed or addressed?
		Have ALL the required notifications been made?
		Are ALL permits and clearances obtained?
		In your opinion, can the burn be carried out according to the Prescribed Fire Plan and will it meet the planned objective?

If all the questions were answered "YES" proceed with a test fire. Document the current conditions, location, and results

_____ _____

Burn Boss Date

ELEMENT 3 COMPLEXITY ANALYSIS SUMMARY

PRESCRIBED FIRE NAME			
ELEMENT	**RISK**	**POTENTIAL CONSEQUENCE**	**TECHNICAL DIFFICULTY**
1. Potential for escape			
2. The number and dependence of activities			
3. Off-site Values			
4 On-Site Values			
5. Fire Behavior			
6. Management organization			
7. Public and political interest			
8. Fire Treatment objectives			
9 Constraints			
10 Safety			
11. Ignition procedures/ methods			
12. Interagency coordination			
13. Project logistics			
14 Smoke management			

COMPLEXITY RATING SUMMARY	
	OVERALL RATING
RISK	
CONSEQUENCES	
TECHNICAL DIFFICULTY	
SUMMARY COMPLEXITY DETERMINATION	
RATIONALE:	

ELEMENT 4: DESCRIPTION OF PRESCRIBED FIRE AREA

A. Physical Description

1. Location**:**
2. Size:
3. Topography:
4. Project Boundary:

B. Vegetation/Fuels Description:

1. On-site fuels data
2. Adjacent fuels data

C. Description of Unique Features:

ELEMENT 5: GOALS AND OBJECTIVES

A. Goals:

B. Objectives:

1. Resource objectives:
2. Prescribed fire objectives:

ELEMENT 6: FUNDING:

A. Cost:

B. Funding source:

ELEMENT 7: PRESCRIPTION

A. Environmental Prescription:

B. Fire Behavior Prescription:

ELEMENT 8: SCHEDULING

A. Ignition Time Frames/Season(s):

B. Projected Duration:

C. Constraints:

ELEMENT 9: PRE-BURN CONSIDERATIONS

A. Considerations:

1. On Site:

2. Off Site

B. Method and Frequency for Obtaining Weather and Smoke Management Forecast(s):

C. Notifications:

ELEMENT 10: BRIEFING

Briefing Checklist:

- □ Burn Organization
- □ Burn Objectives
- □ Description of Burn Area
- □ Expected Weather & Fire Behavior
- □ Communications

- Ignition plan
- Holding Plan
- Contingency Plan
- Wildfire Conversion
- Safety

ELEMENT 11: ORGANIZATION AND EQUIPMENT

A. Positions:

B. Equipment:

C. Supplies:

ELEMENT 12: COMMUNICATION

A. Radio Frequencies

1. Command Frequency(s):
2. Tactical Frequency(s):
3. Air Operations Frequency(s):

B. Telephone Numbers:

ELEMENT 13: PUBLIC AND PERSONNEL SAFETY, MEDICAL

A. Safety Hazards:

B. Measures Taken to Reduce the Hazards:

C. Emergency Medical Procedures:

D. Emergency Evacuation Methods:

E. Emergency facilities:

ELEMENT 14 TEST FIRE

A. Planned location:

B. Test Fire Documentation:

1. Weather conditions On-Site:

2. Test Fire Results:

ELEMENT 15: IGNITION PLAN

A. Firing Methods:

B. Devices:

C. Techniques:

D. Sequences:

E. Patterns:

F. Ignition Staffing:

ELEMENT 16: HOLDING PLAN

A. General Procedures for Holding:

B. Critical Holding Points and Actions:

C. Minimum Organization or Capabilities Needed:

ELEMENT 17: CONTINGENCY PLAN

A. Trigger Points:

B. Actions Needed:

C. Additional Resources and Maximum Response Time(s):

ELEMENT 18: WILDFIRE CONVERSION

A. Wildfire Declared By:

B. IC Assignment:

C. Notifications:

D. Extended Attack Actions and Opportunities to Aid in Fire Suppression:

ELEMENT 19: SMOKE MANAGEMENT AND AIR QUALITY

A. Compliance:

B. Permits to be Obtained:

C. Smoke Sensitive Areas/Receptors:

D. Impacted Areas:

E. Mitigation Strategies and Techniques to Reduce Smoke Impacts:

ELEMENT 20: MONITORING

A. Fuels Information (forecast and observed) Required and Procedures:

B. Weather Monitoring Required and Procedures:

C. Fire Behavior Monitoring Required and Procedures:

D. Monitoring Required To Ensure That Prescribed Fire Plan Objectives Are Met:

E. Smoke Dispersal Monitoring Required and Procedures:

ELEMENT 21: POST-BURN ACTIVITIES

Post-burn Activities That Must be Completed:

APPENDICES

A. Technical Review Checklist
B. Complexity Analysis
C. Job Hazard Analysis
D. Forms
E. Invasive Species Mitigation Plan
F. Maps

APPENDIX D: FMU PHYSICAL AND BIOLOGICAL ADDENDUM

Physiography

The Refuge is located on the eastern coast inland of Lake Superior in northern Wisconsin. The refuge is under management to restore the health of the mixed hardwood and coniferous forests, streams, sedge meadows, and open grasslands. Currently, work is being done to improve the streambeds of the refuge reducing the negative impacts on the watershed, and controlling and decreasing the presence of exotic and invasive species on the landscape. The refuge is primarily flat land with some drop near the streams.

Climatology

The climate of northern Wisconsin along Lake Superior is moderated by the lake, producing longer springs and falls, cooler summers and increased precipitation when compared to inland areas. Over the last 30 years, the average annual temperature was 40.5°F. The average temperature for January was 9.8°F and for July it was 67.2°F. The area averaged 40.4 days where the temperature was below 0°F and only 6.3 days above 90°F. The average annual precipitation over the past 30 years was 30.02 inches. The greatest precipitation falls from June to September. Average annual snowfall is 58.0 inches, which typically falls from November through March. The average growing season, using median of 28°F, is from May 18 to October 1 (135 days).

Fire Season

Typically, most areas of Wisconsin have a split fire season. The Spring fire season occurs from the time of snow off until the vegetation has begun its growth (green-up). This part of the fire season may run from March until early June. A fall fire season follows the growing season. It usually is enhanced or commences with the first frost which cures the grasses and fine fuels. It also signifies the end of that years growing season. The fall fire season may occur from September through mid-December depending on the precipitation and weather patterns. Given the dry and cold climate, fires may easily occur whenever a lack of precipitation has been evident for any period of days.

Soils

Loose rock and soil blankets the area to a depth of about 100 to 300 feet. This material ranges from clayey or loamy glacial till, sand and gravel outwash, and clayey and silty slack-water deposits (Ableiter, 1961). Red, clayey glacial till covers most of the lower portion of the Whittlesey watershed, from the lake level at an elevation of 600 feet above mean sea level (msl) to about 1,000 to 1,050 feet msl, approximately 6,300 acres. The upper watershed, above 1,050 feet, consists of predominately sandy outwash deposits covering about 5,300 acres. Scattered throughout are relatively small permanently saturated basins containing muck soils.

The character of the deposits, sand in the upper reaches and clays downstream, has a large influence on the hydrology of this stream. Few surface streams can be seen in the upper portion as the sand is 200 to 300 feet thick, and water percolates down to underlying bedrock or clay, where it travels laterally, "down slope," coming to the surface as innumerable seeps and springs.

These properties are responsible for the stable flow and constant temperature characteristic of Whittlesey Creek. The topography of the 540 acres within the Refuge can be characterized as flat to gently rolling.

Fish and Wildlife

Whittlesey Creek is an important component of the Lake Superior fishery, producing a disproportionate share of Coho salmon in the Wisconsin portion of the Lake Superior Watershed according to a 1992 WIDNR memorandum. A species list compiled from information gathered by the Wisconsin DNR and the Service's Sea Lamprey Management Program identified 21 species of fish, including seven salmonid species in Whittlesey Creek. Whittlesey Creek also supports a recreational fishery, primarily for brook trout (*Salvelinus fontinalis*) and rainbow trout (*Oncorhynchus mykiss*).

Waterfowl, neotropical migratory birds, raptors, and shorebirds, as well as several amphibian and state listed plant species of concern, will benefit from management of uplands and wetlands (Craven, 1985, Gullion, 1984). The 540 acres within the Refuge boundary will complement approximately 2,000 acres of adjacent coastal wetland/coastal floodplain habitat that is currently publically owned. These sites will provide nesting and breeding habitat for waterfowl and neotropical migrant birds. Area biologists have identified 226 species of birds in the area.

Mammals found on the Refuge include beaver (*Castor canadensis*), numerous small mammals, white-tailed deer (*Odocoileus virginianus*), bobcat (*Lynx rufus superiorensis*) and coyote (*Canis latrans*).

The special attention species fall into the categories listed below. The main categories are in priority order, but the subcategories within a particular category are parallel to each other.

1.) Species Identified by the Fish and Wildlife Service as Trust Responsibility.
   a. Migratory bird, especially waterfowl and nontropical migrants.
   b. Candidate threatened or endangered species under the auspices of the Endangered Species Act of 1973, as amended.

2.) Species Identified Nationally or Regionally by the Fish and Wildlife Service as Species of Special Concern.
   a. Region 3's Fish and Wildlife Resource Conservation Priorities. (U.S. Fish and Wildlife Service, 1998a)
   b. Migratory Nongame species of Management Concern. (U.S. Fish and Wildlife Service, 1987b and U.S. Fish and Wildlife 1998b).

3.) Species Listed as Endangered, Threatened, Candidate, or Special Concern Species pursuant to the Wisconsin Endangered Species Act.

There are no federally-listed species known to occur on the Refuge but the following species are notable:

Gray Wolf:

(*Canis lupis*): The gray wolf was delisted in 2007, relisted in 2008 and is considered endangered in Wisconsin. It occurs in and near forests in numerous Wisconsin counties. Population recovery is considered to be successful with numbers exceeding early

WIDNR predictions. Transient wolves are known to occur on the Refuge. Threats to wolves include habitat loss, illegal killing and car-kill.

Piping Plover: (*Charadrius melodus*)
The piping plover is listed as endangered in Wisconsin. It nests on bare shoreline adjacent to water. It is known to nest on Lake Superior shoreline in a few locations, including Long Island in Chequamegon Bay, as recently as 2006. There are no records of nesting pairs on or in the immediate vicinity of the Refuge and the shoreline habitat of the refuge is not adequate for piping plover. Piping plovers are occasionally spotted in the Bay during spring migration (Verch 1999) and have been seen near the mouth of Whittlesey Creek during migration (Ryan Brady, personal communication, Northern Great Lakes visitor Center, Ashland, WI). A threat to piping plovers that nest on Lake Superior is disturbance by people who use the shoreline for recreation, and predators such as fox, raccoon and skunks.

Canada Lynx:
This species is listed as threatened in Wisconsin. It occasionally is found in northern forest areas of the state. Bayfield and Ashland counties are included in the list of counties with the highest likelihood of occurrence, but lynx are considered to be very rare in Wisconsin, with only a few records in the state during the past 20 years (Joel Trick, personal communication, U.S. Fish and Wildlife Service, Green Bay, WI). Reasons for decline include changes in habitat that are detrimental to the prey (snowshoe hare); and increase in roads, which provide easier access for trappers, and competitors such as coyotes and wolves.

VEGETATION

Vegetation within the refuge boundary is defined by soil moisture. Most of the refuge lies within the floodplain of Whittlesey, Little Whittlesey and Terwilliger Creeks, or the lowlands along the Lake Superior shoreline. Soils are either seasonally flooded or saturated. Forested habitats resemble boreal forests that were cut over in the past 50 to 100 years. Balsam fir (*Abies balsamea*), trembling aspen (*Populus tremuloides*), white spruce (*Picea glauca*) and paper birch (*Betula papyrifera*) are dominant on drier and seasonally flooded sites. Black ash (*Fraxinus nigra*), red maple (*Acer rubrum*), Northern white cedar (*Thuja occidentalis*) and tamarack (*Larix laricina*) dominate on saturated sites.

Most of the Refuge acreage was cleared and farmed historically. Some of the fields continue to be hayed and are dominated by non-native species including timothy grass (*Phleum pratense*), fescue (*Festuca* spp.), reed canarygrass (*Phalaris arundinacea*) and birds-foot trefoil (*Lotus corniculatus*). Fields that are saturated most of the year have become dominated by reed canarygrass, with willow (*Salix* spp.), speckled alder (*Alnus rugosa*), red-osier dogwood (*Cornus sericea*), northern white cedar and tamarack interspersed.

Existing home sites within the refuge boundary contain planted pines, white spruce, Norway spruce (*Picea abies*) American elm (*Ulmus americana*), apple (*Pyrus* spp.) and ornamental shrubs.

Hydrology

Streams in this watershed include Whittlesey Creek, the North Fork of Whittlesey Creek and Little Whittlesey Creek. Whittlesey Creek currently has good water quality and is classified as an outstanding resource water. The stream is a class I trout water supporting both salmonid and non-salmonid fish species. It is also a regionally important spawning area for anadromous trout and salmon from Lake Superior.

Whittlesey Creek is a unique stream in that it relies heavily on groundwater as its primary hydrologic source, allowing it to flow year round (Johannes, et al, 1970). The lower elevation red clay areas of the watershed contain quantities of groundwater that is made available to the stream through substrate and adjacent springs. These active groundwater areas are found within the alluvial floodplain, and are biologically and hydrologically connected to the surface water of the system. They are significant to all stream organisms especially invertebrates. Habitat assessments have identified these zones as being intimately associated with fish spawning and rearing areas and are an important source of energy and nutrient transport. The 5,300 acre area of outwash material in the higher elevations is a valuable source area to recharge these lower zones confined by the clay plain.

Wetlands

There are a number of key wetland areas within the watershed. The coastal area at the mouth of Whittlesey Creek is a part of a large wetland/floodplain complex which extends from just north of the mouth of Fish Creek to the west edge of the City of Ashland. This wetland is a significant part of the wildlife habitat and aquatic resources of Chequamegon Bay. The area is used by many wildlife species and is an important area for migrating birds. The wetland portion of the mouth constitutes a rare coastal wetland. Measures are being taken to control purple loosestrife (*Lythrum salicaria*) in this area. The sand bedload resulting from stream bank erosion in the watershed is severely impacting the diversity of vegetation and water depths in both the estuary and the bay.

