

WILDLAND FIRE MANAGEMENT PLAN

MICHIGAN ISLANDS

NATIONAL WILDLIFE REFUGE



2003

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MICHIGAN ISLANDS NATIONAL WILDLIFE REFUGE

GREAT LAKES-BIG RIVERS REGION

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INTRODUCTION

This document establishes a Fire Management Plan (FMP) for Michigan Islands National Wildlife Refuge. As this plan is not generating new Federal actions that would affect the environment, it is deemed a categorical exclusion and requires no additional environmental documentation under the National Environmental Policy Act (NEPA). An informal Section 7 consultation will be conducted to ensure no adverse effects on Federally Threatened or Endangered (T&E) species. Based on past actions and associated reviews, sites subject to the National Historic Preservation Act (NHPA) are not likely present.

This plan is written as an operational guide for managing the refuge wildland fire program. It defines levels of protection needed to ensure (1) safety of employees and visitors, and (2) protect resources, given current understanding of the complex relationships in natural ecosystems. It is written to comply with a Service-wide requirement that units with burnable vegetation develop a fire management plan (620 DM 1).

The FMP outlines a program, utilizing the appropriate management response, of cost efficient suppression of all wildland fires. There will be no prescribed fires on the refuge. Lands comprising the refuge were originally set aside by Executive Order 9337 on April 24, 1943 as a refuge and breeding grounds for migratory birds and other wildlife.

The portion of Michigan Islands located in Lake Michigan is a satellite unit of Seney National Wildlife Refuge and is located approximately 50 air miles south of Seney. Twenty two miles is over open water in Lake Michigan with a 35 mile drive to reach the launch point. Suppression forces from the Michigan Department of Natural Resources (MIDNR) are, by state law, responsible for suppression. As they are not equipped for water borne operations, suppression, if any, would be by Fish & Wildlife Service staff from Seney Refuge.

An additional unit of Michigan Islands is located in Lake Huron. That portion is managed as a satellite of Shiawassee National Wildlife Refuge and is covered under that station's approved Fire Management Plan.

COMPLIANCE WITH USFWS POLICY

The refuge was established by Executive Order 9337 on April 24, 1943. Two islands, Shoe and Pismere, are designated wilderness by Public Law 91-504 of 1970 and are subject to the provisions of 50 CFR 35 Subpart A.

Authority and guidance for implementing this plan are found in:

- Protection Act of September 20, 1922 (42 Stat. 857; 16 United States Code (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 (NEPA) encourages the combination of environmental comments with other agency documents to reduce duplication and paperwork (40 CFR 1500.4(o) and 1506.4).
- Wilderness Act of 1964 (P.L. 88-577, 16 U.S.C. 1131-1136, 78 Stat. 890) signed September 3, 1964.
- Omnibus Wilderness Act, (P.L. 91-504, 84 Stat 1104) January 2, 1970.
- Clean Air Act (42 U.S.C. 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.

This plan meets NEPA /NHPA compliance and will be implemented in compliance with the Endangered Species Act of 1973, as amended, under the Section 7 programmatic review provisions, and will take appropriate action to identify and protect from adverse effects on any rare, threatened, or endangered species.

The authority for funding (normal fire year programming) and all emergency fire accounts is found in the following authorities:

Section 102 of the General Provisions of the Department of Interior's annual Appropriations Bill provides the authority under which appropriated monies can be expended or transferred to fund expenditures arising from the emergency prevention and suppression of wildland fire.

P.L. 101-121, Department of the Interior and Related Agencies Appropriation Act of 1990, established the funding mechanism for normal year expenditures of funds for fire management purposes.

31 US Code 665(E)(1)(B) provides the authority to exceed appropriations due to wildland fire management activities involving the safety of human life and protection of property.

Authorities for procurement and administrative activities necessary to support wildland fire suppression missions are contained in the Interagency Incident Business Management Handbook.

FIRE MANAGEMENT OBJECTIVES

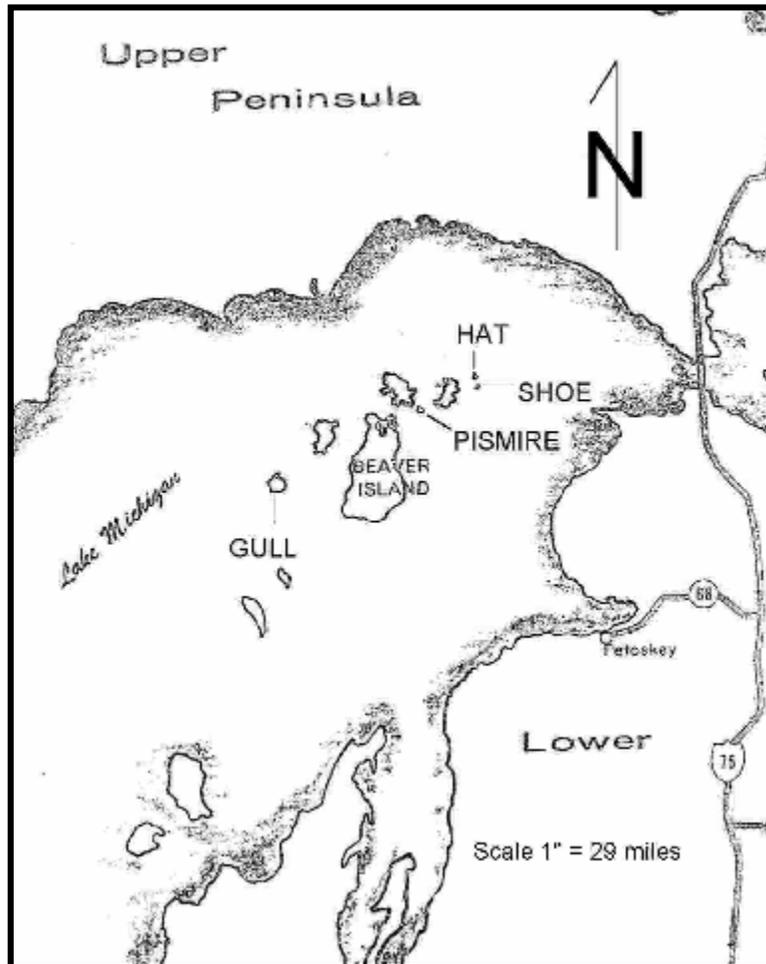
The overall objectives for fire management are to promote a program to ensure firefighter and public safety, aimed at ensuring appropriate suppression response capability to meet expected wildland fire complexity. Specific fire management objectives are:

- Promote a fire management program that seeks to control all wildland fires on the Islands.
- Protect life, and resources from wildland fires at costs commensurate with resource values at risk.
- Use appropriate suppression tactics and strategies that minimize long-term impacts of suppression actions and are consistent with wilderness management guidelines in 50 CFR 35.

DESCRIPTION OF REFUGE

The refuge is made up of 4 islands within the Beaver Island group located in northern Lake Michigan (Figure 1). Shoe and Pismire Islands are the two original islands of the refuge. Gull Island was the site of a Coast Guard lighthouse station and was acquired on September 9, 1969. Hat Island was acquired from The Nature Conservancy on December 19, 1994. Acreage for the islands are found in Table 1.

Figure 1 – Location Map



Shoe and Pismire Islands were included in the Omnibus Wilderness Act (P.L. 91-504, 1970), which established a number of Wilderness Areas on refuge and other Federal lands.

Shoe Island, at high lake levels, is virtually submerged, and at low lake levels appears as a gravel bar with a few clumps of grass and herbs. Pismire rises higher and supports patches of brush and herbs. Gull and Hat Islands support some forest vegetation, grasses and brush.

Figure 2 – Gull Island

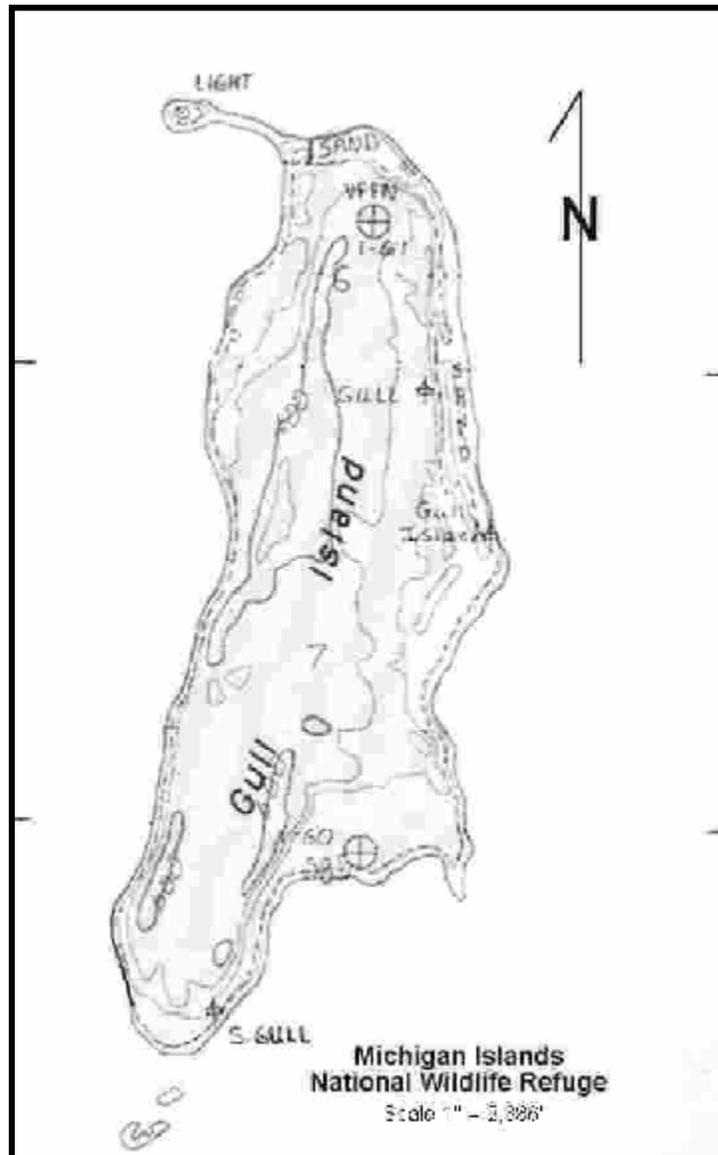


Table 1 – Michigan Islands Acres

Island	Acres	Wilderness Status
Gull	229.7	No
Hat	11.0	No
Shoe	0.6	Yes
Pismire	2.0	Yes
Total Acres	243.3	

CULTURAL RESOURCES

An overview study of archeological and cultural values on the islands in both Lakes Michigan and Huron was conducted by Commonwealth Cultural Resources Group, Inc. in 2000 (Robertson, et al, 2000).

A summary of the findings indicates that there are no previously recorded archeological sites on Hat, Shoe, or Pismire Islands although sites have been recorded within approximately two miles of each. Gull Island, according to General Land Office survey notes, had a fishing village, four log shanties and a few Native American wigwams on the east side of the island. There are no existing, previously recorded, historical above-ground resources on any of the four islands.

Hat, Shoe and Pismire Islands are rated as having a low potential for archeological sites due to their small size and limited elevation above the lake. Gull Island is rated as having a high potential for both prehistoric and historic archeological sites on habitable portions of the island.

The Commonwealth report was forwarded to the Michigan State Historic Preservation Officer in October, 2000.

FISH AND WILDLIFE

Due to the small size of three of the islands, little wildlife use, during the breeding season, other than waterfowl, heron, gull, Caspian Tern (*Sterna caspia*), and double-crested cormorant (*Phalacrocorax auritus*) nesting is known to occur. The value of the islands to migrating birds is not known, but may be important. Significant damage to forest vegetation on Hat Island has been noted as a result of cormorant rookeries. There is little hunting pressure because of the distance from mainland access and limited wildlife populations. Both Federal and state listed T&E or special emphasis species that may be found on the islands are listed in Tables 5 and 6 in Appendix F.

VEGETATION

The only significant vegetative resources are located on Gull Island. Species found include: paper birch (*Betula papyrifera*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), northern white cedar (*Thuja occidentalis*), balsam fir (*Abies balsamea*), white spruce (*Picea glauca*), and trembling aspen (*Populus tremuloides*). The groundcover is dominated by Canada yew (*Taxus canadensis*). Mountain ash (*Pyrus spp.*), red osier dogwood (*Cornus stolonifera*), elderberry (*Sambucus canadensis*), willow (*Salix spp.*) and juniper (*Juniperus communis*) are also present.

In general, fire is not likely to be a significant factor either in management or disturbance of the islands' vegetation.

On Hat Island there is mostly brush with some grass. Forest vegetative cover is limited to mostly standing dead trees due to effects of cormorant nesting.

Pismire is brush covered with a small amount of grass.

Shoe Island is basically a gravel bar and supports little or no vegetation depending on lake levels.

PHYSICAL RESOURCES

Physiographically, the islands are similar, varying chiefly in size and elevation. They portray an ecological sequence from Shoe Island which has the lowest elevation to Gull Island, which has the highest elevation. The islands are a result of glacial forces from the last Wisconsin Ice Age.

Soils are generally well-drained sand and gravel. Gull and Hat Islands show somewhat more soil structure as vegetation has been present for long enough to have contributed some organic material to the upper soil horizons.

The topography of the islands is basically flat with elevations ranging to 10-15 feet above the average lake level. There are no permanent streams on the islands. Some low areas are capable of collecting and storing water.

The area is rated as Class II air quality. This means that actions under the plan will be designed to prevent significant deterioration in air quality.

STRUCTURES AND FACILITIES

There are no Fish and Wildlife Service (FWS) owned structures or facilities on the islands. On Gull Island there is an automated light located on the north shore. The light structure belongs to the U.S. Coast Guard, is steel and not likely to be affected by fire.

SPECIAL CONDITIONS

Shoe and Pismere Islands are part of the Michigan Islands Wilderness. This designation was part of Public Law 91-504 passed October 23, 1970. Under Wilderness regulations, there should be no public use of the islands except in a boating emergency or with an approved permit. As Gull and Hat Islands were acquired after enactment, Wilderness regulations do not apply to these islands although they carry a closed designation. There is evidence of occasional shoreline use on Gull Island in spite of the closed area signage.

WILDLAND FIRE MANAGEMENT SITUATION

HISTORIC ROLE OF FIRE

There is no known fire history for the islands. The small size, limited resources, and existing vegetation on the islands indicates fire from either lightning or anthropogenic sources would be a rare occurrence.

Pre-Settlement Fires

The natural fire interval is unknown. Fire from any cause was likely to be extremely rare. Based on the vegetation of the islands, it is likely that the historic fire regime could be considered Class 5, (long return interval crown fires and severe surface fires in combination (100 to 300 year return intervals)), Heinselman (1981).

Post-Settlement Fire History

No fires are known to have occurred since refuge establishment. The remote location makes detection virtually impossible and reporting unlikely. There are no records or indications of fire on the islands since European settlement in the mid-1800's.

Prescribed Fire History

No prescribed fire has been applied to the area since establishment or (acquisition in the case of Gull and Hat Islands).

RESPONSIBILITIES

The Project Leader at Seney NWR is responsible for planning and implementing the fire management program on the islands. A Zone Fire Management Officer (Zone FMO) located at Leopold Wetland Management District, Portage, WI is responsible for fire management program oversight.

Preparedness planning and work is accomplished by the Refuge Fire Management Officer (FMO) with resources and guidance provided by the Zone FMO. Emergency fire management actions will be handled by Seney staff providing conditions are safe for boat transport to the islands. Response times from the refuge will run from 2-8 hours depending on staff availability, equipment location, and boating conditions on the lake. The Zone FMO will be immediately notified of all emergency actions.

Project Leader (PL)

- Is responsible for implementation of all fire management activities within the unit and will ensure compliance with Department and Service policies.
- Selects the appropriate management responses to wildland fire.
- Identifies preparedness projects and biological objectives to Fire Management Officer (FMO) and notifies FMO of project constraints.
- Acts as the primary refuge resource management specialist during fire management planning and operations.

Fire Management Officer (FMO)

- Responsible for all fire-related planning and implementation for the refuge. Integrates biological objectives into all fire management planning and implementation.
- Solicits program input from the PL.
- Supervises preparedness project planning.

- Is responsible for implementation of this Plan.
- Is responsible for preparation of fire reports following the suppression of wildland fires and for preparedness projects requiring such.
- Prepares an annual report detailing fire occurrences and preparedness activities undertaken in each calendar year. This report will serve as a past year's fire management activities review, as well as provide documentation for development of a comprehensive fire history record for the refuge.