Wetland areas in the upland reaches of the watershed have a valuable hydrologic function in determining both the quality and quantity of water available. The ability of these areas to store and slowly transfer surface water to groundwater sources is what determines both the temperature and the base flow of Whittlesey Creek. Additionally the capacity to carry water periodically and seasonally allows them to function as flood control structures for the watershed.

Air Quality

This part of Wisconsin is considered to be Class II air quality meaning that, in this case, there should be no significant deterioration of air quality resulting from actions to implement this plan. Visibility is a factor to consider. Extensive visitor traffic passes through the Northern Great Lakes Visitor Center and the observation deck offers a significant viewshed.

APPENDIX E: THREATENED AND ENDANGERED SPECIES LIST

Wisconsin Endangered and Threatened Species List

Effective Dates of Listing

(A) October 1, 1972
(B) October 1, 1975
(C) May 1, 1978
(D) October 1, 1979
(E) November 1, 1981
(F) December 1, 1982
(F) December 1, 1982
(G) April 1, 1985
(H) August 1, 1989
(I) August 1, 1997
(J) October 1, 1999

MAMMALS

ENDANGERED

(A)	American Marten	*Martes americana*

THREATENED

(J)	Gray Wolf*	*Canis lupus*

BIRDS

ENDANGERED

(D)	Piping Plover**	*Charadrius melodus*
(H)	Trumpeter Swan	*Cygnus buccinator*
(H)	Yellow-throated Warbler	*Dendroica dominica*
(I)	Snowy Egret	*Egretta thula*
(B)	Peregrine Falcon**	*Falco peregrinus*
(H)	Worm-eating Warbler	*Helmitheros vermivorus*
(D)	Loggerhead Shrike	*Lanius ludovicianus*
(F)	Red-necked Grebe	*Podiceps grisegena*
(H)	Caspian Tern	*Sterna caspia*
(D)	Forster's Tern	*Sterna forsteri*
(D)	Common Tern	*Sterna hirundo*
(H)	Bewick's Wren	*Thryomanes bewickii*
(D)	Barn Owl	*Tyto alba*

THREATENED

(I)	Henslow's Sparrow	*Ammodramus henslowii*
(D)	Red-shouldered Hawk	*Buteo lineatus*
(D)	Great Egret	*Casmerodius albus*
(I)	Yellow Rail	*Coturnicops noveboracensis*
(I)	Spruce Grouse	*Dendragapus canadensis*
(H)	Cerulean Warbler	*Dendroica cerulea*
(H)	Acadian Flycatcher	*Empidonax virescens*
(H)	Yellow-Crowned Night-Heron	*Nyctanassa violaceus*
(H)	Kentucky Warbler	*Oporornis formosus*
(H)	Osprey	*Pandion haliaetus*
(D)	Greater Prairie-Chicken	*Tympanuchus cupido pinnatus*
(H)	Bell's Vireo	*Vireo bellii*
(H)	Hooded Warbler	*Wilsonia citrina*

REPTILES & AMPHIBIANS

ENDANGERED

(F)	Blanchard's Cricket Frog	*Acris crepitans blanchardi*
(D)	Slender Glass Lizard	*Ophisaurus attenuatus*
(A)	Queen Snake	*Regina septemvittata*
(B)	Massasauga Rattlesnake	*Sistrurus catenatus*
(A)	Ornate Box Turtle	*Terrapene ornata*
(D)	Western Ribbon Snake	*Thamnophis proximus*
(D)	Northern Ribbon Snake	*Thamnophis sauritus*

THREATENED

(B)	Wood Turtle	*Clemmys insculpta*
(D)	Blanding's Turtle	*Emydoidea blandingii*
(I)	Butler's Garter Snake	*Thamnophis butleri*

FISHES

ENDANGERED

(H)	Skipjack Herring	*Alosa chrysochloris*
(D)	Crystal Darter	*Crystallaria asprella*
(D)	Gravel Chub	*Erimystax x-punctata*
(D)	Bluntnose Darter	*Etheostoma chlorosomum*
(D)	Starhead Topminnow	*Fundulus dispar*
(D)	Goldeye	*Hiodon alosoides*
(D)	Striped Shiner	*Luxilus chrysocephalus*
(I)	Black Redhorse	*Moxostoma duquensnei*
(D)	Pallid Shiner	*Notropis amnis*
(D)	Slender Madtom	*Noturus exilis*

THREATENED

(D)	Blue Sucker	*Cycleptus elongatus*
(D)	Black Buffalo	*Ictiobus niger*
(D)	Longear Sunfish	*Lepomis megalotis*
(H)	Redfin Shiner	*Lythrurus umbratilis*
(D)	Speckled Chub	*Macrhybopsis aestivalis*
(H)	River Redhorse	*Moxostoma carinatum*
(H)	Greater Redhorse	*Moxostoma valenciennesi*
(H)	Pugnose Shiner	*Notropis anogenus*
(A)	Ozark Minnow	*Notropis nubilus*
(D)	Gilt Darter	*Percina evides*
(H)	Paddlefish	*Polyodon spathula*

INSECTS

ENDANGERED

(H)	Pecatonica River Mayfly	*Acanthametropus pecatonica*
(I)	Red-tailed Prairie Leafhopper	*Aflexia rubranura*
(H)	Flat-headed Mayfly	*Anepeorus simplex*
(H)	Swamp Metalmark	*Calephelis mutica*
(H)	Northern Blue Butterfly	*Lycaeides idas*
(H)	Giant Carrion Beetle**	*Nicrophorus americanus*
(H)	Powesheik Skipperling	*Oarisma powesheik*
(H)	Extra-striped Snaketail Dragonfly	*Ophiogomphus anomalus*
(I)	Saint Croix Snaketail Dragonfly	*Ophiogomphus susbehcha*
(H)	Silphium Borer Moth	*Papaipema silphii*
(H)	Phlox Moth	*Schinia indiana*
(I)	Warpaint Emerald Dragonfly	*Somatochlora incurvata*
(I)	Hine's Emerald Dragonfly**	*Somatochlora hineana*
(H)	Regal Fritillary	*Speyeria idalia*
(H)	Knobels Riffle Beetle	*Stenelmis knobeli*
(I)	Lake Huron Locust	*Trimerotropis huroniana*

THREATENED

(I)	Spatterdock Darner Dragonfly	*Aeshna mutata*
(H)	Frosted Elfin	*Incisalia irus*
(I)	Prairie Leafhopper	*Polyamia dilata*
(H)	Pygmy Snaketail Dragonfly	*Ophiogomphus howei*

SNAILS

ENDANGERED

(H)	Midwest Pleistocene Vertigo	*Vertigo hubrichti*
(H)	Occult Vertigo	*Vertigo occulta*

THREATENED

(H)	Wing Snaggletooth	*Gastrocopta procera*
(H)	Cherrystone Drop	*Hendersonia occulta*

MUSSELS

ENDANGERED

(H)	Spectaclecase	*Cumberlandia monodonta*
(H)	Purple Wartyback	*Cyclonaias tuberculata*
(H)	Butterfly	*Ellipsaria lineolata*
(H)	Elephant-Ear	*Elliptio crassidens*
(H)	Snuffbox	*Epioblasma triquetra*
(H)	Ebonyshell	*Fusconaia ebena*
(C)	Higgins Eye**	*Lampsilis higginsi*
(H)	Yellow/Slough Sandshell	*Lampsilis teres*
(H)	Bullhead	*Plethobasus cyphyus*
(H)	Rainbow	*Villosa iris*
(H)	Winged Mapleleaf**	*Quadrula fragosa*

THREATENED

(H)	Slippershell mussel	*Alasmidonta viridis*
(H)	Rock-Pocketbook	*Arcidens confragosus*
(H)	Monkeyface	*Quadrula metanevra*
(H)	Wartyback	*Quadrula nodulata*
(H)	Salamander Mussel	*Simpsonaias ambigua*
(H)	Buckhorn	*Tritogonia verrucosa*
(H)	Ellipse	*Venustaconcha ellipsiformis*

PLANTS

ENDANGERED

(E)	Carolina Anemone	*Anemone caroliniana*

(D)	Hudson Bay Anemone	*Anemone multifida*
(D)	Lake Cress	*Armoracia lacustris*
(G)	Purple Milkweed	*Asclepias purpurascens*
(D)	Green Spleenwort	*Asplenium trichomanes-ramosum*
(D)	Alpine Milk Vetch	*Astragalus alpinus*
(E)	Prairie Plum	*Astragalus crassicarpus*
(G)	Coopers Milk Vetch	*Astragalus neglectus*
(I)	Prairie Moonwort	*Botrychium campestre*
(E)	Moonwort	*Botrychium lunaria*
(G)	Goblin Fern	*Botrychium mormo*
(D)	Floating Marsh Marigold	*Caltha natans*
(G)	Wild Hyacinth	*Camassia scilloides*
(E)	Crow-spur Sedge	*Carex crus-corvi*
(I)	Smooth-sheathed Sedge	*Carex laevivaginata*
(D)	Hop-like Sedge	*Carex lupuliformis*
(D)	Intermediate Sedge	*Carex media*
(I)	Schweinitz's Sedge	*Carex schweinitzii*
(E)	Brook Grass	*Catabrosa aquatica*
(D)	Stoneroot	*Collinsonia canadensis*
(D)	Hemlock-parsley	*Conioselinum chinense*
(E)	Beak Grass	*Diarrhena americana*
(D)	Lanceolate Whitlow-cress	*Draba cana*
(I)	Neat Spike-rush	*Eleocharis nitida*
(I)	Wolf Spike-rush	*Eleocharis wolfii*
(D)	Angle-stemmed Spikerush	*Eleocharis quadrangulata*
(D)	Harbinger-of-Spring	*Erigenia bulbosa*
(D)	Chestnut Sedge	*Fimbristylis puberula*
(E)	Umbrella Sedge	*Fuirena pumila*
(D)	Northern Commandra	*Geocaulon lividum*
(G)	Pale False Foxglove	*Agalinus skinneriana*
(H)	Bog Rush	*Juncus stygius*
(H)	Prairie Bush Clover*	*Lespedeza leptostachya*
(E)	Dotted Blazing Star	*Liatris punctata*
(D)	Auricled Twayblade	*Listera auriculata*
(I)	Fly Honeysuckle	*Lonicera involucrata*
(E)	Smith Melic Grass	*Melica smithii*
(D)	Large-leaved Sandwort	Moehringia macrophylla
(I)	Mat Muhly	*Muhlenbergia richardsonis*
(I)	Louisiana Broomrape	*Orobanche ludoviciana*
(H)	Fassett's Locoweed*	*Oxytropis campestris*
(D)	Small-flowered Grass-of-Parnassus	*Parnassia parviflora*
(E)	Smooth Phlox	*Phlox glaberrima*
(E)	Butterwort	*Pinguicula vulgaris*
(D)	Heart-leaved Plantain	*Plantago cordata*
(H)	Eastern Prairie White-fringed Orchid*	*Platanthera leucophaea*
(I)	Western Jacob's Ladder	*Polemonium occidentale lacustre*
(D)	Pink Milkwort	*Polygala incarnata*
(G)	Spotted Pondweed	*Potamogeton pulcher*
(E)	Rough White Lettuce	*Prenanthes aspera*
(D)	Great White Lettuce	*Prenanthes crepidinea*
(D)	Pine-drops	*Pterospora andromedea*
(D)	Small Shinleaf	*Pyrola minor*
(E)	Small Yellow Water Crowfoot	*Ranunculus gmelinii*
(I)	Lapland Buttercup	*Ranunculus lapponicus*
(D)	Lapland Rosebay	*Rhododendron lapponicum*
(D)	Wild Petunia	*Ruellia humilis*
(D)	Sand Dune Willow	*Salix cordata*
(I)	Satiny Willow	*Salix pellita*
(I)	Hall's Bulrush	*Scirpus hallii*
(G)	Netted Nut-rush	*Scleria reticularis*
(G)	Small Skullcap	*Scutellaria parvula*
(E)	Selago-like Spikemoss	*Selaginella selaginoides*
(I)	Fire Pink	*Silene viginica*
(E)	Blue-stemmed Goldenrod	*Solidago caesia*
(D)	Lake Huron Tansy	*Tanacetum bipinnatum ssp.huronese*
(D)	Hairy Meadow Parsnip	*Thaspium barbinode*
(E)	Foamflower	*Tiarella cordifolia*
(I)	Purple False Oats	*Trisetum melicoides*
(D)	Dwarf Bilberry	*Vaccinium cespitosum*
(D)	Mountain Cranberry	*Vaccinium vitis-idaea*
(D)	Squashberry	*Viburnum edule*
(D)	Sand Violet	*Viola fimbriatula*

THREATENED

(D)	Northern Monkshood*	*Aconitum noveboracense*
(E)	Muskroot	*Adoxa moschatellina*
(G)	Round Stemmed False Foxglove	*Agalinus gattingeri*
(G)	Yellow Giant Hyssop	*Agastache nepetoides*
(D)	Small Round-leaved Orchis	*Amerorchis rotundifolia*
(G)	Prairie Indian Plaintain	*Arnoglossum plantagineum*
(I)	Dwarf Milkweed	*Asclepias ovalifolia*
(G)	Wooly Milkweed	*Asclepias lanuginosa*
(E)	Prairie Milkweed	*Asclepias sullivantii*
(H)	Pinnatifid Spleenwort	*Asplenium pinnatifidum*
(G)	Forked Aster	*Aster furcatus*
(G)	Kitten Tails	*Besseya bullii*
(G)	Sand Reed	*Calamovilfa longifolia*
(I)	Large Water Starwort	*Callitriche heterophylla*
(H)	Calypso Orchid	*Calypso bulbosa*
(H)	Carey's Sedge	*Carex careyana*
(D)	Beautiful Sedge	*Carex concinna*
(H)	Coast Sedge	*Carex exilis*
(H)	Handsome Sedge	*Carex formosa*
(G)	Garbers Sedge	*Carex garberi*
(D)	Lenticular Sedge	*Carex lenticularis*
(E)	Michaux's Sedge	*Carex michauxiana*
(H)	Drooping Sedge	*Carex prasina*
(H)	Prairie Thistle	*Cirsium hillii*
(D)	Dune Thistle*	*Cirsium pitcheri*
(D)	Rams-head Ladys-slipper	*Cypripedium arietinum*
(D)	White Ladys-slipper	*Cypripedium candidum*
(D)	English Sundew	*Drosera anglica*
(D)	Linear-leaved Sundew	*Drosera linearis*
(E)	Pale Purple Coneflower	*Echinacea pallida*
(G)	Beaked Spike Rush	*Eleocharis rostellata*
(E)	Thickspike Wheatgrass	*Elymus lanceolatus ssp. psammophilus*
(D)	Western Fescue	*Festuca occidentalis*
(D)	Blue Ash	*Fraxinus quadrangulata*
(G)	Yellowish Gentian	*Gentiana alba*
(I)	Cliff Cudweed	*Gnaphalium saxicola*
(G)	Round Fruited St. John's Wort	*Hypericum sphaerocarpum*
(D)	Dwarf Lake Iris*	*Iris lacustris*
(H)	Slender Bush Clover	*Lespedeza virginica*
(H)	Bladderpod	*Lesquerella ludoviciana*
(E)	Broad-leaved Twayblade	*Listera convallarioides*
(D)	Brittle Prickly Pear	*Opuntia fragilis*
(E)	Clustered Broomrape	*Orobanche fasciculata*
(D)	Marsh Grass-of-Parnassus	*Parnassia palustris*
(E)	Wild Quinine	*Parthenium integrifolium*
(E)	Sweet Coltsfoot	*Petasites sagittatus*
(D)	Tubercled Orchid	*Platanthera flava*
(H)	Bog Bluegrass	*Poa paludigena*
(E)	Braun's Holly Fern	*Polystichum braunii*
(D)	Prairie-parsley	*Polytaenia nuttallii*
(D)	Algal-leaved Pondweed	*Potamogeton confervoides*
(G)	Sheathed Pondweed	*Potamogeton vaginatus*
(E)	Seaside Crowfoot	*Ranunculus cymbalaria*
(E)	Bald Rush	*Rhynchospora scirpoides*
(E)	Hawthorn-leaved Gooseberry	*Ribes oxyacanthoides*
(I)	Flat-leaved Willow	*Salix planifolia*
(I)	Tussock Bulrush	*Scirpus cespitosus*
(I)	Plains Ragwort	*Senecio indecorus*
(I)	Snowy Campion	*Silene nivea*
(D)	Dune Goldenrod	*Solidago simplex var. gillmanii*
(I)	Clustered Bur Reed	*Sparganium glomeratum*
(E)	False Asphodel	*Tofieldia glutinosa*
(D)	Snow Trillium	*Trillium nivale*
(E)	Spike Trisetum	*Trisetum spicatum*
(E)	Marsh Valerian	*Valeriana sitchensis*

*** also Federally Endangered*
** also Federally Threatened*

A Reminder

The Department of Natural Resources reminds you that the Endangered and Threatened Species list is only a first step toward identifying a problem that exists. It

Most Current List Available from the WI- DNR

APPENDIX F: COMMUNICATIONS

Communications

Radio Frequencies- Whittlesey Creek National Wildlife Refuge does not have radio equipment or repeaters in operation.

FWS Telephone Numbers

Name	Work #	Cell #	Home #	*Position*
Tom Kerr	715-246-7784	715-781-4105	-xxxx	*Refuge Mgr.*
Joel Kemm	715-246-7784	715-781-2893	-xxxx	*Prescribe fire Specialist-St. Croix*
Tracy Ronnander	715-246-7784	715-781-4108	-xxxx	*Range Technician – Fire St. Croix*
Katie Goodwin	715-685-2645		-xxxx	*Visitor Services Manager*
Mike Mlynarek	715-685-2666		-xxxx	*Biologist*
Jeannie VanBeek	715-246-7784			*Admin Technician*
Tom Zellmer	608-742-7100 x12	920-948-4806	-xxxx	*Zone FMO*
Steve Jakala	612-713-5366	612-817-6797		*Regional Coord.*
Tim Hepola	5479	612-309-0119		*Reg. Fire Ecolog*

Area Phone numbers of interest

Wisconsin Interagency Fire Center WIC (715) 358-6863
Chequamegon National Forest- Washburn Ranger Station- (715) 373-2667
Wisconsin DNR- Washburn (715) 373-6165
Bayfield County Dispatch (715) 373-6120
Washburn Volunteer Fire Department (715) 373-6168
Ashland City Fire Department (715) 682-7052

R3 Fire Contacts

Name	Title	Desk	Cell	Fax
Steve Jakala	Fire Coordinator	612-713-5366	612-817-6797	612-713-5287
Valdo Calvert	WUI Coordinator	5445	612-803-5384	5286
Tim Hepola	Fire Ecologist	5479	612-309-0119	5287
Deb Daniel	Personnel	5228		
Ken Kaseforth	Contracting Officer	5219		5151
Tom Zellmer	Central ZFMO	608-742-7100 x12	920-948-4806	608-745-0866
Dan Dearborn	West ZFMO	320-273-2191	320-815-0994	320-273-2231
Cliff Berger	South ZFMO	217-224-8580	217-242-7767	217-242-7767
Steve Nurse	East ZFMO	989-826-1783	989-329-2999	
Paul Charland	Central WUI Coordinator	608-742-7100 x23	920-948-4875	608-745-0866
	West WUI Coordinator			
Chad Loreth	South WUI Coordinator			
	East WUI Coordinator			

Central Zone Stations & Fire Contacts

Station	Org Code	Fire Contact	Fire Phone	Project Leader	PL Phone	Fire Fax
Horicon NWR	32520	Sean Sallmann	920-387-2658 x27	Patti Meyers	920-387-2658	920-387-2973
Leopold WMD	32525	Tom Zellmer	608-742-7100 x12	Steve Lenz	x11	608-745-0866
Necedah NWR	32530	Tate Fisher	608-565-4410	Larry Wargowsky	608-565-4400	608-565-4419
St. Croix WMD	32577	Joel Kemm	715-246-7784 x17	Tom Kerr	715-246-7784	715-246-4670
Trempealeau NWR	32578			Vicki Hirschboeck	507-454-7351	507-452-0851
Upper Miss La Crosse District	32572			Jim Nissen	608-783-8405	608-783-8452
Whittlesey Creek NWR	32620			Tom Kerr	715-246-7784	715-246-4670
Madison PLO		Mike Engel	608-261-1206 x21	Jim Ruwaldt	608-221-1206	608-221-1357

APPENDIX G: MECHANICAL TREATMENT PROJECT TRACKING SHEET

Project Tracking Sheet

Whittlesey Creek National Wildlife Refuge

County_____
Refuge Location or Easement_____
Lead staff_____
Type of Project_____
Project Description

Date	Initial	Action	Notes
		Compatibility Determination Complete	Name of CD:
		EAS – NEPA documentation	
		Intra-service section 7	
		Archeological RHPO review	
		Permits complete	Name permits:
		PR complete	
		Contract or force account	
		Funding source	
		Utility call – Diggers Hotline	Ticket #:
		Before photo	Location:
		Project start date	
		Contractor/staff name	
		Project completion date	
		After photo	
		Aerial photo for file	
		WMD GIS entry	
		Project Monitoring	

APPENDIX H: ENVIRONMENTAL ASSESSMENT TO THE WHITTLESEY CREEK NWR FIRE MANAGEMENT PLAN

ENVIRONMENTAL ASSESSMENT to the WILDLAND FIRE MANAGEMENT PLAN for WHITTLESEY CREEK NATIONAL WILDLIFE REFUGE

2009

Selection of Alternative
and
Finding of No Significant Impact (FONSI)
to the
Whittlesey Creek NWR Fire Management Plan and Environmental Assessment

An Environmental assessment (EA) has been prepared to identify the possible fire management options and alternatives along with the corresponding environmental consequences of such alternatives to the Whittlesey Creek NWR. This EA was written following the guidelines as set forth in the National Environmental Policy Act of 1969 (NEPA). This EA addressed two action alternatives along with evaluating the consequences of the no-action alternative.

Alternative Selection: The preferred alternative selected was alternative A which includes important and critical habitat restoration of the mixed coniferous and deciduous forest ecosystem with inner lying open grasslands and sedge marshes. The habitat management and restoration is dependent upon the use of prescribed fire to successfully restore these sites.

Justification: The fire management program to be implemented on the Whittlesey Creek NWR will successfully preserve and restore mixed coniferous and deciduous forest forests, wetland, and grassland habitats for the myriad of fish and wildlife species dependent upon fire adapted ecosystems.

Finding of No Significant Impact: Based upon an evaluation of the information contained within this EA and the Fire Management Plan, I have determined that implementing the preferred alternative A is not a major Federal action that would alter and negatively impact the quality of the human environment within the context of Section 102(2)c of the National Environmental Policy Act of 1969. An Environmental Impact Statement will not be necessary to prepare. This decision is based upon the following facts:

1) Implementation of the fire program will restore and maintain critical mixed coniferous and deciduous forest habitat and associated wetland and grassland ecosystems originally associated with the mixed coniferous and deciduous forest landscape.
2) Minimal impacts will occur to any soil and water resources. These resources will be enhanced through restoration of natural water flows and nutrient movement and cycling.
3) Cultural resource sites discovered will be protected from disturbance.
4) Refuge lands contain no federally-listed threatened *(transient wolves occur!)* or endangered species at this time. Since the range of the Piping plover and the Canadian Lynx could overlap the Refuge, an Intra-Service Section 7 Biological Evaluation was prepared in the event that suitable habitat is found on Refuge Lands. At this time, fire activities will have no effect on federally listed species.

_____
Regional Director, FWS, Region 3

Date:

UNITED STATES FISH & WILDLIFE SERVICE

ENVIRONMENTAL ACTION STATEMENT

Within the spirit and intent of the Council of Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA) and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and have determined that the action of (describe action):

Implementing the Whittlesey Creek NWR Fire Management Plan (2009)

____ is a categorical exclusion as provided by 516 DM 6, Appendix 1 and 516 DM 2, Appendix 1. No further documentation will therefore be made.

___ is found not to have significant environmental effects as determined by the attached Environmental Assessment and Finding of No Significant Impact.

____ is found to have significant effects, and therefore further consideration of this action will require a notice of intent to be published in the Federal Register announcing the decision to prepare an EIS.

____ is not approved because of unacceptable environmental damage, or violation of Fish and Wildlife Service mandates, policy, regulations, or procedures.

____ is an emergency action within the context of 40 CFR 1506.11. Only those actions necessary to control the immediate impacts of the emergency will be taken. Other related actions remain subject to NEPA review.

Other supporting documents (list):

___ Environmental Assessment and FONSI

___ Public comments

___ Intra-Service Section 7 Evaluations

_____ _____

(1) Refuge Manager Date (2) RHPO Date

_____ _____

(3) REC Date (4) RD Date

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Environmental Assessment for the Whittlesey Creek National Wildlife Refuge Fire Management Plan

Abstract

The U.S. Fish and Wildlife Service is proposing to implement a Fire Management Plan (FMP) for the Whittlesey Creek National Wildlife Refuge located in northern Wisconsin along the Lake Superior Coastline. This plan will specify a fire management direction for Whittlesey Creek NWR, as described in detail through a set of goals, objectives, and strategies. This Environmental Assessment (EA) considers the biological, environmental, and Socio-economic effects that implementing the FMP (the preferred alternative) and other management alternatives will have on the most significant issues and concerns identified during the planning process.

Responsible Agency and Official:

Regional Director - Tom Melius
U.S. Fish and Wildlife Service, Henry Whipple Federal Building, One Federal Drive, Fort Snelling, MN 55111-4056

Additional Contacts for information regarding this Fire Management Plan and Environmental Assessment are:

Tom Kerr, Refuge Manager, Whittlesey Creek National Wildlife Refuge, 29270 County Highway G Ashland, WI 54806

Joel Kemm, Prescribed Fire Specialist, St Croix Wetland Management District, New Richmond, WI 54017

Tom Zellmer, Zone Fire Management Officer Leopold Wetland Management District, W10040 Cascade Mountain Road, Portage, WI 53901

Tim Hepola Regional Fire Ecologist
U.S. Fish and Wildlife Service, Henry Whipple Federal Building, One Federal Drive, Fort Snelling, MN 55111-4056

Chapter 1

Purpose and Need for the Proposed Action

Purpose:

The purpose of the Environmental Assessment is to consider various alternatives for managing fire at the Whittlesey Creek National Wildlife Refuge. This management direction is described in detail through a set of goals, objectives, and strategies in the Fire Management Plan (FMP). The action is needed to address current management issues and to establish what action will be taken in regard to future use of fire as a management tool and fire suppression efforts.

This Environmental Assessment (EA) was prepared using the guidelines of the National Environmental Policy Act of 1969. The Act requires us to examine the effects of proposed actions on the natural and human environment. In the following sections, alternatives for future Refuge fire management, the environmental consequences of each alternative, and the preferred management direction are described.

Need:

In order to meet Federal and specifically FWS regulations, an approved fire management plan must be in place before any prescribed burning may take place on Whittlesey Creek National Wildlife Refuge. The 1995 Final Report of the Federal Wildland Fire Management Policy and Program Review provides guiding principles that are fundamental to the success of the Federal wildland fire management program and implementation of review recommendations. These recommendations include Federal wildland fire policies in the areas of: safety, planning, wildland fire, prescribed fire, preparedness, suppression, prevention, protection priorities, interagency cooperation, standardization, economic efficiency, wildland/urban interface, and administration and employee roles. The 2001 Federal Fire Management Policy update addresses 17 distinct items, the foremost being safety; all FMPs and fire management activities must reflect this commitment.

The Federal Wildland Fire Management Policy that now governs wildland fire management provides for a full range of responses and the opportunity for wildland fires to be managed for resource benefits. This policy represents a significant departure from past fire management practices. All ignitions occurring in wildland areas are now classified as wildland fires or prescribed fires. Wildland fires include any non-structure fire, other than prescribed fire, that occurs in the wildland, regardless of whether the origin is natural (generally lightning) or human (accident or arson). All wildland fires will receive a suppression response. Prescribed fires include any fire ignited by management actions to meet specific objectives. Prior to the ignition of prescribed fires, a written, approved prescribed fire plan must exist, and NEPA requirements must be met. This EA constitutes the requisite NEPA documentation and compliance for the FMP.

Specific needs include:

. • Wildland fires are managed with the appropriate response as directed by the FMP and analysis of the specific situation.

. • Minimize burned area due to high values to be protected, threats to life or property, or other social, political, and economic considerations that outweigh potential environmental benefits.

. • Implement a wildland fire suppression decision-making process that evaluates and compares alternative strategies with respect to safety, environmental, social, economic, political, and resource management objectives.

. • Meet current Departmental and Service policies as well as Congressional direction regarding need for consistent, up-to-date FMPs.