Zone Fire Management Officer (Zone FMO)

- Submits budget requests and monitors FIREBASE funds.
- Maintains records for all personnel involved in suppression and preparedness activities, detailing the individual's qualifications and certifications for such activities.
- Updates all fire qualifications for entry into the Fire Management Information System.
- Nominates personnel to receive fire related training, as appropriate.

Incident Commander

Incident Commanders (of any level) use strategies and tactics as directed by the Project Leader and Wildland Fire Situation Analysis (WFSA), where applicable, to implement selected objectives on a particular incident. A specific Limited Delegation of Authority (Appendix C) will be provided to the Incident Commander prior to assuming responsibility for an incident. Major duties of the Incident Commander are given in the National Wildfire Coordinating Group (NWCG) Fireline Handbook, including:

- Brief subordinates, direct their actions, and provide work tools.
- Ensure that safety standards identified in the Fire Orders, the Watch Out Situations, and agency policies are followed at all times.
- Personally scout, and communicate with others, to be knowledgeable of fire conditions, fire weather, tactical progress, safety concerns and hazards, condition of personnel, and needs for additional resources.
- Order resources to implement the management objectives for the fire.
- Inform appropriate dispatch of current situation and expected needs.
- Coordinate mobilization and demobilization with dispatch and the Collateral FMO.
- Perform administrative duties (i.e., approving work hours, completing fire reports for command period, maintaining property accountability, providing or obtaining medical treatment, and evaluating performance of subordinates).
- Assure aviation safety is maintained to the highest standards.

Initial attack modules

An initial attack module will be assembled at Seney for all wildland fires reported on the islands. The module would usually consist of three qualified firefighters, one of whom would be qualified at the initial attack incident commander level (ICT5). At least one individual would meet Service requirements for a boat operator.

Employees participating in any wildland fire activities on Fish and Wildlife Service or cooperators' lands will meet fitness requirements established in PMS 310-1, except where Service-specific fitness requirements apply.

INTERAGENCY COORDINATION

The State of Michigan has primary responsibility for wildland fire suppression on refuge lands under state law. As the MIDNR has no local capability to travel to the islands with necessary suppression equipment, an appropriate suppression response will be undertaken by the FWS.

Seney National Wildlife Refuge will use the Incident Command System (ICS) as a guide for fireline organization. Qualifications for individuals is per DOI Wildland Fire Qualifications and Certification System, part of NIIMS and the National Wildland Fire Coordination Group (NWCG) Wildland and Prescribed Fire Qualification Guide (310-1).

PROTECTION OF SENSITIVE RESOURCES

It is unlikely that wildlife resources will be affected more than temporarily by smoke and the flame front. There is potential for wildland fire during the nesting season to adversely affect ground nesting birds and possibly tree nesting species. Small mammals may be affected although their reproductive capability restores populations within a relatively short time. (Schramm et al., 1983) Vegetation may be affected by fire; the effects will depend on fire intensity, rate of spread, condition of fuels and other factors.

Seney Refuge staff will act as resource advisors to the Incident Commander.

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.

Impacts to archeological resources by fire vary. The four basic sources of damage are (1) fire intensity, (2) duration of heat, (3) heat penetration into soil, and (4) suppression actions. Of the four, the most significant threat is from equipment during line construction for wildland fire holding actions.

The following actions will be taken to protect archeological and cultural resources:

Wildland Fires

- Minimum impact fire suppression tactics will be used to the fullest extent possible.
- Foam will not be used on the Islands.
- Resource Advisors will inform Fire Suppression personnel of any areas with cultural resources and should contact the Regional Historic Preservation Officer and/or his/her staff for more detailed information.
- The location of any sites discovered as the result of fire management activities will be reported to the Regional Historic Preservation Officer.
- Rehabilitation plans will address cultural resources impacts and will be submitted to the Regional Historic Preservation Officer for review.

WILDLAND FIRE ACTIVITIES

Fire program management describes the operational procedures necessary to implement fire management at Michigan Islands National Wildlife Refuge. Program management includes: fire prevention, preparedness, emergency preparedness, fire behavior predictions, step-up staffing plan, fire detection, fire suppression, minimum impact suppression, minimum impact rehabilitation, and documentation.

All fires will receive an appropriate management response. As the islands have no known fire history since designation or acquisition, a response capable of suppression actions will be the usual practice.

Records from MIDNR show that the mainland fire season is typically from mid-April to late May or early June with a possible season in the fall from mid-September to snowfall, usually mid-November. Depending on the specific weather of any particular year the seasons may be shorter or longer and, therefore, may start earlier or last longer.

FIRE MANAGEMENT STRATEGIES

Although resource impacts of suppression alternatives must always be considered in selecting a fire management strategy, managing fire for resource benefit will not be considered. Reasons for not managing wildland fire for resource benefits include:

- the small size of all but Gull Island (most fires reported are expected to be out upon suppression force arrival);
- the difficulty of access due to boating conditions when a monitor is required to be at a Wildland Fire Use for Resource Benefit (WFURB) fire until it is declared controlled;
- current lack of adequate staff numbers to monitor a WFURB

Appropriate suppression action will be taken to ensure firefighter safety, public safety, and protection of refuge resources.

Critical protection areas, such as nesting trees for bald eagles or ground nesting habitats, will receive priority consideration in fire suppression efforts. In all cases, the primary concerns of fire suppression personnel shall be safety and, if needed, all individuals not involved in the suppression effort may be evacuated.

Suppression strategies are limited by the equipment that can be carried by boat from the mainland. Generally tools will be hand tools and pumps that can be used on the shoreline. These tools should meet the desired objectives inflicting the least impacts upon natural and cultural resources. Minimum impact suppression tactics (MIST) will be employed to protect all resources. Natural and artificial barriers will be used as much as possible for containment. When necessary, fire line construction will be conducted in such a way as to minimize long-term impacts to resources. Sites impacted by fire suppression activities or by the fire will be rehabilitated as necessary, based on an approved course of action for each incident.

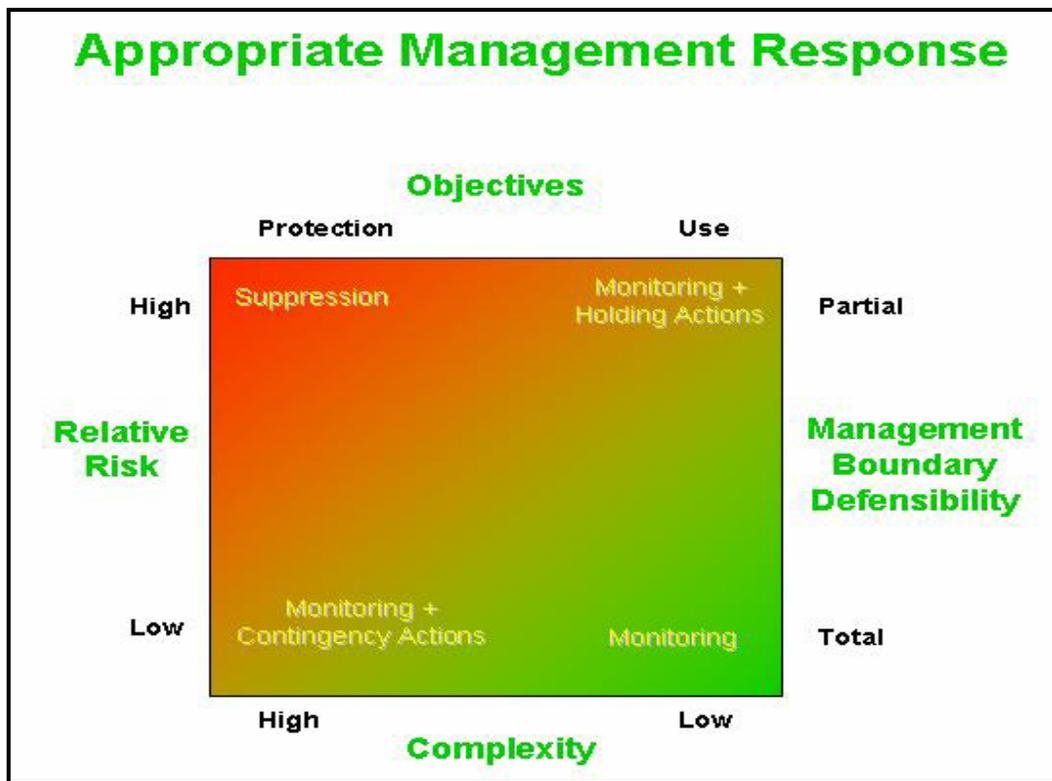
Specific fire management strategies for Michigan Islands NWR are:

- All wildland fires will be managed using the appropriate suppression strategy which considers safety, natural resources, and economics.
- Priority will be given to the protection of critical refuge habitats.
- Known cultural resource areas will be excluded from all fire management activities including fire line location, retardant use, and adverse fire effects.