. • Plan for use of prescribed fire to restore the historic role of fire to fire dependent or fire adapted habitats.

. • Use prescribed fire, chemical treatments, mechanical treatments, or other appropriate tools to reduce hazardous fuels to protect both Refuge improvements and reduce risk of fire escape to adjacent land ownerships.

Background:

Whittlesey Creek National Wildlife Refuge (Refuge) was established with the first purchase of land by the U.S. Fish and Wildlife Service (Service) in October, 1999. Located in the Town of Barksdale, Bayfield County, Wisconsin, the purpose of the Refuge is the development, advancement, management, conservation, and protection of fish and wildlife resources. The Service is working with individuals, groups, and other governmental entities to protect and restore coastal wetland and stream habitats that are utilized by migratory trout and salmon from Lake Superior and by migratory birds. Up to 540 acres of coastal wetland, floodplain and upland will be acquired in fee title, and up to 1260 acres will be protected through conservation easements in the Whittlesey watershed. Currently, the refuge owns 280 acres.

Additional areas managed by the Refuge under Conservation Easements remote from the Refuge are included by reference in this plan. All easements are to be considered Refuge in this document for the management of wildland fire, prescribed fire, and mechanical treatments. Table 3 (found in Appendix A) lists the name, location, and size for all easements currently under the management of the Whittlesey Creek NWR. In addition to the table there are several maps in Appendix B that show the location of the easements.

Figure 1 - Vicinity Map

Decision Framework:

The Regional Director for the Great Lakes-Big Rivers Region (Region 3) of the U.S. Fish and Wildlife Service will use this Environmental Assessment to select one of the alternatives and determine whether the alternative selected will have significant environmental impacts, requiring preparation of an Environmental Impact Statement (EIS). It is recommended that the reader refer to the Fire Management Plan (FMP) for Whittlesey Creek National Wildlife Refuge when reviewing this Environmental Assessment. An FMP is needed to address current management issues, propose a plan of action, and meet current policy which the Service and its partners can use to achieve the future vision for the Refuge.

Policy, Authority, Legal Compliance, and Compatibility:

The National Wildlife Refuge System includes Federal lands managed primarily to provide habitat for a diversity of wildlife species. The purpose(s) for which a particular National Wildlife Refuge is established are specified in the authorizing document for that Refuge. These purposes guide the establishment, design, and management of the Refuge.

Additional authority delegated by Congress, Federal regulations/guidelines, Executive Orders and several management plans guide the operation and the management of the Refuge and provide the framework for the U.S. Fish and Wildlife Service's proposed action. The key statutes and orders that guide Whittlesey Creek NWR are summarized in the following section and under Authorities For FMP Development, page 8, of the FMP.

Lacey Act of 1900, as amended (16 U.S.C. 701)
Under this Law, it is unlawful to import, export, sell, acquire, or purchase fish, wildlife or plants taken, possessed, transported, or sold: 1) in violation of U.S. or Indian law, or 2) in interstate or foreign commerce involving any fish, wildlife, or plants taken possessed or sold in violation of State or foreign law.

Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711) Migratory Bird Treaty Act of 1978 (40 Stat. 755)
The original 1918 statute implemented the 1916 convention between the U.S. and Great Britain (for Canada) for the protection of migratory birds. The 1978 Act amended the MBTA to authorize forfeiture to the U.S. of birds and their parts illegally taken, for disposal by the Secretary as he deems appropriate. Public Law 95-616 also ratified a treaty with the former Soviet Union specifying that both nations will take measures to protect identified ecosystems of special importance to migratory birds against pollution, detrimental alterations, and other environmental degradations.

Migratory Bird Conservation Act (1929), as amended (16 U.S.C. 715-715s)
The Act of 1929 established a Migratory Bird Conservation Commission to approve areas recommended by the Secretary of Interior for acquisition with Migratory Bird Conservation Funds. The Secretary of Interior is authorized to cooperate with local authorities in wildlife conservation and to conduct investigations, to publish documents related to North American birds, and to maintain and develop refuges.

Refuge Improvement Act (1997)
This Act calls for managing the National Wildlife Refuge System to conserve biological diversity by applying the latest scientific information and methods to Refuge management and its evaluation, and by expanding the system through planned land acquisition. The Act also addresses how to determine the compatibility of each activity or "use" allowed on a refuge with the purpose of the refuge and the "wildlife first" mission of the National Wildlife Refuge System. It also requires each Refuge to develop a 15-year comprehensive conservation plan.

Fish and Wildlife Coordination Act (1934), as amended (16 U.S.C. 661-666).
The Act of 1934 authorizes the Secretaries of Agriculture and Commerce to provide assistance to and cooperate with Federal and State agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, as well as to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife. In addition, this Act authorizes the preparation of plans to protect wildlife resources, the completion of wildlife surveys on public lands, and the acceptance by the Federal agencies of funds or lands for related purposes, provided that land donations received the consent of the State in which they are located.

Refuge Recreation Act, as amended, (Public Law 87-714.76 Sta. 653; 16 U.S.C. 460k 4 September 28, 1962).
This Act authorized the Secretary of the Interior to administer Refuges, hatcheries, and other conservation areas for recreational use, when such uses do not interfere with the area's primary purposes.

National Wildlife Refuge System Administration Act of 1966 (U.S.C. 668dd-668ee). This Act provides guidelines and directives for administration and management of all areas in the system, including "wildlife refuges, areas for the protection and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, or waterfowl production areas."

Fish and Wildlife Conservation Act of 1980 (Public Law 96-366, dated September 29, 1980). ("Non-game Act") (16 U.S.C. 2901-2911; 94 Stat. 1322).

Public Law 96-366 authorized the Service to monitor and assess migratory non-game birds, determine the effects of environmental changes and human activities, identify those likely to become candidates for endangered species listing, identify appropriate actions, and report to Congress 1 year from enactment. It also requires the Service to report at 5 year intervals on actions taken.

The National Wilderness Preservation Act of 1964 Public Law 88-577 (16 U.S.C. 1131-1136)
Established a National Wilderness Preservation System for the permanent good of the whole people, and for other purposes. From this Act, Wilderness Areas are designated.

The Protection of Timber Act of 1922 (42 Stat.857; 16 U.S.C. 594)
Provides basic authority for the Secretary of the Interior to protect timber of lands under the Department's jurisdiction from fire, disease, and insects.

The Federal Noxious Weed Act Public Law 93-629 (7 U.S.C. 2801 et. Seq.; 88Stat. 2148)
Established a program to control the spread of noxious weeds.

Fish and Wildlife Act of 1956, as amended [16 U.S.C. ss 742f (a) (4) (5)].
This Act is the specific law granting authority for acquiring lands for national wildlife refuges. Under this Act, the Secretary of the Interior is authorized to take steps as may be required for the development, advancement, management, conservation, and protection of fish and wildlife resources including but not limited to research, development of existing facilities, and acquisition by purchase or exchange of land and water or interests therein. The Act also authorizes the Service to accept gifts of real or personal property for its benefit and use in performing its activities and services. Such gifts qualify under Federal income, estate, or gift tax laws as a gift to the United States.

Land and Water Conservation Fund Act of 1965.
This Act provides funding through receipts from the sale of surplus Federal land, appropriations from oil and gas receipts from the outer continental shelf, and other sources for land acquisition under several authorities. Appropriations from the Fund may be used for matching grants to the states for outdoor recreation projects and for land acquisition by various Federal agencies, including the Service.

The Refuge Revenue Sharing Act of 1935, as Amended.
This Act established procedures for making payments to counties in which national wildlife refuges are located. Such payments come from revenues derived from the sale of products and privileges from national wildlife refuges, supplemented by Congressional appropriations. The revenues are deposited in a special Treasury account, and net receipts from this are distributed to counties or other units of local government to help offset their loss of tax revenue that occurs when land for national wildlife Refuges is acquired by the Federal Government and removed from tax rolls. Three formulas are used to determine payments.

Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands).
These Orders prohibit any significant changes to the natural and beneficial values of floodplains or wetlands and require avoidance of direct and indirect support of floodplain development.

Executive Order 12996 (Management and Public Use of the National Wildlife Refuge

System).
This order defines a conservation mission for the Refuge System to "preserve a national network of lands and waters for the conservation and management of fish, wildlife, and plants of the United States for the benefit of present and future generations." Six compatible Wildlife-dependent recreational activities (hunting, fishing, wildlife observation, photography, environmental education, and interpretation) are defined as priority uses. The order also provides for the identification of existing wildlife-dependent uses that would continue to occur as lands are added to the system. The order defines four guiding principles for management: habitat conservation, public use, partnerships, and public involvement.

National Environmental Policy Act of 1969, as Amended.
Established a National policy for the environment. Preparation of this EA is a part of the Service's compliance.

Executive Order 12372 (Intergovernmental Review of Federal Programs).
In compliance, copies of this EA will be sent to the Minnesota Clearinghouse.

Clean Water Act, as Amended.
Section 404 of this Act requires that a U.S. Army Corps of Engineers permit be obtained prior to dredging or filling in waters of the United States.

Endangered Species Act of 1973, as Amended
Provided for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend, through Federal and State actions. A consultation pursuant to Section 7 of the Endangered Species Act was conducted as part of this project to ensure that the proposal would not affect the continued existence of any endangered or threatened species in the project area or result in destruction or adverse modification of their critical habitats.

National Historic Preservation Act.
Section 106 of the Act of 1966 requires Federal agencies to consider the effects of their undertakings on properties meeting the criteria for the National Register of Historic Places. The regulations in 36 CFR, Part 800, describe how Federal agencies are to identify historic properties, determine effect on significant historic properties, and mitigate adverse effects. Section 110 of the 1966 Act codifies the salient elements from Executive Order 11593, "...to ensure that historic preservation is fully integrated into the ongoing programs and missions of Federal agencies." Section 110 also requires each Federal agency to establish a program to inventory all historic properties on its land.

Archaeological Resources Protection Act.
Section 14 of this Act of 1979 requires an inventory program of all Federal lands. It applies to the protection of all archeological sites more than 100 years old (not just sites meeting the criteria for the National Register) on Federal land and requires archaeological investigations on Federal land be performed in the public interest by qualified persons.

The Native American Graves Protection and Repatriation Act of 1990.
This Act directed Federal agencies to protect Native American human remains and associated burial items located on or removed from Federal land.

Chapter 2

Management Alternatives

Introduction:

The following alternatives are viable management alternatives developed with input from knowledgeable individuals and scrutinized by impartial professionals. **The alternatives are:**

Alternative A: ***(Preferred) Prescribed burning would be utilized as a management tool. All wildland fires will be suppressed.***

Alternative B: ***(No Action) No prescribed burning will be used. All wildland fires will be immediately suppressed.***

Alternative C: ***No prescribed burning will be used. All wildland fires will be monitored and managed accordingly.***

Descriptions of Alternatives

Alternative A: (Preferred) Prescribed burning would be utilized as a management tool. All wildland fires will be suppressed.

This alternative would allow for flexibility when considering management options. There are many benefits to the use of prescribed burning which, when combined with other management techniques such as mechanical and chemical treatments, allows for the best habitat management results. A considerable amount of effort will be expended in restoring the mixed coniferous and deciduous forest ecosystem with open grasslands and sedge meadow habitat. The use of prescribed fire will allow for the successful re-establishment and restoration of these sensitive habitat areas. Not only can time and money be saved on labor costs and chemicals, but the effects of fire management will meet habitat objectives in this ecosystem better than any other method.

All wildland fires will be suppressed. Without the proper site preparation and pre-ignition controls involved in prescribed burning, wildland fires will have a greater likelihood of adversely affecting life, personal property, facilities, infrastructure and/or endangered species. Wildland fires will be suppressed utilizing Minimum Impact Suppression Techniques (MIST).

Alternative B - (No Action) No prescribed burning will be used. All wildland fires will be immediately suppressed.

This alternative prevents the use of prescribed burning as a management tool. Other, less effective and less efficient measures will be used to accomplish management objectives. All wildland fires will be suppressed immediately. The wetlands and water that are interspersed throughout the Refuge and the easements would act to help contain wildland fires and reduce the occurrence of ignition. Without the proper site preparation and pre-ignition controls involved in prescribed burning, wildland fires have greater likelihood of affecting life, personal property, facilities, infrastructure and/or endangered species. Wildland fires will be suppressed utilizing Minimum Impact Suppression Techniques (MIST).

Alternative C - No prescribed burning will be used. All wildland fires will be monitored and suppressed accordingly.

This alternative prevents the use of prescribed burning as a management tool. Wildland fires would be allowed to burn in all areas of the Refuge and easements, as long as they meet the following criteria:

. • must not endanger human life or health.
. • must not endanger private or government-owned property.
. • benefits must outweigh damage to natural resources.
. • must not have any negative impact on endangered, threatened, or rare species.
. • must be capable of being easily brought under control with the resources immediately available.
. • are subject to a daily review of fire behavior and conditions in a Wildland Fire Implementation Plan. Wildland fires will be suppressed utilizing Minimum Impact Suppression Techniques (MIST).

.

Chapter 3

Affected Environment

General

The refuge includes 540 acres of land to be acquired in fee-title. To date, the Service has acquired about 280 acres. The Service can also acquire up to 1,260 acres of easements in the watershed, with one 40 acre easement secured in 2007.A detailed description of the ecology of the refuge and Whittlesey Creek watershed is provided in the Habitat Management Plan. A summary is provided in this document.

Physical Features

The refuge is located in the coastal area of Lake Superior at the mouth of Whittlesey Creek, which is part of a large wetland complex that extends from just north of the mouth of Whittlesey Creek to the west edge of the City of Ashland, Wisconsin. This coastal wetland complex is a significant part of the wildlife habitat and aquatic resources of Chequamegon Bay. The area is used by many fish and wildlife species and is an important area for migrating birds

.

The refuge also encompasses the mouth of Whittlesey Creek, so it is located at the downstream end of the Whittlesey Creek watershed. The Whittlesey Creek Priority Watershed Project plan provided a description of the watershed (Gardner and Malischke 1996). The Whittlesey watershed, including both groundwater and surface water drainages, covers 18 square miles.

Characteristics include:

· Land uses in the watershed are agriculture and forest related. The area is dotted with farms and rural dwellings.

· Public lands within the watershed include about 7,600 acres within the Chequamegon National Forest boundary.

· Agricultural lands account for 14% of the total drainage area, and 50% of the total are National Forest lands. The remaining 36% of the area includes wetlands, woodlands, riparian lands and home sites.

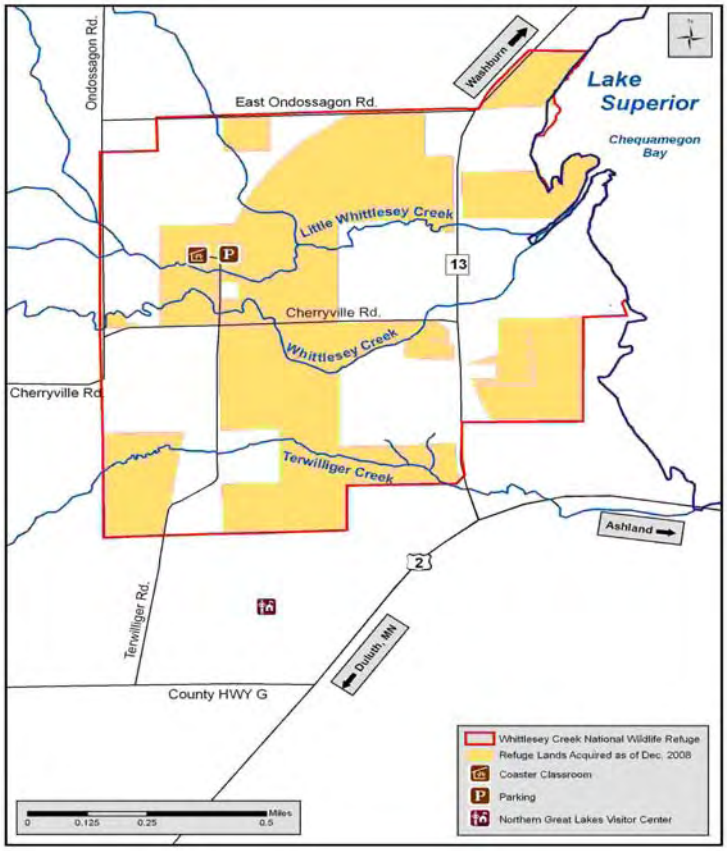
· Although there has been a decline in the number of operations, agriculture is still an important land use in the watershed.

· Whittlesey Creek currently has good water quality and is classified as an outstanding resource water.

· The stream is a class I trout water supporting both salmonid and non-salmonid fish species. It is also a regionally important spawning area for potadromous trout and salmon from Lake Superior.

Figure 2 State Wide Location Map

Figure 3 Whittlesey Creek National Wildlife Refuge Area Map



Climate

The climate of northern Wisconsin along Lake Superior is moderated by the lake, producing longer springs and falls, cooler summers and increased precipitation when compared to inland areas. Over the last 30 years, the average annual temperature was 40.5°F. The average temperature for January was 9.8°F and for July it was 67.2°F. The area averaged 40.4 days where the temperature was below 0°F and only 6.3 days above 90°F. The average annual precipitation over the past 30 years was 30.02 inches. The greatest precipitation falls from June to September. Average annual snowfall is 58.0 inches, which typically falls from November through March. The average growing season, using median of 28°F, is from May 18 to October 1 (135 days).

Pre-Settlement Vegetation

Pre-settlement vegetation was documented by the Public Land Survey (PLS) conducted from 1833-1866. Public Land Survey records were written in the 1850's and 1860's (in northern Wisconsin) by the first surveyors who mapped the region. While establishing section lines, they documented tree species, understory species, soil conditions, and notable features such as streams or villages. This information is available from the University of Wisconsin Library website: http://digicoll.library.wisc.edu/SurveyNotes/SurveyInfo.html. The notes are not a comprehensive list of pre-settlement plant species. PLS records, along with the work of Robert W. Finley and John T. Curtis, were used to determine the pre-settlement vegetation of the region.

The historic vegetation of the Refuge area, according to Finley in 1976, indicate a large conifer swamp at the mouth of Fish Creek, extending into the property owned by the Northern Great Lakes Visitor Center and up to Whittlesey Creek. The vegetation would likely have been northern white cedar (*Thuja occidentalis*), black spruce (*Picea mariana*), tamarack (*Larix laricina*) and balsam fir (*Abies balsamea*). Remnants of this vegetation type exist at the southern edge of the Whittlesey Creek NWR and northern edge of the NGLVC land. The northern edge of the Refuge area, which is at a higher elevation, is described as mixed conifer-deciduous forest, which would include white pine (*Pinus strobus*), red pine (*Pinus resinosa*), yellow birch (*Betula alleghaniensis*), and hemlock (*Tsuga canadensis*). The area south of the conifer swamp is noted as boreal forest, with species such as aspen (*Populus spp.*), paper birch (*Betula papyrifera*), white spruce (*Picea glauca*), balsam fir, red pine and white pine.

The Public Land Survey notes from 1852 to 1855 listed black ash (*Fraxinus nigra*), spruce, tamarack, white pine, red pine, balsam, cedar, and elm (*Ulmus Americana*) as timber or post tree species. Understory species listed include alder (*Alnus spp.*), cedar, willow (*Salix spp.*), hazel (*Corylus spp.*), and dwarf maple (*Acer spp*.).

Most of the timber noted by surveyors was harvested by the early 1900's. Land nearest to Lake Superior was the first to be cleared by European settlers and was primarily used for farming. Aerial photos from 1938 show the extent of the farmland in the area. Most likely, land was often too wet, either from floods or from high groundwater, to produce consistent crops. Ditch networks were established to hasten land drainage for agricultural purposes. When the Whittlesey Creek NWR was established in 1999, only about 90 acres were hayed or pastured within the Refuge boundary. No annually tilled cropland remained.

Current Vegetation

There are a few sites within the refuge boundaries that still exhibit many of the characteristics described by the original surveyors in the 1850's. These "relict" plant communities serve as ecological reference sites and provide direction for restoration efforts. These sites include a cedar/tamarack swamp, black ash swamp, sedge meadow and mixed coniferous forest.

Currently, less than 60 acres of the historic farmland is hayed or pastured. Some of the former agricultural land has transitioned to water-tolerant trees and shrubs such as willows, white cedar, black ash and speckled alder (*Alnus incana*). Other old fields are largely comprised of invasive reed canarygrass (*Phalaris arundinacea*), with varying amounts of both native and/or invasive grasses and forbs.

According to the National Hierarchical Framework of Ecological Units (NHFEU), the Refuge is located within Province 212, the Laurentian Mixed Forest. Province 212 is located across the northern portion of the Lake States eastward through Pennsylvania, New York, and Maine. The vegetation of Province 212 is described as transitional, between the boreal forest and broadleaf deciduous forest. Based on the U.S. Forest Service description, "part of it consists of mixed stands of a few coniferous species (mainly pine) and a few deciduous species (mainly yellow birch, sugar maple, and American beech -*Fagus grandifolia*); the rest is a macromosaic of pure deciduous forest in favorable habitats with good soils and pure coniferous forest in less favorable habitats with poor soils."

Invasive Species

Prior to becoming a Refuge, portions of the Whittlesey Creek NWR were proposed to be an 18-hole golf course. In preparation for the course, fill was hauled in most likely carrying invasive species seeds. Ground disturbance from equipment contributed to the large presence of invasives found on the refuge lands. Invasive plants are also an artifact of the area's agricultural history. Presently, this site is dominated by non-native grasses and forbs such as reed canarygrass, Canada thistle, tansy and other cool-season forage grasses. However, there are still traces of native sedges that remain in small patches scattered throughout the site. The following chart taken from the Invasive Free Management Zone Plan for Whittlesey Creek NWR lists the majority of invasive species found in and around the refuge.

Table 1- Invasive Plants of Area

Common Name	Scientific Name
cool season grasses	various species
reed canarygrass	***Phalaris arundinacea***
bird's foot trefoil	*Lotus corniculatus*
red clover	*Trifolium pratense*
common tansy	*Tanacetum vulgare*
white clover	*Trifolium repens*
oxeye daisy	*Chrysanthemum leucanthemum*
buckthorn	***Rhamnus cathartica*** and ***R. frangula***
Canada thistle	***Cirsium arvense***
honeysuckle	***Lonicera spp.***
purple loosestrife	***Lythrum salicaria***
bull thistle	*Cirsium vulgare*
common burdock	*Arctium minus*
knapweed	***Centaurea jacea*** and ***C. biebersteinii***
sweet clover	*Melilotus alba* and *M. officinalis*
common reed	***Phragmites australis***
bishop's goutweed	*Aegopodium podagraria*
crown vetch	*Coronilla varia*
garden lupine	*Lupinus polyphyllus*
orange daylily	*Hemerocallis fulva*
hawkweed	*Heiracium spp.*
crack willow	*Salix fragilis*
common mullein	*Verbascum thapsus*

Wildlife

The Refuge provides key wetland, freshwater stream, and grassland habitat in the mosaic of the northern hardwoods, boreal forests, and Lake Superior sand coastlines that are so incredibly productive and important habitats for numerous species of fish, mammals, insects, and birds.

Wisconsin has developed a State Wildlife Action Plan that has analyzed the animal species of Wisconsin, identified those most in need of attention because they are declining or are dependent

on habitat or places that are declining, and suggests conservation measures to ensure their survival. The document describing their analysis and findings is filled with information that helps identify conservation needs. For each Ecological Landscape of Wisconsin, it provides information on the overarching needs and opportunities in the landscape as well as lists of those natural communities which are major and important management opportunities. It also lists those Species of Greatest Conservation Need with high, moderate, or low degrees of probability of occurring in the landscape. The State's analysis provides a good basis for coordination of the Refuge's activities with the State and other conservation organizations. This information is available in the State Wildlife Action Plan (http://dnr.wi.gov/org/land/er/wwap/).

Whittlesey Creek is an important component of the Lake Superior fishery, producing a disproportionate share of coho salmon in the Wisconsin portion of the Lake Superior Watershed according to a 1992 WIDNR memorandum. A species list compiled from information gathered by the Wisconsin DNR and the Service's Sea Lamprey Management Program identified 21 species of fish, including seven salmonid species in Whittlesey Creek. Whittlesey Creek also supports a recreational fishery, primarily for brook trout (*Salvelinus fontinalis*) and rainbow trout (*Oncorhynchus mykiss*).

Waterfowl, neotropical migratory birds, raptors, and shorebirds, as well as several amphibian and state listed plant species of concern, will benefit from management of uplands and wetlands (Craven, 1985, Gullion, 1984). The 540 acres within the Refuge boundary will complement approximately 2,000 acres of adjacent coastal wetland/coastal floodplain habitat that is currently publically owned. Sites will provide resting and breeding habitat for waterfowl and neotropical migrant birds. Area biologists have identified 226 species of birds in the area.

A large number and variety of mammals, invertebrates, birds, and fish depend on the restoration and preservation work of refuge and easement lands to provide habitats that will sustain a healthy ecosystem for future generations.

Wetlands

There are a number of key wetland areas within the watershed. The coastal area at the mouth of Whittlesey Creek is a part of a large wetland complex which extends from just north of the mouth of Fish Creek to the west edge of the City of Ashland. This wetland is a significant part of the wildlife habitat and aquatic resources of Chequamegon Bay. The area is used by many wildlife species and is an important area for migrating birds. The wetland portion of the mouth constitutes a rare coastal wetland. Measures are being taken to control purple loosestrife (*Lythrum salicaria*) in this area. The sand bedload resulting from stream bank erosion in the watershed is severely impacting the diversity of vegetation and water depths in both the estuary and the bay.

Wetland areas in the upland reaches of the watershed have a valuable hydrologic function in determining both the quality and quantity of water available. The ability of these areas to store and slowly transfer surface water to groundwater sources is what determines both the temperature and the base flow of Whittlesey Creek. Additionally the capacity to carry water periodically and seasonally allows them to function as flood control structures for the watershed.

Threatened, Endangered, and Candidate Species

Federally listed endangered species to be considered include the following:

Gray Wolf:

(*Canis lupis*): The gray wolf was delisted in 2007, relisted in 2008 and is considered endangered in Wisconsin. It occurs in and near forests in numerous Wisconsin counties. Population recovery is considered to be successful with numbers exceeding early WIDNR predictions. Transient wolves are known to occur on the Refuge. Threats to wolves include habitat loss, illegal killing and car-kill.

Piping Plover:

(*Charadrius melodus*): The piping plover is listed as endangered in Wisconsin. It nests on bare shoreline adjacent to water. It is known to nest on the Lake Superior shoreline in a few locations, although there are no records of nesting pairs on or in the immediate vicinity of the Refuge and the shoreline habitat of the Refuge is not adequate for piping plover. Piping plovers are occasionally spotted in the Bay during spring migration (Verch 1999) and have been seen near the mouth of Whittlesey Creek during migration (Environmental Assessment for the Public Use Management Plan, 2001). A threat to piping plovers that nest on Lake Superior is disturbance by people who use the shoreline for recreation.

Canada Lynx:

(*Lynx canadensis*): This species is listed as threatened in Wisconsin. It occasionally is found in northern forest areas of the state. Bayfield and Ashland counties are included in the list of counties with the highest likelihood of occurrence, but lynx are considered to be very rare in Wisconsin, with only a few records in the state during the past 20 years. Reasons for decline include changes in habitat that are detrimental to the prey (snowshoe hare); and increase in roads, which provide easier access for trappers, and competitors such as coyotes and wolves.

All actions taken under the FMP and EA will consider effects on listed or potentially listed species.

Chapter 4

Environmental Consequences

Impacts Common to All Alternatives

There are potential impacts common to all of the proposed alternatives. They are found as follows and not repeated in the individual alternatives.

Cultural Resources

Impacts to archeological resources by fire resources vary. Preparation for prescribed fire activities or to control wildfire are subject to Section 106 of the National Historic Preservation Act. Rather than repeat the protocols and procedures followed within region 3 of the U.S. Fish and Wildlife Service here, the accepted methodology is described in detail and found in Appendix A of the Whittlesey Creek National Wildlife Refuge Fire Management Plan.

The alternatives described and considered for selection are as follows:

Alternative A: (Preferred) Prescribed burning would be utilized as a management tool. All wildland fires will be suppressed.

Habitat Impacts

This alternative would allow for flexibility when considering management options, particularly in restoration and maintenance of mixed coniferous and deciduous forest with open grasslands and sedge meadow components. Prescribed fire will primarily be used to prepare sites for tree planting to fill in unnatural forest openings. Prescribed fire will also allow for the control of undesirable grasses and encroaching woody vegetation in moist soil areas, on grasslands, and levees. The transition of previously farmed agricultural lands to restored native grasses is best accomplished and maintained with the use of prescribed fire.