- Foam or other retardants will not be used due to the proximity of open water and concern for shoal fisheries.

Figure 3 provides a graphic method of determining alternative responses.

Figure 3 – Appropriate Management Response



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 activities include: budget planning, equipment acquisition, equipment maintenance, dispatch (Initial attack, extended, and expanded), equipment inventory, personnel qualifications, and training. Preparedness efforts are accomplished prior to normal fire season dates.

Historical Weather Analysis

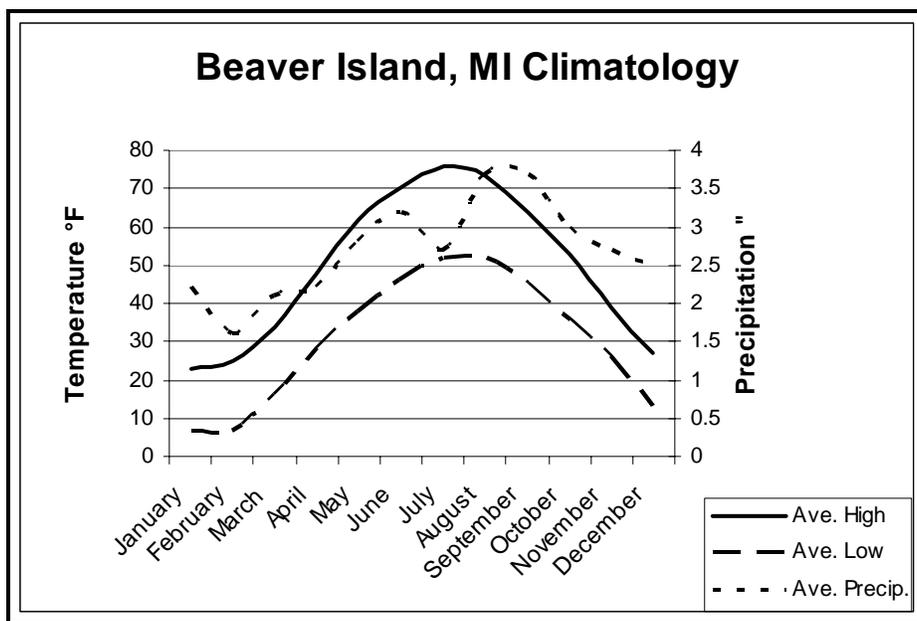
There is no weather station on the islands. Weather history (Figure 4) comes from National Oceanic and Atmospheric Administration (NOAA) records at Beaver Island, MI approximately 10 miles south of the islands. The normal fire season on the mainland (as determined by MIDNR) extends from mid-April to early June.

Fire Prevention

As the islands are not staffed, a fire prevention program will not be conducted. Should fire occurrence become a problem, signs would be posted on the islands warning of fire danger and reminding visitors that the Islands are closed to public use.

As the Islands are closed to public use, during periods of extreme or prolonged fire danger, emergency law enforcement patrols may become necessary.

Figure 4 – Beaver Island, MI Climatology



Hazard Reduction for Structure Protection

There are no structures present on the Islands. No hazard fuel operations for structure protection will be conducted.

Staffing Priority Levels

As no weather station is present and there is no staff on the islands, no Step-up actions are considered in this plan.

Training

Departmental policy requires that all personnel engaged in suppression and prescribed fire duties meet the standards set by the National Wildfire Coordinating Group (NWCG). Seney National Wildlife Refuge will conform strictly to the requirements of the wildland fire management qualification and certification system and FWS guidelines.

Fire suppression is an arduous duty. Poor physical condition of crew members can endanger safety and lives during critical situations. Personnel performing fire management duties will maintain a high level of physical fitness. This requires successful completion of a fitness pack test. Appendix K contains a brief explanation of the physical testing requirements.

Supplies and Equipment

Suppression tools and equipment will be taken from the Seney Refuge fire cache to deal with reported fires. Refuge staff will use assigned personal protective equipment.

DETECTION

Fires are expected to be detected by passing vessels. Reports are likely to be made to either the Coast Guard or MIDNR. These organizations would then contact Seney NWR for dispatch.

The Fire Management Plan does not discriminate between human-caused and lightning-caused fire. All wildland fires will be suppressed. However, initial attack 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. Qualified investigators are available from either MIDNR or FWS.

COMMUNICATIONS

All communications are based on the Seney Refuge communications system. Due to the distance from Seney's base, most communication would be expected to be through cellular phones. Some communication may be possible through the Coast Guard using marine radio frequencies.

PRE-ATTACK PLAN

Upon discovery of a fire, all subsequent actions will be based on the following:

- The Incident Commander (IC) will locate, size-up, and coordinate suppression actions.
- Provide for public safety.
- Considering the current and predicted fire conditions, the Incident Commander will assess the need for additional suppression resources and estimate the final size of the fire. The potential for spread, as well as the total suppression force required to initiate effective containment action at the beginning of each burning period.
- The Incident Commander will assess the need for law enforcement personnel for investigations and make the request to the FMO.
- Document decisions and complete the fire report (DI-1202).
- Should a wildland fire move into an extended attack with incident management from outside FWS, a Delegation of Authority will be issued by the Project Leader. A sample Limited Delegation of Authority is found in Appendix C.

FIRE MANAGEMENT UNITS

There is only one Fire Management Unit (FMU) on the refuge. It encompasses all islands.

Due to staff limitations, relatively small land area, and long response times, this plan does not recommend wildland fire managed for resource benefit as an option on the islands. Wildland fires will be managed using the appropriate suppression response.

Fire Effects

Fire effects are expected to be limited due to the generally maritime weather conditions found on the islands. Effects on forest vegetation are not expected to be severe unless significant drought conditions are present. Areas that are grass covered would recover within a growing season or less depending on the season of fire occurrence.

Most fires on the islands would be expected to be relatively slow moving. Smaller mammals and reptiles may be more subject to fire because of limited mobility. Most reptiles would be in wetter areas or

burrows where temperatures are cooler. Effects on small mammals would be more pronounced in the grass fuels and in the ecotone between grass and forest or brush fuels where escape is difficult (Kelleyhouse, 1979). Small mammals usually have high reproductive rates and with regeneration of their normal habitat, will usually recover within two or three years (Schramm, et al., 1983).

Fuel Types

Northern Hardwoods - this type is best represented by Northern Forest Fire Laboratory (NFFL) fuel models 8 and 10. This fuel covers most of Gull Island and consists of litter and understory growth with a 65 to 90% crown closure.

Fuel Model 6 (dormant brush and hardwood slash) best describe the fuels on Hat Island. Cormorant nesting has killed most trees on the island leaving an accumulation of hardwood slash and brush cover.

Pismere Island is basically brush covered with a few areas of low grass. Fuel models 5 Brush (2 feet) and 1 Shortgrass (1 foot) describe fuels on this island.

Fire Behavior

Normal fire behavior in the forest fuels on the islands would be slow moving with minimal (1-2') flame lengths. Grass areas would see flame lengths of 1-3' with a rapid spread component depending on the stage of curing.

Extreme fire behavior in the hardwood areas would see flame lengths of 2-4' with potentially rapid spread depending on the season and condition of the litter layer. During the fall with cured fuels, flame lengths could run to 6+' with rates of spread high enough to require indirect attack.

Fires on Shoe and Pismere would likely be out well before refuge staff could arrive regardless of size at discovery or travel time to the islands.

For Hat Island, using NFFL model 6 with inputs as shown in Table 2, a fire reported to Seney Refuge, upon ignition, with an average response time of 4 hours would have covered the entire island surface before suppression forces could arrive.

Gull Island, using a combined fuel model (60% model 8 - closed timber litter and 40% model 10 - timber (litter and understory)) under similar conditions, would show a burned area of approximately 12 acres upon arrival. Table 3 contains the details.