Fire may also be used as a tool to eliminate woody vegetation encroaching in moist soil areas and to reduce the canopy of dense stands of vegetation. Vegetation control on moist soil units may be more effective with the periodic use of fire, and fire may trigger germination of beneficial plants.

Biological Impacts

Conversion of timothy and reed canarygrass dominated fields to desirable native grasses will provide higher quality habitat for migratory grassland birds, ground nesting birds, and other wildlife species. A mixture of native grasses and forbes will provide seeds for food and cover from predators.

Listed Species

No Piping Plovers are known to be nesting on the refuge lands that are proposed for prescribed fire at this time. If nests were to be found on the proposed burn sites actions would be taken to protect and prevent disturbance of the nests. Sightings of Gray Wolf or Canada Lynx will also be taken into consideration when using prescribed fire. If it is found that burning may negatively impact the area where the animal is residing, prescribed fire will not be implemented on those sites.

Administration

Prescribed burning is generally more cost-effective than other management tools. Without the use of prescribed burning, heavy equipment and chemicals will be required to accomplish management goals of habitat restoration. Heavy equipment is expensive and time consuming to

operate. Chemical use, for controlling undesirable vegetation is costly, demands strict oversight, and may pose unknown risks to the environment. This is of special concern when working in and around such a sensitive watershed. Fire is the most natural treatment available for managing the lands.

Health and Safety

There is some risk of visitors being on or near an area where either wildland fire or prescribed fire operations are ongoing. Mitigation of this risk involves the use of closures, signage and patrol by staff. Employees would be at some risk during all fire operations including prescribed fire application. The use of chemicals for the control of undesirable vegetation can also pose a health risk to the applicator and the environment. The use of mechanical equipment can cause hearing loss, back and neck pain, and a large variety of other problems generally associated with heavy equipment operations.

Cumulative Impacts

There are several potential impacts that may be considered cumulative. One is the effect of smoke from either wildland or prescribed fires on visibility within the Refuge area. The close proximity of the Northern Great Lakes Visitor Center, as well as the Lake Superior Shoreline to the burn sites would call for public awareness to explain the purpose of the prescribed fire as a management tool for the land. Education and outreach would need to be used to inform the public of proposed prescribed burns, and proper planning of prescribed fire operations would mitigate a large percentage of this impact over the immediate area. Prescribed fire smoke effects on regional haze and that impact on the visibility in the area is not known but can be expected to add to haze levels on burn days. Smoke from wildland fire would also have an effect on regional haze but is considered a natural event under the EPA air quality regulations.

The second cumulative effect is related to restoration of native vegetation to Refuge grasslands, supported by fire application. Under this alternative, prescribed fire use would restore and maintain the valuable mixed coniferous and deciduous forest with open grasslands and sedge meadows ecosystem. Continued loss of this sensitive habitat on federal lands within the Refuge area would cease.

A third potential effect is the enhancement of neotropical and migratory bird populations with improved habitat conditions. Prescribed fire planning would address issues of timing to reduce conflicts with nesting and fledging seasons. Additionally, grasslands are recognized by many as the most imperiled ecosystem worldwide. The avian assemblages associated with grasslands also are at risk - grassland bird populations have shown steeper, more consistent, and more geographically widespread declines than any other guild of North American species (Department of the Interior 1996). Breeding Bird Survey data from 1966-1993 indicate that almost 70 percent of 29 grassland bird species adequately surveyed by BBS data had negative population trends; more than half of these were statistically significant (Northern Prairie Wildlife Research Center, USGS). Restoration of the old farm fields to viable open grasslands would increase the acreage of this valuable and currently reduced cover type so important to bird habitat. Settlement of the Great Lakes region introduced the harvesting of both coniferous and deciduous forests leaving many of the lands to be farmed and left in poor condition. The erosion from the farming impacted many of the watersheds of the area damaging the fisheries. Careful restoration work continues to

improve the degraded sites so wildlife can live and thrive as they may have in previous years.

Alternative B - (No Action) No Prescribed burning will be used. All wildland fires will be immediately suppressed.

Habitat Impacts

Under this alternative, Refuge habitats can be managed successfully; however, management is much more costly and labor intensive. Without the ability to conduct prescribed burns on the Refuge, habitat conditions will continue to deteriorate for area wildlife. Grassland conditions would remain in a deteriorated state, making them less attractive to migrating grassland birds, ground nesting birds, and other wildlife species. Increased encroachment of undesirable woody fuels would likely continue in the absence of fire.

Management options for dealing with invading moist soil plants, and proliferating aquatic emergent vegetation is limited to mechanical and chemical options.

Biological Impacts

Nearly every species which relies upon the grassland, wetland habitat complex would be potentially negatively impacted should management lose the ability to properly utilize prescribed fire as a management tool. Without the use of prescribed fire, it would also be much more difficult to adequately prepare sites for tree planting in unnatural openings of forested areas. The invasion of brush and trees into the open areas would cause many dependent species to fall victim to predators that thrive in perching environments. Also many of these bird species will not nest or reproduce successfully near trees causing them to relocate if possible.

Increased levels of chemicals would need to be used to treat the invasive plants, therefore often also killing native species on the site. Mechanical treatments could bring in additional invasives, and exotics by transporting the seeds on the equipment from other infested areas. This could increase the amount and variety of invasives on the refuge in a very short time.

Listed Species

Management practices involving mechanical site disturbances to control undesirable vegetation, may leave soils barren and exposed to the elements. Increased surface erosion is possible under these conditions. Siltation of wetlands within the Refuge could take place resulting in declining water quality. A decline in water quality and the fish populations would have a negative impact on the fisheries of the Whittlesey Creek area as well as Lake Superior.

Under extreme drought conditions there is the potential for wildland to result in increased runoff due to the removal of the grass and duff layer with a resultant decrease in water quality. Wildfires occurring under extreme conditions could also have direct negative effects on the Gray Wolf or Canada Lynx if the forest was to be scorched leaving no cover areas, and the Piping Plover if all coastal vegetation were to be burned during the nesting period.

Administration

Heavy equipment and chemicals will be required to accomplish management goals. Heavy equipment is expensive to acquire and maintain, time consuming to operate and requires specialized operator training. Mechanical methods of controlling vegetation along levees and in moist soil units are costly and labor intensive. The use of chemicals is costly and demands strict supervisory oversight and may pose unknown risks to the environment. Mechanical and chemical treatments on a regular basis are not as cost effective as prescribed fire application.

The planned restoration of Refuge lands and easements include chemical alternatives and mowing. Increased use of heavy equipment and chemicals, for controlling undesirable vegetation is more costly. The labor required to complete the mechanical methods, is more expensive due to the hours consumed by equipment operations, cost of maintenance and fuel, chemical costs, etc. In addition, the use of pesticides requires strict oversight and may pose unknown risks to the environment.

Health and Safety

The use of chemicals for the control of undesirable vegetation can pose a health risk to the applicator. There is some risk to Refuge visitors under this alternative from wildland fire but none from prescribed fire operations. Wildland fire suppression risks to employees is identical to the risk under Alternative A, there is no employee risk from prescribed fire operations since they would be banned from use under this alternative.

Cumulative Impacts

There are several potential impacts that may be considered cumulative. One is the effect of smoke from wildland fires on the visibility within the Refuge and the Great Lakes Visitor Center area. Smoke from wildland fire would also have an effect on regional haze but is considered a natural event under the EPA air quality regulations. Prescribed fire is not an issue under this alternative.

The second cumulative effect is related to restoration of the overgrown timothy and reed canarygrass fields, and the invasive brush understories from their current condition by the use of chemical or mechanical means. Chemical and mechanical methods are much more costly to implement than is prescribed fire. Under this alternative, a loss of, or reduction in funding to support equipment and chemical costs could potentially cause a loss of open grasslands and sedge meadows on the Refuge and, although small, contribute to the loss of habitat nationally.

A third potential effect is the enhancement of neotropical bird populations with improved habitat conditions. Mechanical and chemical treatments would address issues of timing to reduce conflicts with nesting and fledging seasons.

Alternative C - No Prescribed Burning will be used. All wildland fires will be monitored and managed accordingly.

Habitat Impacts

Efforts will go forward to restore and maintain the mixed coniferous and deciduous forest, open grasslands, and sedge meadows using chemical and mechanical means, which will be less effective than fire, but may meet the objectives. Without the ability to conduct prescribed burns on the Refuge habitat, conditions will deteriorate for area wildlife. In the absence of fire, wetlands may deteriorate and become more susceptible to invasion by undesirable woody vegetation (willow, alder, etc.). Management options, for dealing with invading moist soil plants and proliferating aquatic emergent vegetation, are limited to mechanical and chemical options.

Biological Impacts

Less than optimal management yields fewer waterfowl and associated species, which are dependent upon a healthy wetland complex for nesting and brood habitat. Use of chemicals in the absence of fire may pose unknown threats to wildlife.
Grassland conditions would deteriorate, making them less attractive to migrating birds, ground nesting birds, and other wildlife species. Without the effective use of fire, wetlands and moist soil areas will likely experience invasion by undesirable vegetation species forcing waterfowl, shorebirds, and other species to look for suitable habitat elsewhere. Nearly every species resident to the Refuge would be negatively impacted should management not be able to properly utilize prescribed fire. Wildland fires would be allowed to burn as long as they weren't posing a threat to private, government, historical, or economically important properties. Under this Alternative, whole sections of upland grasslands and wetland areas could potentially be destroyed in the absence of treatments. This could cause a major shift in habitat types and wildlife usage, and could also potentially threaten wildlife populations on the Refuge. Species utilizing sedge meadows for nesting and resting cover could be adversely affected due to the loss of habitat and the destruction of plant species.

Depending on the time of occurrence of the wildfire, ground nesting birds could be severely impacted through the loss of active nests. Wildfire could cause complete tree mortality in the forested land both the hardwood and coniferous portions being impacted eliminated the heavy cover some wildlife need to survive.

Management would be by mechanical and chemical means. The natural maintenance of the mixed coniferous and deciduous forest, open grasslands, and associated wetland ecosystem through the use of prescribed fire would not occur. This would have long term implications regarding degradation of this critical habitat.

Listed Species

Management practices involving mechanical site disturbances to control undesirable vegetation, may leave soils barren and exposed to the elements. Increased surface erosion is possible under these conditions. The siltation of wetlands within the Refuge could take place resulting in a

declining water quality issue and is a major concern. A decline in water quality and the fish populations would have a negative impact on the bald eagle.

There is the potential for wildland fires under extreme drought conditions to result in increased runoff due to the removal of the grass and duff layer with a resultant decrease in water quality. Wildfires occurring under extreme conditions could also have direct negative effects on the Gray Wolf or Canada Lynx by removing ground cover and the Piping Plover by burning coastal vegetation during the nesting season.

Administration

Mechanical methods of restoring and maintaining vegetation is costly and labor intensive. The use of chemicals is costly and demands strict supervisory oversight. Fire is the most cost-effective means for accomplishing management goals and needs.

Prescribed burning is generally more cost-effective than other management tools. Without the use of prescribed burning, heavy equipment and chemicals will be required to accomplish management goals of habitat restoration. Heavy equipment is expensive and time consuming to operate. Chemical use, for controlling undesirable vegetation is costly, demands strict oversight, and may pose unknown risks to the environment. Further, these two methods are not natural to the ecosystem as is fire.

Health and Safety

The use of chemicals for the control of undesirable vegetation can pose a health risk to the applicator. There is some risk to Refuge visitors under this alternative from wildland fire but none from prescribed fire operations. Wildland fire suppression risks to employees is identical to the risk under Alternative A, there is no employee risk from prescribed fire operations since they are banned from use.

The use of chemicals for the control of undesirable vegetation can also pose a health risk to the applicator and the environment. There is some risk of visitors being near an area where wildland fire use operations are ongoing. Large amounts of smoke generated from heavy fuels may decrease visibility and cause respiratory problems to visitors and staff. Mitigation of this risk involves the use of closures, signage and patrol by Refuge staff. There is no employee risk from prescribed fire operations since that technique is banned from use.

Cumulative Impacts

There are several potential impacts that may be considered cumulative. One is the effect of smoke from wildland fires on the visibility in the Refuge and Northern Great Lakes Visitor Center air shed. Smoke from wildland fire would also have an effect on regional haze but is considered a natural event under the EPA air quality regulations. Monitored fires, are likely to be longer duration smoke events.

The second cumulative effect is related to restoration of native vegetation to the Refuge lands including any grasslands, marshes, or forest, supported by chemical or mechanical means. Under this alternative, a loss of, or reduction in funding to support equipment and chemical costs could

potentially cause areas to become overgrown with invasive species where progress could be made with less cost using fire. Furthermore, some invasive species such as buckthorn are more comprehensively treated with fire due to the complexity involved with the chemicals being used

A third potential effect is the enhancement or reduction of neotropical migratory bird and migratory bird populations with changing habitat conditions. Mechanical and chemical treatments would have to address issues of timing to reduce conflicts with nesting and fledging seasons. Other cumulative impacts from expanded fire coverage under this alternative include possible migrations of many species to less desirable areas, a decrease in biodiversity, a decline in waterfowl usage, damage to threatened and endangered plants as well as a decline in endangered animal species populations. These declines could result from reduced habitat and water quality, reduced plant diversity.

Summary of Environmental Consequences by Alternative

Impact	**Alternative A** - Full Wildland Fire Suppression, Prescribed Fire applied as necessary. May Include the use of mechanical fuels treatments as needed.	**Alternative B** - Full Wildland Fire Suppression, No prescribed fire applied (No Action Alternative)	**Alternative C** - Wildland Fire Monitored and Managed Accordingly, No Prescribed Fire Applied.
Environmental Justice	No Environmental Justice Issues identified	No Environmental Justice Issues identified	No Environmental Justice Issues identified
Cultural Resources	Wildland Fire Impacts expected to be minimal	Wildland Fire Impacts expected to be minimal	Wildland Fire Impacts expected to be minimal
Habitat	Habitat Improved	Potential decline in habitat Quality.	Potential decline in habitat Quality.
Biological	Improvement	Low possibility of any improvement	Potential decline in biological Quality and diversity.
Listed Species	No Change	No Change	No Change
Administrative	Reduced Management Impacts	Higher costs for management are likely	Higher costs for management are likely
Health and Safety	Some increased risk in Prescribed fire operations. No Change to public safety.	No risk to employees during Rx fire. No change to public safety.	Some decrease to employee Safety. Potential elevated risk To public safety.
Cumulative	Improvement of overall mixed coniferous and deciduous forest and wetland Ecosystem habitat. Greatly improved habitat for migratory bird species and waterfowl, along with resident plant and Animal species.	No meaningful change	No meaningful change

Chapter 5:

List of Preparers:

Tim Hepola, Regional Fire Ecologist, Fort Smelling, MN
Tom Kerr, Refuge Manager, Whittlesey Creek NWR
Tracy Ronnander, Fire Technician, St Croix Wetland Management District
Mike Mlynarek, Fish and Wildlife Biologist, Whittlesey Creek NW

Chapter 6

List of Agencies, Organizations, and Persons Contacted

The news release in Chapter 7 was sent to the following locations:

Wisconsin Department of Natural Resources

Ashland Field Office – Ashland, WI
Northern Regional Headquarters – Spooner, WI

Public Offices/Organizations

Ashland, WI Post Office
Bayfield, WI Post Office

Federal Agencies

Apostle Island National Lakeshore- National Park Service- Bayfield, WI
Washburn Ranger District – U.S. Forest Service – Washburn, WI
Bureau of Indian Affairs – Great Lakes Agency- Ashland, WI

Local Newspapers

Daily Globe- Ironwood, MI
Duluth New Tribune- Duluth, MN
Iron County Miner- Hurley WI
Millen Weekly Recorder- Mellen, Wi
Spooner Advocate Record- Spooner, WI
Sawyer County Record- Hayward, WI
Ashland Daily Press- Ashland, WI
Washburn County Journal- Washburn, WI

Chapter 7

Public Comments and Responses

This Fire Management Plan and Environmental Assessment were opened for a 30 day public review and comment period starting on March 20, 2009. The news release is found on the next page.

********** NEWS RELEASE **********

Whittlesey Creek National Wildlife Refuge Seeks **Public Comment on Draft Environmental Assessment and Fire Management Plan**

The U.S. Fish and Wildlife Service is seeking public comment on a draft Environmental Assessment and Fire Management Plan for the Whittlesey Creek National Wildlife Refuge. Once approved, the plan will direct the use of prescribed fire and mechanical fuel treatments to enhance wildlife habitat vital to the Refuge's wildlife conservation mission. Refuge management response to wildfires is also addressed in the plan.

Copies of the draft FMP and EA may be requested by calling Whittlesey Creek National Wildlife Refuge at (715)-685-2666. This document can also be downloaded at: http://www.fws.gov/midwest/Fire/firemgmtplans.html.

Written comments on the FMP can be mailed to Tom Kerr at Northern Great Lakes Visitor Center 29270 County Highway G, Ashland WI 54806. Comments can also be faxed to 715-246-4670, or sent via email to Tom_Kerr@fws.gov. Comments must be received by close of business on April 24, 2009.

Whittlesey Creek National Wildlife Refuge, located in the Town of Barksdale, Bayfield County, Wisconsin, was established in October 1999 for the development, advancement, management, conservation, and protection of fish and wildlife resources.

The U.S. Fish and Wildlife Service is working with individuals, groups, and other entities to protect and restore coastal wetland and stream habitats that are utilized by migratory trout and salmon from Lake Superior and by migratory birds.

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people. We are both a leader and trusted partner in fish and wildlife conservation, known for our scientific excellence, stewardship of lands and natural resources, dedicated professionals and commitment to public service. For more information on our work and the people who make it happen, visit **http://www.fws.gov**

-FWS-

Chapter 8

References Cited

Whittlesey Creek National Wildlife Refuge Invasive Plant Management Plan

Whittlesey Creek NWR – Habitat Management Plan 2006

Whittlesey Creek NWR – Fire Management Plan 2003

Chapter 9

Intra-Service Section 7 Biological Evaluations

See following pages

Intra-Service Section 7 Biological Evaluation Form

Originating Person: Tracy Ronnander Date Submitted: 07/15/2008
Telephone Number: 715-246-7784

I. **Service Program and Geographic Area or Station Name**:
Refuge- Whittlesey Creek National Wildlife Refuge

II. **Flexible Funding Program** (e.g. Joint Venture, etc) if applicable:

III. **Species/Critical Habitat**: List federally-listed, proposed, and candidate species or designated or proposed critical habitat that occurs or may occur within the action area:

Gray Wolf: (*Canis lupis*)
The Gray Wolf was delisted in 2007, relisted in 2008 and is considered endangered in Wisconsin. It occurs in and near forests in numerous Wisconsin counties. Population recovery is considered to be successful with numbers exceeding early WIDNR predictions. Transient wolves are known to occur on the Refuge. Threats to wolves include habitat loss, illegal killing and car-kill.

Piping Plover: (*Charadrius melodus*)
The Piping Plover is listed as endangered in Wisconsin. It nests on bare shoreline adjacent to water. It is known to nest on Lake Superior shoreline in a few locations, including Long Island in Chequamegon Bay, as recently as 2006. There are no records of nesting pairs on or in the immediate vicinity of the Refuge and the shoreline habitat of the refuge is not adequate for Piping Plover. Piping Plovers are occasionally spotted in the Bay during spring migration (Verch 1999) and have been seen near the mouth of Whittlesey Creek during migration (Ryan Brady, personal communication, Northern Great Lakes visitor Center, Ashland, WI). A threat to piping plovers that nest on Lake Superior is disturbance by people who use the shoreline for recreation, and predators such as fox, raccoon and skunks.

Canada Lynx:
This species is listed as threatened in Wisconsin. It occasionally is found in northern forest areas of the state. Bayfield and Ashland counties are included in the list of counties with the highest likelihood of occurrence, but lynx are considered to be very rare in Wisconsin, with only a few records in the state during the past 20 years (Joel Trick, personal communication, U.S. Fish and Wildlife Service, Green Bay, WI). Reasons for decline include changes in habitat that are detrimental to the prey (snowshoe hare); and increase in roads, which provide easier access for trappers, and competitors such as coyotes and wolves.

IV **Location**: Location of the project including County, State and TSR (township, section & range): Bayfield County, WI, T 48 N, R 5 W, Section 35, 36

V **Project Description: Prescribed Burning on Whittlesey Creek NWR lands**

The proposed action is the establishment of a Fire Management Plan (FMP) to facilitate the use of prescribed fire to manage the mixed coniferous and deciduous forests, open grasslands, and sedge meadow habitats found on and around the Whittlesey Creek NWR. Additionally, the FMP will also provide the actions to be followed on managing the suppression of wildfires on the refuge lands. Fire is a documented and successfully proven practice required to maintain and restore many of the natural plant communities by setting back invasive plants, and encouraging fire adapted plants through prescribed fire.

The main objectives of fire management at Whittlesey Creek NWR are: reduction of fuels in the wildland urban interface for landowners adjacent to refuge lands, the reduction of hazardous fuels across the landscape to minimize the potential spread of wildland fires, and resource management (to restore the natural plant communities to their original state therefore, encouraging species that may have left the ecosystems).

VI. **Determination of Effects:**

(A) Description of Effects: Describe the effects of the action(s) on the species and critical habitats listed in item III. For each section 7 determination made below, attach an explanation of such determination for all applicable species or critical habitat. Documentation should justify your determination.
Gray Wolf- Individuals and sign have occasionally been noted on the Refuge. Large tracts of intact forest occur several miles west of the Refuge and this area currently serves as more-desirable gray wolf habitat. The total restoration area is so small that it is unlikely to affect the gray wolf population

Piping Plover- Have only been spotted flying over Refuge lands to date, at this time there are no known nests on the refuge. The nesting is not likely to occur on the refuge lands since the shoreline habitat of the Refuge is not adequate for piping plover nesting.

Canada Lynx- Lynx can cover a large area, males cover 50-94 square miles with females covering 20-55 square miles meaning, and although there may be lynx observations on the refuge the presence of the lynx is very limited. The entire refuge lands would only make up a tiny fraction of the area being covered by these carnivores. Canada Lynx populations are closely tied to the snowshoe hare populations and are considered to be best when associated with healthy mixed coniferous and deciduous forests. Forest management practices through the use of

mechanical treatments may improve the forest's health. The total restoration area is so small it is unlikely to affect the Canada lynx population.

Effect: Until Piping Plovers, Gray Wolf, and Canada Lynx are commonly traveling through the refuge no restrictions on prescribed burning on the refuge should be necessary. Should the prescribed burning of overgrown sites through hazardous fuel reduction make these sites somehow more appealing to the Piping Plover, Gray Wolf, and Canada Lynx, then measures will be taken to plan burns according to the reaction of the species. Ultimately, the treatment areas of the refuge make up such a small portion of the Northern Wisconsin Forests that even though prescribed fire will improve the lands the overall populations of the Piping Plover, Gray Wolf, and Canada Lynx will most likely see no significant change in population.

Fire can and is a very important tool for restoring native lands and reducing hazardous fuels from the landscape, but with all good things there can be negative effects, in this case it would be the possible burning of snowshoe hare young in the spring.

In anticipation that nesting Piping Plover, Gray Wolf, and Canada Lynx inhabit the refuge lands Whittlesey Creek NWR staff will consider protocols to appropriately use varied habitat management tools.

Recommendations for prescribed fire management of Piping Plover, Gray Wolf, and Canada Lynx Habitat:

a. **Burn frequency:** Since neither, the Piping Plover, Gray Wolf, or Canada Lynx are known to reside on the refuge lands burning may be conducted in spring or fall. Units may need to be burned in repetitive years to achieve management goals of the treatment units.
b. **Number/ Size of Burn Units:** Divide refuge lands so that portions of lands equal or greater in size to the treatment areas remain unburned so wildlife can relocate during and after the burn until re-growth has occurred. Adjacent landowners may have suitable vegetation that could be used as adjacent cover for wildlife thus increasing possible areas to be burned.
c. **Type of Burn:** This can be achieved by burning with different weather conditions, times of year, and fuel conditions. Burning units as a mosaic is most ideal for wildlife cover, but if conditions can't support this then it is also done by reducing the size of the unit and burning smaller portions at varying times throughout the year.
d. **Timing of the Burn:** Fire has different effects depending on the type of vegetation you want to impact. Using different burn seasons throughout the year may provide improved results depending on the desired goals of the treatment area.

(B) Determination: Determine the anticipated effects of the proposed project on species and critical habitats listed in item III. Check all applicable boxes and list the species associated with each determination.

Response requested

☒ "No Effect" This determination is appropriate when the proposed project will not directly or indirectly affect (neither negatively nor beneficially) individuals of listed/proposed/candidate species or designated/proposed critical habitat of such species. List species applicable to this determination (or attach a list): **Piping Plover, Gray Wolf, & Canada Lynx**

_____ Concurrence (optional)

☐ "May Affect but Not Likely to Adversely Affect species/critical habitat" This determination is appropriate when the proposed project is not likely to adversely impact individuals of listed species or designated critical habitat of such species. List species applicable to this determination (or attach a list):

_____ Concurrence

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_____ Formal Consultation

☐ " Not Likely to Jeopardize candidate or proposed species/critical habitat" This determination is appropriate when the proposed project is not expected to jeopardize the continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. List species applicable to this determination (or attach a list):

_____ Concurrence
Informal Conference optional

☐ "Likely to Jeopardize candidate or proposed species/critical habitat" This determination is appropriate when the proposed project is reasonably expected to jeopardize the continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. List species applicable to this determination (or attach a list):

_____ Formal Conference

Thomas M. Kerr 2/20/09

Signature Date
[Supervisor at originating station]

Intra-Service Section 7 Biological Evaluation Form

Originating Person: Tracy Ronnander Date Submitted: 07/15/2008
Telephone Number: 715-246-7784

I. **Service Program and Geographic Area or Station Name**:
Refuge- Whittlesey Creek National Wildlife Refuge

II. **Flexible Funding Program** (e.g. Joint Venture, etc) if applicable:

III. **Species/Critical Habitat**: List federally-listed, proposed, and candidate species or designated or proposed critical habitat that occurs or may occur within the action area:

Gray Wolf: (*Canis lupis*)
The Gray Wolf was delisted in 2007, relisted in 2008 and is considered endangered in Wisconsin. It occurs in and near forests in numerous Wisconsin counties. Population recovery is considered to be successful with numbers exceeding early WIDNR predictions. Transient wolves are known to occur on the Refuge. Threats to wolves include habitat loss, illegal killing and car-kill.

Piping Plover: (*Charadrius melodus*)
The Piping Plover is listed as endangered in Wisconsin. It nests on bare shoreline adjacent to water. It is known to nest on Lake Superior shoreline in a few locations, including Long Island in Chequamegon Bay, as recently as 2006. There are no records of nesting pairs on or in the immediate vicinity of the Refuge and the shoreline habitat of the refuge is not adequate for piping plover. Piping Plovers are occasionally spotted in the Bay during spring migration (Verch 1999) and have been seen near the mouth of Whittlesey Creek during migration (Ryan Brady, personal communication, Northern Great Lakes visitor Center, Ashland, WI). A threat to Piping Plovers that nest on Lake Superior is disturbance by people who use the shoreline for recreation, and predators such as fox, raccoon and skunks.

Heavy equipment will not be operated along the shoreline or at the mouth of Whittlesey Creek or any other freshwater streams that may be in the treatment areas.

Canada Lynx: : (*Lynx canadensis*):
This species is listed as threatened in Wisconsin. It occasionally is found in northern forest areas of the state. Bayfield and Ashland counties are included in the list of counties with the highest likelihood of occurrence, but Canada Lynx are considered to be very rare in Wisconsin, with only a few records in the state during the past 20 years (Joel Trick, personal communication, U.S. Fish and Wildlife Service, Green Bay, WI). Reasons for decline include changes in habitat that are detrimental to the prey (snowshoe hare); and increase in roads, which provide easier access for trappers, and competitors such as coyotes and wolves.

IV **Location**: Location of the project including County, State and TSR (township, section & range): Bayfield County, WI, T 48 N, R 5 W, Section 35, 36

V Project Description: Mechanical Fuel Treatments on Refuge lands.

In an effort to restore the historic mixed coniferous and deciduous forests with open grasslands and sedge meadows, the FWS will be removing trees and shrubs from restoration sites. In forested areas, mechanical fuel treatment may also be used to prepare sites to plant trees in unnatural openings. Many of these trees are found adjacent to property boundaries, in open fields, at old building sites, along old fence lines, and in degraded woodlot stands. The trees and shrubs will be removed by one of several techniques including contract timber sales, special use permits, contract tree and shrub removal or FWS staff using equipment to remove trees and shrubs. Most of the tree species to be removed include but not limited to buckthorn, green ash, honeysuckle, maple, black locust, Siberian elm, willow, and alder. Native tree species include the white spruce, birch, oak, red and white pine, and balsam fir, will not be removed from the restoration sites.