Table 2 – Fire Behavior – FM 6

NFFL Fuel Model 6			
Inputs		Outputs	
1- hour fuel moisture	10%	Rate of Spread	27 ch/hr
10 hour fuel moisture	10%	Fireline intensity	205 BTU/ft/sec
100 hour fuel moisture	15%	Flame length	5.2 feet
Mid-flame Wind Speed	5 mph	Size @ 4 hours	440 acres
Slope	0%		

Table 3 – Fire Behavior – FM 8 & 10

NFFL Fuel Models 8 (40%) & 10 (60%)			
Inputs		Outputs	
1- hour fuel moisture	10%	Rate of Spread	4 ch/hr
10 hour fuel moisture	10%	Fireline intensity	81.2 BTU/ft/sec
100 hour fuel moisture	15%	Flame length	2.9 feet
Live Woody Fuel Moisture	125%	Size @ 4 hours	12 Acres
Mid-flame Wind Speed	5 mph		S
Slope	0%		

SUPPRESSION TACTICS

Suppression involves a wide range of possible tactics from initial attack to final control. To this end, all wildland fires will be managed in a safe, aggressive, and cost-effective manner to produce efficient action with minimal resource damage. As noted in the Fire Behavior section, it is likely that only a fire on Gull Island would be active on arrival.

Typical initial attacks will consist of 1-3 individuals with hand tools and portable pumps. All fires will be assessed by the on-scene incident commander and attacked using the appropriate management strategy. When a selected strategy requires line construction or other confining tactics, minimum impact fire suppression tactics will be applied. Natural barriers will be used as much as possible to reduce fireline construction. Unnecessary cutting and bucking should be replaced with alternative actions whenever possible. Back-fires and burnout operations should consider fire intensities and attempt to avoid excessive heating of the soil.

As refuge staff will be the initial attack force, the Incident Commander will also be the *de facto* resource advisor, documenting rehabilitation needs as well as making on-the-ground tactical decisions.

There will be only one Incident Commander responsible to the project leader. The Incident Commander will designate all overhead positions on fires requiring extended attack. If an Incident Commander from outside the refuge is assigned, a Limited Delegation of Authority (Appendix C) should be issued by the Project Leader.

Suppression Conditions

All suppression actions will be completed using hand tools or water as there is no facility to load or unload equipment other than hand tools on the islands.

Wildland Fire Situation Analysis

For fires that cannot be contained in one burning period, a WFSA must be prepared. In the case of a wildland fire, the Project Leader, in conjunction with the FMO, will prepare the WFSA. Approval of the WFSA resides with the Project Leader.

The purpose of the WFSA is to allow consideration of alternatives by which a fire may be controlled. Damages from the fire, transportation issues, suppression costs, safety, and the probable character of suppression actions are all important considerations.

With the small land areas and long response times, most fires are expected to have burned out by the time refuge staff can reach the scene. It is highly unlikely that a fire would enter a second burning period uncontained except on Gull Island.

Aircraft Operations

Aircraft may be used in all phases of fire management operations. All aircraft must be Office of Aircraft Services (OAS) or Forest Service approved. An OAS Aviation Policy Department Manual is available from OAS.

Helicopters may be used for reconnaissance, bucket drops and transportation of personnel and equipment. Any helicopter used for island fire operations must be equipped with floats as specified by OAS. Helispot construction on the islands will not be allowed.

As in all fire management activities, safety is a primary consideration. Qualified aviation personnel will be assigned to all flight operations.

REHABILITATION AND RESTORATION

There are 3 types of fire rehabilitation: Suppression, Burn Area, and Emergency Stabilization.

Suppression rehabilitation is to restore and repair property and resources from direct suppression activity damage, i.e. cut fences, dozer lines, and campsites. Burn area rehabilitation and stabilization is to restore resources and property damaged or otherwise impacted from the fire, i.e. burned waterlines, denuded hill sides, etc.

Suppression Rehabilitation

In the event of a wildland fire, rehabilitation of fire suppression damage should be accomplished immediately. An appropriate time is within 7 days after the fire is controlled unless the regional fire coordinator grants an extension. Funding for suppression rehabilitation is from the specific fire cost account as established through current Service procedures. The Incident Commander as agreed to by the Project Leader will initiate suppression rehabilitation. Rehabilitation will be directed toward minimizing or eliminating the effects of the suppression effort and reducing the potential hazards caused by the fire.

These actions may include:

- Backfill control lines, scarify, and seed*.
- Install water bars and construct drain dips on control lines to prevent erosion.
- Restore natural ground contours, which were altered.
- Remove all flagging, equipment and litter.
- Re-vegetation to restore sensitive impacted areas due to suppression actions*.

*If re-vegetation or seeding is necessary, locally procured seeds of native plant species will be preferred.

A written suppression rehabilitation plan may be appropriate on larger incidents. Contractors or equipment may be hired to accomplish specialized work.

Emergency Stabilization Versus Rehabilitation

Emergency stabilization is the use of appropriate emergency stabilization techniques in order to protect public safety and stabilize and prevent further degradation of cultural and natural resources in the perimeter of the burned area and downstream impact areas from erosion and invasion of undesirable species. Rehabilitation is the use of appropriate rehabilitation techniques to improve natural resources as stipulated in approved refuge management plans and the repair or replacement of minor facilities damaged by the fire.

Total "rehabilitation" of a burned area is not within the scope of the Emergency Rehabilitation funding. Emergency Rehabilitation funding can be used to begin the rehabilitation process if other funding is committed to continue the rehabilitation throughout the life of the project (beyond the initial 3 years of Emergency Rehabilitation funding). Major facilities are repaired or replaced through supplemental appropriations of other funding.

Burned Area Emergency Stabilization and Rehabilitation (ESR) Plan

The goal of the ESR Plan is to protect public safety and stabilize and prevent further degradation of natural and cultural resources, and to rehabilitate the stability, productivity, diversity, and ecological integrity of refuge lands after a wildland fire as described in approved refuge management plans. The ESR Plan is tiered to the refuge Comprehensive Conservation Plan and Fire Management Plan. Development of ESR Plan objectives is guided by resource management objectives, general management practices, and constraints identified in approved plans.

If Burned Area Emergency Stabilization and Rehabilitation is required to reduce the effects of a wildland fire, then the refuge should request appropriate funding through the Burned Area Emergency Stabilization and Rehabilitation (ESR) fund. The Service representative at the National Interagency Fire Center administers the ESR fund. A rehabilitation and restoration survey, plan, and request must be prepared and submitted according to agency guidelines. Due to the small size of the islands, incidents may only need simple plans prepared by local staff. The Project Leader, FMO and Zone FMO will review all ESR Plans. The final plan will be submitted to the Regional Office for review prior to submission to the Washington Office. Direction and ESR guidelines can be found in the Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook.

REQUIRED REPORTING

The IC will be responsible for documenting decisions and providing information to the Project Leader to complete the fire report (DI-1202). The FMO will be responsible for any additional required reports.

FIRE INVESTIGATION

Fire management personnel will attempt to locate and protect the probable point of origin and record pertinent information required to determine fire cause. They will be alert for possible evidence, protect the scene and report findings to the fireline supervisor.

Prompt and efficient investigation of all suspicious fires will be carried out. However, fire management personnel should not question suspects or pursue the fire investigation unless they meet federal standards for federal investigators. All fire investigations should follow the guidelines outlined in 4.1-2 of the Fire Management Handbook (2000).

FIRE RESEARCH

No fire related research is occurring on the Islands. There are several potential fire related research projects.

- Dendrochronology fire history on Gull Island.
- Fuel surveys on Gull and Hat Islands.
- Literature review of fire effects on the fuels found on Hat and Gull Islands.
- Fire effects on migratory bird species using the Islands.

PUBLIC SAFETY

FWS is dedicated to ensuring the safety of each visitor to the refuge. Shoe and Pismire Islands are designated wilderness and are closed to visitors without a permit from the refuge office at Seney. Gull and Hat Islands are also closed to all public entry.

As refuge staff only visits the Islands 3-4 times annually, restricting unauthorized public access and protecting the public in case of a wildland fire is virtually impossible.

Emergency medical evacuation from the islands would likely require Coast Guard assistance as they have the equipment, staffing, and experience to handle over water rescues.

PUBLIC INFORMATION AND EDUCATION

The public information program will be developed as follows:

- The fire management program may be incorporated into visitor information.
- News releases will be distributed to the media as appropriate.
- The public information outlets of cooperating agencies and the regional office will be provided with all fire management information.
- The fire management program will be discussed in informal talks with all employees and volunteers.

During unwanted wildland fire events, on-site information will be provided to alleviate visitor concern about the apparent destruction of resources by fire or the impairment of views due to temporary smoke.

As outlined in the prevention section, emergency law enforcement patrols may become necessary during periods of extreme or extended fire danger.

FIRE CRITIQUES AND ANNUAL PLAN REVIEW

FIRE CRITIQUES

Fire reviews will be documented and filed with the final fire report. The FMO will retain a copy for the refuge files.

ANNUAL FIRE SUMMARY REPORT

The FMO will be responsible for completing an annual fire summary report. The report will contain the number of fires by type, acres burned by fuel type, cost summary, personnel utilized, and fire effects.

ANNUAL FIRE MANAGEMENT PLAN REVIEW

The Fire Management Plan will be reviewed annually. Necessary updates or changes will be accomplished prior to the next fire season. Any additions, deletions, or changes will be reviewed by the Project Leader to determine if such alterations warrant a re-approval of the plan.

CONSULTATION AND COORDINATION

The following agencies, organizations and/or individuals were consulted in preparing this plan.

Corace, Greg, Forester, Seney National Wildlife Refuge
Gale, Cal, Fire Program Analyst, RS Staffing, Inc.
Tansy, Mike, Biologist, Seney National Wildlife Refuge.

APPENDICES

APPENDIX A: REFERENCES CITED

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- Robertson, J.A., Taylor, K.C., Hambacher, M.J., Lovis, W.A., Monaghan, G.W. 2000. Overview Study of Archaeological and Cultural Values on Shiawassee, Michigan Islands and Wyandotte National Wildlife refuges in Saginaw, Charlevoix, Alpena, and Wayne Counties, Michigan. Jackson, MI. Commonwealth Cultural Resources Group, Inc.
- Schramm, Peter; Willcutts, Brian J. 1983. Habitat selection of small mammals in burned and unburned tallgrass prairie. In: Brewer, Richard, ed. Proceedings, 8th North American prairie conference; 1982 August 1-4; Kalamazoo, MI. Kalamazoo, MI: Western Michigan University, Department of Biology: 49-55.
- USDA-USDI. 2002. Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook. 151 pp.
- USFWS. 2002. Fire Management Handbook. 402 pp.

APPENDIX B: DEFINITIONS

Agency Administrator. The appropriate level manager having organizational responsibility for management of an administrative unit. May include Director, State Director, District Manager or Field Manager (BLM); Director, Regional Director, Complex Manager or Project Leader (FWS); Director, Regional Director, Park Superintendent, or Unit Manager (NPS), or Director, Office of Trust Responsibility, Area Director, or Superintendent (BIA).

Appropriate Management Action. Specific actions taken to implement a management strategy.

Appropriate Management Response. Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Appropriate Management Strategy. A plan or direction selected by an agency administrator which guide wildland fire management actions intended to meet protection and fire use objectives.

Appropriate Suppression. Selecting and implementing a prudent suppression option to avoid unacceptable impacts and provide for cost-effective action.

Bureau. Bureaus, offices or services of the Department.

Class of Fire (as to size of wildland fires):

- Class A – ¼ acre or less.
- Class B - more than ¼ but less than 10 acres.
- Class C - 11 acres to 100 acres.
- Class D - 101 to 300 acres.
- Class E - 301 to 1,000 acres.
- Class F - 1,001 to 5,000 acres.
- Class G - 5,001 acres or more.

Emergency Fire Rehabilitation/Burned Area Emergency Rehabilitation (EFR/BAER). Emergency actions taken during or after wildland fire to stabilize and prevent unacceptable resource degradation or to minimize threats to life or property resulting from the fire. The scope of EFR/BAER projects are unplanned and unpredictable requiring funding on short notice.

Energy Release Component (ERC) A number related to the available energy (BTU) per unit area (square foot) within the flaming front at the head of a fire. It is generated by the National Fire Danger Rating System, a computer model of fire weather and its effect on fuels. The ERC incorporates thousand hour dead fuel moistures and live fuel moistures; day to day variations are caused by changes in the moisture content of the various fuel classes. The ERC is derived from predictions of (1) the rate of heat release per unit area during flaming combustion and (2) the duration of flaming.

Extended Attack. A fire on which initial attack forces are reinforced by additional forces.

Fire Suppression Activity Damage. The damage to lands, resources and facilities directly attributable to the fire suppression effort or activities, including: dozer lines, camps and staging areas, facilities (fences, buildings, bridges, etc.), handlines, and roads.

Fire Effects. Any consequences to the vegetation or the environment resulting from fire, whether neutral, detrimental, or beneficial.

Fire Intensity. The amount of heat produced by a fire. Usually compared by reference to the length of the flames.

Fire Management. All activities related to the prudent management of people and equipment to prevent or suppress wildland fire and to use fire under prescribed conditions to achieve land and resource management objectives.

Fire Management Plan. A strategic plan that defines a program to manage wildland and prescribed fires and documents the Fire Management Program in the approved land use plan. The plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans and prevention plans.

Fire Prescription. A written direction for the use of fire to treat a specific piece of land, including limits and conditions of temperature, humidity, wind direction and speed, fuel moisture, soil moisture, etc., under which a fire will be allowed to burn, generally expressed as acceptable range of the various fire-related indices, and the limit of the area to be burned.

Fuels. Materials that are burned in a fire; primarily grass, surface litter, duff, logs, stumps, brush, foliage, and live trees.

Fuel Loadings. Amount of burnable fuel on a site, usually given as tons/acre.

Hazard Fuels. Those vegetative fuels which, when ignited, threaten public safety, structures and facilities, cultural resources, natural resources, natural processes, or to permit the spread of wildland fires across administrative boundaries except as authorized by agreement.

Initial Attack. An aggressive suppression action consistent with firefighter and public safety and values to be protected.

Maintenance Burn. A fire set by agency personnel to remove debris; i.e., leaves from drainage ditches or cuttings from tree pruning. Such a fire does not have a resource management objective.

Natural Fire. A fire of natural origin, caused by lightning or volcanic activity.

NFDRS Fuel Model. One of 20 mathematical models used by the National Fire Danger Rating System to predict fire danger. The models were developed by the US Forest Service and are general in nature rather than site specific.

NFFL Fuel Model. One of 13 mathematical models used to predict fire behavior within the conditions of their validity. The models were developed by US Forest Service personnel at the Northern Forest Fire Laboratory, Missoula, Montana.

Prescription. Measurable criteria which guide selection of appropriate management response and actions. Prescription criteria may include safety, public health, environmental, geographic, administrative, social, or legal considerations.

Prescribed Fire. A fire ignited by agency personnel in accord with an approved plan and under prescribed conditions, designed to achieve measurable resource management objectives. Such a fire is designed to produce the intensities and rates of spread needed to achieve one or more planned benefits to natural resources as defined in objectives. Its purpose is to employ fire scientifically to realize maximize net benefits at minimum impact and acceptable cost. A written, approved prescribed fire plan must exist and NEPA requirements must be met prior to ignition. NEPA requirements can be met at the land use or fire management planning level.

Preparedness. Actions taken seasonally in preparation to suppress wildland fires, consisting of hiring and training personnel, making ready vehicles, equipment, and facilities, acquiring supplies, and updating agreements and contracts.

Prevention Activities directed at reducing the number or the intensity of fires that occur, primarily by reducing the risk of human-caused fires.

Rehabilitation (1) Actions to limit the adverse effects of suppression on soils, watershed, or other values, or (2) actions to mitigate adverse effects of a wildland fire on the vegetation-soil complex, watershed, and other damages.

Suppression. A management action intended to protect identified values from a fire, extinguish a fire, or alter a fire's direction of spread.

Unplanned Ignition. A natural fire that is permitted to burn under specific conditions, in certain locations, to achieve defined resource objectives.

Wildfire. An unwanted wildland fire.

Wildland Fire. Any non-structure fire, other than prescribed fire, that occurs in the wildland.

Wildland Fire Situation Analysis (WFSA) A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives as selection criteria.

Wildland/Urban Interface Fire A wildland fire that threatens or involves structures.

APPENDIX C: SAMPLE DELEGATION OF AUTHORITY

Michigan Islands National Wildlife Refuge Seney, MI

Limited Delegation of Authority

As of 1800, May 20, 2001, I have delegated authority to manage the Gull Island fire, number 3102, Michigan Islands National Wildlife Refuge, to Incident Commander, John Doe and his Incident Management Team.