Trees and shrubs can be removed at all times of the year with preference for winter removal or removal during times when soil conditions permit equipment operation without resulting in rutting and /or other soil disturbance and erosion on the site. Following tree removal, the sites will be burned to remove any slash or tree residue and then may be planted with local ecotype seedlings or seed if needed to enhance the restoration process. A cover crop may be planted for one or two years to aid with reestablishing native plants. Sites will be intensively burned for several years if necessary.

VI. Determination of Effects:

(A) Description of Effects:.

Gray Wolf- Individuals and sign have occasionally been noted on the Refuge. Large tracts of intact forest occur several miles west of the Refuge and this area currently serves as more-desirable gray wolf habitat. The total restoration area is so small that it is unlikely to affect the gray wolf population.

Piping Plover- Have only been spotted flying over Refuge lands to date, at this time there are no known nests on the refuge. The nesting is not likely to occur on the refuge lands since the shoreline habitat of the Refuge is not adequate for piping plover nesting.

Canada Lynx- Lynx can cover a large area, males cover 50-94 square miles with females covering 20-55 square miles meaning, and although there may be lynx observations on the refuge the presence of the lynx is very limited. The entire refuge lands would only make up a tiny fraction of the area being covered by these carnivores. Canada Lynx populations are closely tied to the snowshoe hare populations and are considered to be best when associated with healthy mixed coniferous and deciduous forests. Forest management practices through the use of

mechanical treatments may improve the forest's health. The total restoration area is so small that it is unlikely to affect the lynx population.

Effect: Until Piping Plovers, Gray Wolf, and Canada Lynx are nesting and commonly traveling through the refuge no changes in the mechanical treatments should be necessary. Should the opening of overgrown sites through hazardous fuel reduction make these sites more appealing to the Piping Plover, Gray Wolf, and the Canada Lynx, then measures will be taken to protect the species during these operations. Ultimately, the treatment areas of the refuge make up such a small portion of the Northern Wisconsin Forests that even though mechanical treatments will improve the lands the overall populations of the Piping Plover, Gray Wolf, and the Canada Lynx will most likely see no significant change in population.

In anticipation that someday nesting Piping Plover, Gray Wolf, and Canada Lynx inhabit the refuge lands, Whittlesey Creek NWR staff will consider protocols to appropriately use varied habitat management tools. Mechanical management tools such as cutting, girdling, mowing, and chipping may be used to stimulate aspects of historical grazing and browsing and even to achieve many of the effects of fire, such as reducing surface fuel accumulation (thereby reducing the intensity of subsequent fire), opening ground for seed germination and seedling establishment, and curbing growth of competing woody and herbaceous plants. Because mechanical management is believed, at least in the short term due to the flexibility in scheduling, to result in lower mortality of nesting birds and small mammal populations of the community than does prescribed fire, it should be strongly considered as an alternative or a complement to fire management.

Recommendations for mechanical management of Piping Plover, Gray Wolf, and Canada Lynx Habitat:

a. Mow (or other brushing treatment) no more frequently than once per year.
b. If any open sand areas are discovered in treatment areas that could possibly be used for Piping Plover nesting stop work in that area.
c. Do not treat whole property blocks at one time on the refuge, leave portions undisturbed to be used for wildlife during the mechanical operations.
d. No Mechanical treatments between March 15 through the end of April due to the snowshoe hare reproduction cycle occurring at that time.
e. If possible use light equipment likely to have the least impact on vegetation and trees to prevent mortality in leave trees to promote habitat for birds.
f. Logging/chipping/thinning of closed-canopy stands of trees will be used to expand habitat for improving the forests on refuge lands by removing invasive and overgrown trees. Snowshoe hare populations are dependent on healthy hardwood-coniferous forests for supporting healthy populations, which in return result in a larger number of Canada lynx.

(B) Determination: Determine the anticipated effects of the proposed project on species and critical habitats listed in item III. Check all applicable boxes and list the species associated with each determination.

	Response requested
☑ "No Effect" This determination is appropriate when the proposed project will not directly or indirectly affect (neither negatively nor beneficially) individuals of listed/proposed/candidate species or designated/proposed critical habitat of such species. List species applicable to this determination (or attach a list): **Piping Plover, Gray Wolf, & Canada Lynx**	_____ Concurrence (optional)
☐ "May Affect but Not Likely to Adversely Affect species/critical habitat" This determination is appropriate when the proposed project is not likely to adversely impact individuals of listed species or designated critical habitat of such species. List species applicable to this determination (or attach a list):	_____ Concurrence
☐ "May Affect and Likely to Adversely Affect species/critical habitat" This determination is appropriate when the proposed project is likely to adversely impact individuals of listed species or designated critical habitat of such species. List species applicable to this determination (or attach a list):	_____ Formal Consultation
☐ " Not Likely to Jeopardize candidate or proposed species/critical habitat" This determination is appropriate when the proposed project is not expected to jeopardize the continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. List species applicable to this determination (or attach a list):	____ Concurrence Informal Conference optional
☐ "Likely to Jeopardize candidate or proposed species/critical habitat" This determination is appropriate when the proposed project is reasonably expected to jeopardize the continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. List species applicable to this determination (or attach a list):	____ Formal Conference

Thomas M. Kern 2/20/2009

Signature Date

[Supervisor at originating station]

Appendix A

Conservation Easements

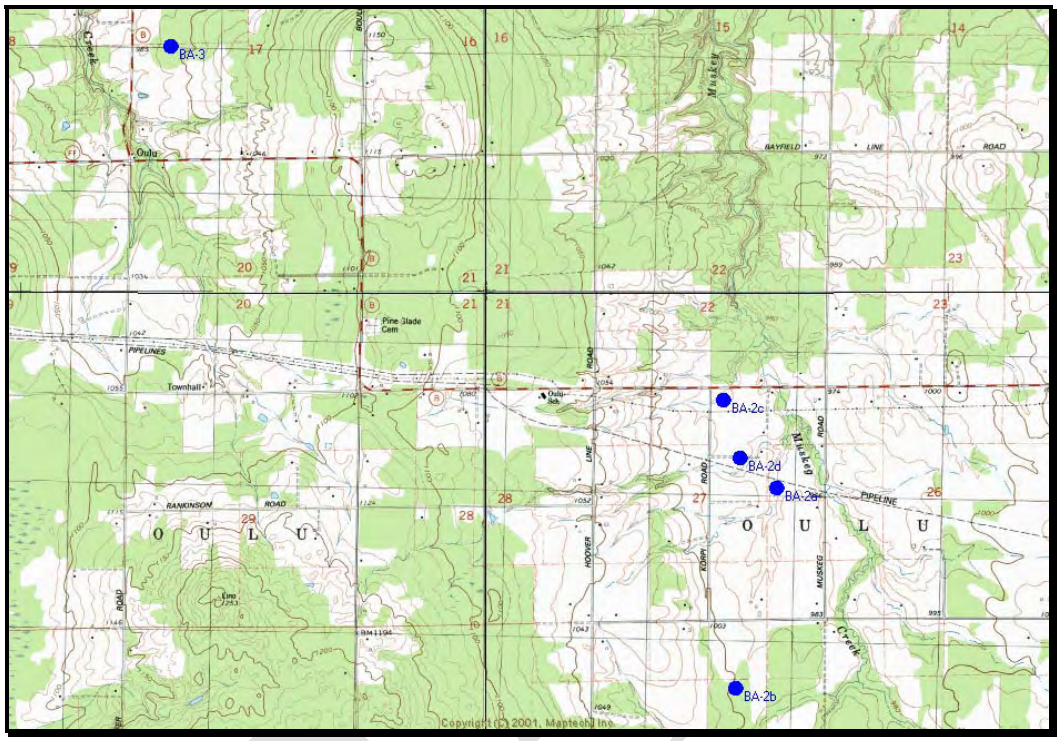
Easement Name	County	Township	Range	Section	Subdivision	Acres
BA-1a	Bayfield	T46N	R5W	25	E ½, NW ¼, NW ¼	20.00
BA-1b	Bayfield	T46N	R5W	25	SW ¼, NW ¼, NE ¼ and W ½, SW ¼, NE ¼, NE ¼	15.00
BA-2a	Bayfield	T48N	R9W	27	SW ¼, SE ¼, NE ¼	9.7
BA-2b	Bayfield	T48N	R9W	34	S ½, NW ¼, NE ¼ and SW ¼, NE ¼	60.00
BA-2c	Bayfield	T48N	R9W	27	NW ¼, NW ¼, NE ¼	9.82
BA-2d	Bayfield	T48N	R9W	27	N ½, SW ¼, NE ¼	19.53
BA-3	Bayfield	T48N	R9W	17	SW ¼, SW ¼, NW ¼ and NW ¼, SW ¼	49.76
BA-4a & 4d	Bayfield	T48N	R8W	31	Part of NW ¼	78.90
BA-4b	Bayfield	T48N	R9W	36	Part of W1/2, NE ¼	16.83
BA-4c	Bayfield	T48N	R9W	36	Part of E ½, NE ¼	20.26
IR-1a	Iron	T46N	R1W	1	SE ¼, NW ¼, SW ¼, NE ¼, Part of SE ¼, NE ¼	112.86
IR-1b	Iron	T46N	R1E	6	NE ¼, NE ¼	36.02
IR-1c	Iron	T46N	R1E	6	N ½, SE ¼, NW ¼, and SW ¼, NW ¼	56.79
Tenney Tract	Bayfield	T.48	R5 W	34	NW1/4 , NW1/4	40

Appendix B

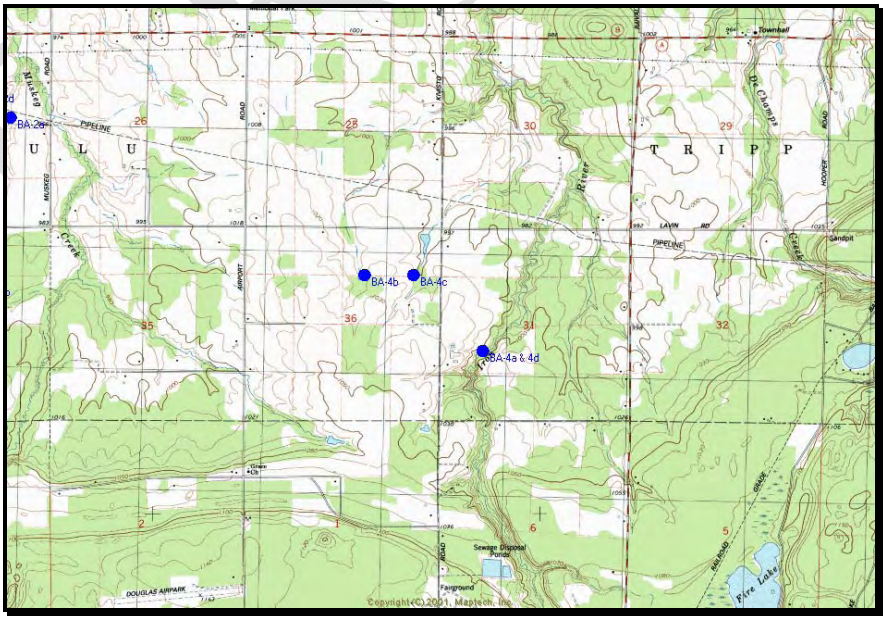
Conservation Easement Maps

The following Maps provide general locations of remote Conservation Easements. Survey maps of the easement boundaries are available in Refuge files.

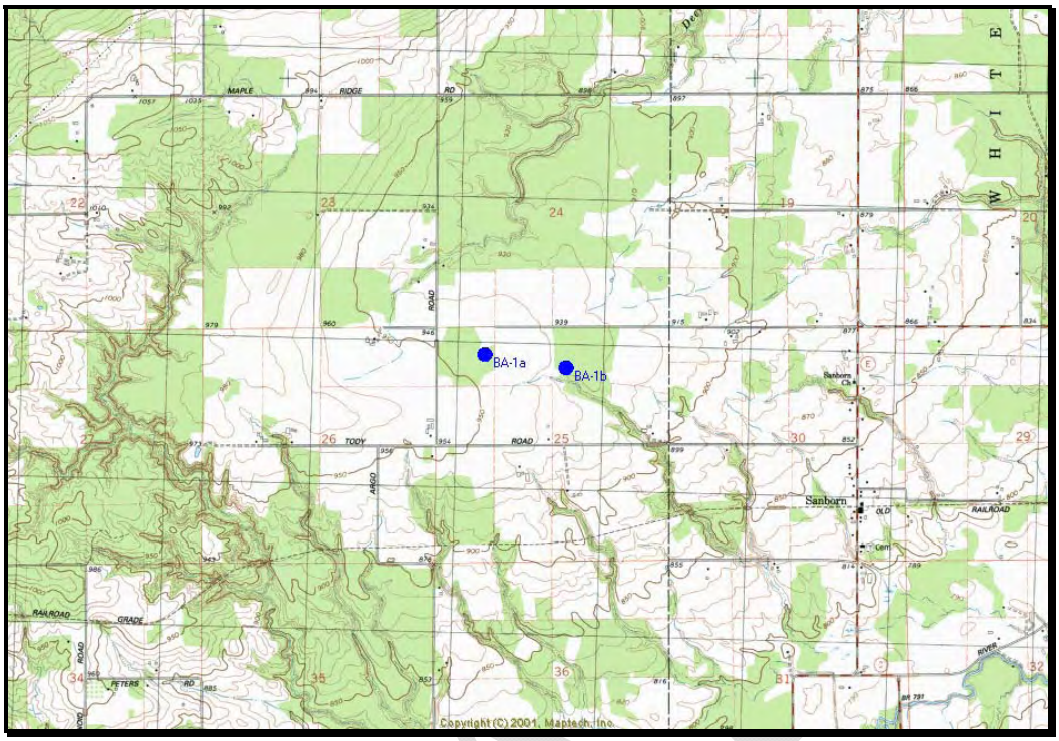
Iron River - Oulu Area FmHA Conservation Easements



Tripp Area FmHA Conservation Easements



Sanborn Area FmHA Conservation Easements



Saxon Area FmHA Conservation Easements