The fire which originated as an arson fire on May 18, 2001, is burning in habitat valuable to nesting bird species. My considerations for management of this fire are:

1. Provide for firefighter safety.
2. I would like the fire managed in such a manner that suppression actions will cause little environmental damage as possible.
3. Key features requiring priority protection are: eagle nest trees.
4. Key resource considerations are: minimize disturbance to nesting piping plovers.
5. Restrictions for suppression actions are no foam or retardant use within 200 feet of island shoreline.
6. Minimum tools for use are pumps and chainsaws.
7. My agency advisor will be the Refuge Biologist.
8. Managing the fire cost effectively for the values at risk is a significant concern.

Tracy Casselman
Project Leader Seney National Wildlife refuge
May 20, 2001

APPENDIX D: NEPA DOCUMENTATION

This plan does not support any activities that would constitute a new Federal action. It documents the current situation which has been in existence since establishment in 1943 and acquisition of additional lands in 1969 and 1994. It is eligible for Categorical Exclusion status and this is reflected in the Finding of No Significant Impact.

APPENDIX E: ANNUAL UPDATE DOCUMENTS

Cache Equipment Inventory

No fire cache or fire equipment is positioned on the islands. Fire cache inventory is found with the Seney NWR FMP.

APPENDIX E: CONTINUED

Cooperator Contacts

Table 4 – Cooperator Contact List

Name	Phone Number
Michigan Department of Natural Resources, Gaylord Operations Center	(989) 732-3541

APPENDIX E: CONTINUED

Adjacent Landowner Contact List

There are no adjacent landowners.

APPENDIX E: CONTINUED

Cooperative Agreements

No cooperative agreements are currently in force.

APPENDIX E: CONTINUED

Wildland Fire Dispatch Plan

***Michigan Islands National Wildlife Refuge
Dispatch Plan***

When report of smoke or fire is received get as much information as possible from the caller. The following list should be filled in.

Location of smoke or fire:

Location of caller:

Name and telephone number of caller:

Color of smoke:

Size of fire:

Type of Fuel:

Character of fire (running, creeping, etc.):

Anyone on the fire:

See anyone in the area or boats leaving the area:

- 1. Check map location*
- 2. Notify Project Leader*
- 3. Maintain log of all telephone communications.*
- 4. Remain on duty.*

DIRECTORY

Regional Office

<i>Brian McManus</i>	<i>Fire Mgt. Coordinator</i>	<i>Office (612) 713-5366</i> <i>Home (507) 263-8878</i>
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<i>Nita Fuller</i>	<i>Chief, Division of Refuges</i>	<i>Office (612) 713-5401</i>
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National Interagency Fire Center

<i>Phil Street</i>	<i>FWS Coordinator</i>	<i>Office (208) 387-2595</i>
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MIDNR, Gaylord Operations Center

Office (989) 732-3541

Other Services

Hospital (from Gull Island)

Schoolcraft Memorial Hospital (906) 341-3200
500 Main Street, Manistique, MI 49854

Ambulance

Manistique Ambulance Service (906) 341-2133
300 N. Maple Street, Manistique, MI 49854

Hospital (from other islands)

Charlevoix Area Hospital (231) 547-4024
14700 Lakeshore Drive, Charlevoix, MI 49720

Northern Michigan Hospital (231) 487-4520
416 Connable Avenue, Petoskey, MI 49770

Ambulance

Allied Ambulance Service (231) 526-9333
200 East Fairview Sreet, Harbor Springs, MI 49740

Sheriff 911

State Police 911

U.S. Coast Guard (231) 547-4447
106 Bridge Street, Charlevoix, MI 49720
(Emergency Helicopter Evacuation)

APPENDIX F: MICHIGAN ISLANDS SPECIES LISTS

Species lists for this Refuge do not exist. Table 5 contains the list of those Federally protected species with potential to be found on Refuge Islands.

Federal Threatened or Endangered Species

Table 5 – Federal Listed Threatened or Endangered Species

Common Name	Accepted Scientific Name	Status
BIRDS		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T
Piping Plover	<i>Charadrius melodus</i>	E
INSECTS: BUTTERFLIES & MOTHS		
Karner Blue Butterfly	<i>Lycaeides melissa samuelis</i>	E
Mitchell's Satyr Butterfly	<i>Neonympha mitchellii mitchellii</i>	E
PLANTS		
American hart's-tongue fern	<i>Asplenium scolopendrium var. americanum</i>	T
Dwarf lake iris	<i>Iris lacustris</i>	T
Eastern prairie fringed orchid	<i>Platanthera leucophaea</i>	T
Fassett's locoweed	<i>Oxytropis campestris</i>	T
Houghton's goldenrod	<i>Solidago houghtonii</i>	T
Lakeside daisy	<i>Hymenoxys herbacea</i>	T
Michigan monkey-flower	<i>Mimulus glabratus var. michiganensis</i>	E
Pitcher's thistle	<i>Cirsium pitcheri</i>	T
Small whorled pogonia	<i>Isotria medeoloides</i>	T

Michigan State Threatened or Endangered Species

The table below is derived from the Michigan Natural Features Inventory and includes those state T&E species reported in, or reasonably expected to be found in, Charlevoix County.

Table 6 – State Listed Threatened or Endangered Species – Charlevoix County

Common Name	Scientific Name	Status
BIRDS		
Caspian tern	<i>Sterna caspia</i>	T
Common tern	<i>Sterna hirundo</i>	T
Common loon	<i>Gavia immer</i>	T
Osprey	<i>Pandion haliaetus</i>	T
Piping plover	<i>Charadrius melodus</i>	E
Red-shouldered hawk	<i>Buteo lineatus</i>	T
INSECTS		
Lake huron locust	<i>Trimerotropis huroniana</i>	T
Deepwater pondsnail	<i>Stagnicola contracta</i>	T
PLANTS		
Calypso or fairy-slipper	<i>Calypso bulbosa</i>	T
Dwarf lake iris	<i>Iris lacustris</i>	T
Fascicled broom-rape	<i>Orobanche fasciculata</i>	T
Hill's pondweed	<i>Potamogeton hillii</i>	T
Houghton's goldenrod	<i>Solidago houghtonii</i>	T
Lake huron tansy	<i>Tanacetum huronense</i>	T
Michigan monkey-flower	<i>Mimulus glabratus var michiganensis</i>	E
Pitcher's thistle	<i>Cirsium pitcheri</i>	T
Pumpelly's brome grass	<i>Bromus pumpellianus</i>	T
Seaside crowfoot	<i>Ranunculus cymbalaria</i>	T

APPENDIX G: HISTORIC FIRE SEASON ANALYSIS

No unwanted wildland fires have been recorded on the islands since initial designation or acquisition. An analysis may be completed in future revisions if sufficient fire activity occurs.

APPENDIX H: STEP-UP PLAN

As there is no staff on the islands, the “Step-up Plan” only address public and visitor information needs. Adjective class will be obtained from MIDNR at the Gaylord Operations Center.

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	Broadcast information and coordination with MIDNR will be utilized to increase awareness of fire hazards.
Extreme	During periods of extreme or prolonged fire danger emergency law enforcement patrols may become necessary ictions or area closures may become necessary.

APPENDIX I: COMMUNICATION PLAN

As the Refuge has no radio system on site and the base station at Seney NWR is too distant to be of use, a communication plan is not necessary. Cellular phones and marine radio bands will be used as necessary. Cooperators will use their own systems with appropriate frequency sharing agreements in place.

APPENDIX J: SAMPLE WILDLAND FIRE SITUATION ANALYSIS

Wildland Fire Situation Analysis

WFSA Information

WFSA Number: 1

Jurisdiction(s): USFWS

Fire Name: Gull 1

Geographic Area: EACC

Incident Number: 3385

Unit: Michigan Islands (Seney NWR)

Date/Time Prepared: 07/16/02 0859

Management Code: 31510-926-3385

Fire Situation

Start Date/Time: 7/3/02 1000

Current Fire Size: 10 acres

Fuel Conditions:

1 hr = 10%
10 hr = 12%
100 hr = 16%

Fire Behavior -Current and Forecast:

Currently creeping in mixed hardwoods.

Forecast to continue creeping.

Weather- Current and Forecast:

Current- dry, sunny, 76F, RH 26%, wind WNW @ 7

Forecast. more of same for 48 hours

Suppression Resource Availability:

Lack of boat transport limits number of firefighters that can be sent to island to 4 w/gear at a time; round trip takes about 3 hours.

WFSA No.1

Gull 1

Page 2

Objectives

Objective	Priority	Weight	Contribution
Safety	10	0.77	
Firefighter Safety	10	0.67	0.513
Provide safe transport for crew personnel, maintain clear access to safety zones on shore.			
Public Safety	5	0.33	0.256
Maintain lookout to ask public to leave as island is closed to use until fire is declared contained			
Economic	1	0.05	
There are no significant economic losses other than suppression costs with this fire.			
Environmental	3	0.23	
Visual	7	0.78	0.179
Avoid "tunnel" effect of fireline appearance. Keep visible impacts at a minimum along shore areas.			
Fuels	2	0.22	0.051
Fuels should not be piled up along fireline, scatter as much as possible			

Alternatives

Alternative A Minimize Firefighter Exposure

Work fire edge totally with water from pumps on shore working wetline around fire. Utilize sprinkler setup for mop-up

Target Outcome

Utilize crew of 5, boat and 2 pumps with associated equipment to wetline the fire.

Probability: 75%

Final Fire Size: 25 acres

Time to Contain: 2 days

Time to Control: 2 days

Worst Case Outcome

Fire in old, heavy fuels may smolder for several days. Added personnel, boat, pumps and associated equipment needed.

Probability: 25%

Final Fire Size: 70 acres

Time to Contain: 7 days

Time to Control: 7 days

WFSA No.1

Gull 1

Page 4

Suppression Costs

Alternative A Minimize Firefighter Exposure

Target Outcome

1 Local Crew 2 day
1 Boat, 18' 22 hour
Suppression cost: \$4,300

Worst Case Outcome

Suppression cost: \$19,000

WFSA No.1

Gull 1

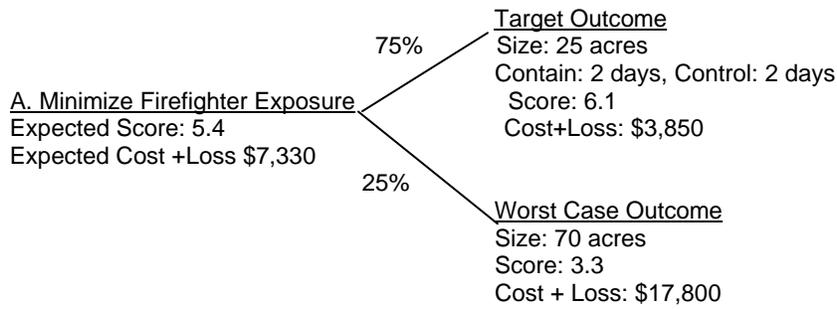
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Impact on Resource Values

Alternative A Minimize Firefighter Exposure

Item	Target Outcome	Worst Case Outcome	Expected Impact
Wildlife – Big Game	223	624	
Wildlife – Other	223	624	
Total	\$446	\$1,250	\$647

Decision Tree



WFSA No.1

Gull 1

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Decision Summary

Strategy:

Minimize Firefighter Exposure

Description

Work fire edge totally with water from pumps on shore working wetline around fire. Utilize sprinkler setup for mop-up. Utilize crew of 5, boat and 2 pumps with associated equipment to wetline the fire.

Rationale

Expected effects on natural resources are similar in Alternative A & B. Cost difference is not significant once crew is on site and crew is safer working from shoreline.

Special Considerations

Firefighter safety on the line is of primary importance and resources at risk are not of high or controversial value.

Information Policy

Information will be handled locally by the refuge utilizing local media outlets and special interest groups.

Agency Administrator Signature

Date/Time

Incident Complexity Analysis

Incident Complexity Rating: Type 4

Rationale: Predicted conditions will not worsen and crew will be protected by water handling equipment, additional day should see containment.

NO YES FACTOR

A. Fire Behavior

Burning index predicted to be above the 90% level.
Potential exists for "blowup" conditions (fuel moisture, winds, etc.).
Crowning, profuse or long range spotting.

X Weather forecast indicating no significant relief or worsening conditions.

B. Resources Committed

200 or more personnel assigned.
Three or more divisions.
Wide variety of special support personnel.
Substantial air operation which is not properly staffed.
Majority of initial attack resources committed.

C. Resources Threatened

Urban interface.
Developments and facilities.
Restricted, threatened or endangered species habitat.
Cultural sites.
Unique natural resources, special designated zones or wilderness.
Other special resources.

D. Safety

Unusually hazardous fire line conditions-
Serious accidents or fatalities.
Threat to safety of visitors from fire and related operations.
Restrictions and/or closures in effect or being considered.

X No night operations in place for safety reasons.

E. Ownership

Fire burning or threatening more than one jurisdiction.
Potential for claims (damages).
Different or conflicting management objectives.
Disputes over suppression responsibility.
Potential for unified command.

F. External Influences

Controversial wildland fire management policy.
Pre-existing controversies/relationships.
Sensitive media relationships.
Smoke management problems.
Sensitive political interests.
Other external influences.

G. Change in Strategy

Change to a more aggressive suppression strategy.
Large amounts of unburned fuel within planned perimeter.
WFSA invalid or requires updating.

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H. Existing Overhead

Worked two operational periods without achieving initial objectives.
Existing management organization ineffective.
Overhead overextended themselves mentally and/or physically.
Incident action plans, briefings, etc. missing or poorly prepared.

APPENDIX K: PACK TEST BACKGROUND

WHAT IS THE "PACK TEST?"

Work capacity tests are used to qualify individuals for the three levels of wildland firefighting duty:

- **ARDUOUS**
- **MODERATE**
- **LIGHT**

The work capacity tests measure:

- Aerobic capacity
- Muscular strength
- Muscular endurance

All wildland firefighters must meet minimum levels of fitness requirements for the type of duties they are assigned:

Arduous: involves field work calling for above-average endurance and superior conditioning. All firefighters are required to perform arduous duty.

Moderate: involves field work requiring complete control of physical faculties and may include considerable walking, standing, and lifting 25-50 lbs. Safety officers and fire behavior analysts are examples of moderate duty positions.

Light: involves mainly office-type work with occasional field activity. Examples include staging area and helibase managers.

Testing wildland firefighters for work capacity is important for several reasons:

- Personal safety and health
- Co-worker safety
- Improved operations

ABOUT ARDUOUS WORK

Wildland firefighting demands a high level of fitness to safely perform physically demanding work in difficult environments.

Firefighters, strike team leaders, line scouts, and others assigned arduous duty must be prepared to work in steep terrain and in extreme temperatures, altitude, and smoke, while maintaining reserve work capacity to meet unforeseen emergencies.

Prior to reporting for work, applicants are **strongly encouraged** to train for arduous-level work capacity.

WORK CAPACITY TEST TRAINING

Training for the test is important. Start training at least four to six weeks before you are scheduled to take the test. To be in shape for work duty, you may want to train in the footwear or boots you will wear during the test. Footwear should be ankle-high and protect the ankles.

Begin training before you report for work. Start by walking. Train for the test level you will need to pass for the duties you will be required to perform.

Start training without a pack. Gradually increase distance and - for arduous and moderate duty - begin carrying appropriate weight. Increase the weight until you can meet the requirement for arduous or moderate duty.

Table 7, below, provides test criteria for arduous, moderate, and light duty performance:

Table 7 – Physical Testing Criteria

Physical Level	Test Name	Distance Covered	Weight Required	Maximum Time
ARDUOUS	Pack Test	3-miles	45 lb.	45 min.
MODERATE	Field Test	2-miles	25 lb.	30 min.
LIGHT	Walk Test	1-mile	no pack	16 min.

MORE ON TRAINING:

Before you begin to train for testing or substantially increase your level of activity, consult your physician. This is especially important if you are over 40 and have been inactive, have a history of a heart condition or chest pain or loss of balance, or have a joint or bone problem that could be made worse by a change in physical activity.

Once you are cleared to begin training, here's what you'll need:

- Adequate footwear that will cover and protect feet and ankles while testing
- Comfortable clothing
- A pack. The type of pack is a personal choice, but it must weigh either 45 or 25 lbs., depending on whether you are testing for arduous or moderate duty
- An accurately measured, safe, and level course

TAKING THE TEST:

Testing will be monitored and any problems should be brought to the attention of the test monitors.

- No jogging or running is permitted
- The test is Pass/Fail only
- Bring your own pack, or a standard firefighter backpack pump will be provided
- Packs will be weighed before and after testing

FOR MORE INFORMATION:

Personal health, physical fitness, and work capacity all work toward making conditions safer for firefighters and the people they protect. Ask your local fire management office for more information.