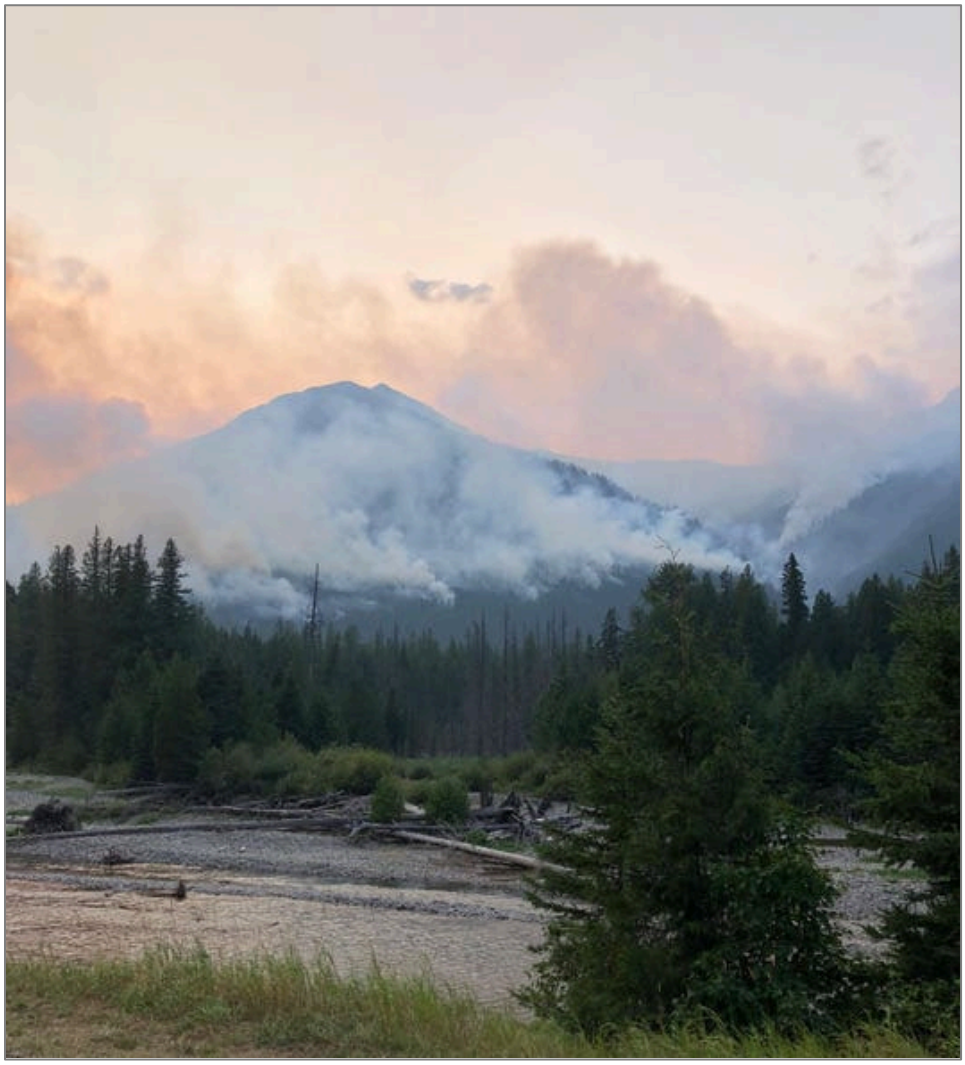
U.S. National Park Service

Glacier National Park
DRAFT Fire Management Plan

2024



This Fire Management Plan was prepared by:
NPS Glacier National Park, Fire and Aviation Management
with input from
NPS Intermountain Region, Fire and Aviation Management

Recommended by:

Jeremy Harker, Fire Management Officer, Western Montana Fire Zone

Recommended by:

Jay Lusher, Regional Fire Management Officer, IMRO

Recommended by:

Phil Wilson, Chief of Resources and Science, Glacier National Park

Approved by:

Dave Roemer, Superintendent, Glacier National Park

Table of Contents

EXECUTIVE SUMMARY

Glacier National Park is in Northwest Montana and the Northern Rocky Mountains. The northern boundary of the park is adjacent to Waterton Lakes National Park and provincial lands of Alberta and British Columbia, Canada, while the rest of the park is surrounded by National Forests and the Blackfeet Reservation. Glacier is just over one million acres in size, the Continental Divide bisects the park, and 95 percent of the park is managed as wilderness.

The Glacier National Park Wildland Fire Management program will respond to all wildfires using a risk-based approach. Specific strategies and tactics will be selected dependent on the location and defined incident protection and resource objectives, throughout the duration of the incident. Additionally, the park will use prescribed fire and non-fire fuels treatments to accomplish programmatic and project specific objectives, such as to reduce fuel accumulation and maintain desired conditions. Glacier is divided into two Fire Management Units (FMUs) that provide further direction in the form of strategic objectives.

This fire management plan is based on direction contained in existing park planning documents and is consistent with environmental laws and regulations such as the National Environmental Policy Act, the National and State Historic Preservation Acts, the Endangered Species Act, and the Clean Air Act. It outlines goals and objectives of the wildland fire management program, and provides operational guidance for risk management, fuels treatments, preparedness activities, and monitoring.

1.0 INTRODUCTION, LAND MANAGEMENT PLANNING, and COMMUNICATION

As part of its mission, the National Park Service (NPS) Wildland Fire Program manages wildland fire to protect the public, park communities, and infrastructure, conserve natural and cultural resources, and maintain and restore natural ecosystem processes (NPS Wildland Fire Strategic Plan 2020-2024, NPS 2020). Each park unit with burnable vegetation must have an approved Fire Management Plan (FMP) that will address the need for adequate funding and staffing to support the Fire Management Program (Directors Order #18, Wildland Fire Management, NPS 2008). To align with the DOI FMP Framework, the NPS developed fire management planning guidance which considers fire program complexity and efficient and effective planning direction (see Reference Manual (RM) - 18, Chapter 4, Fire Management Plans).

Glacier National Park (Glacier, park) is in the Northern Rocky Mountains of northwest Montana and is adjacent to the border of Canada (Figure 1). The park is bounded on the west and southeast by the Flathead National Forest, the east by the Blackfeet Reservation and Helena-Lewis and Clark National Forest, and to the north by Waterton Lakes National Park and provincial lands of Alberta and British Columbia, Canada. Glacier comprises 1,013,595 acres and was established in 1910. The park was set aside "as a public park or pleasure ground for the benefit of the people of the United States" in its enabling legislation. Glacier National Park and Waterton Lakes National Park of Canada are designated the world's first International Peace Parks and are part of the 18 million acres known as the Crown of the Continent which is one of the most diverse and mostly intact temperate zone ecosystems in the world. Waterton-Glacier International Peace Park also has been designated as an International Biosphere Reserve and a World Heritage Site. Ninety-five percent of Glacier National Park is recommended wilderness, and following NPS policy, is managed as designated wilderness.

The Glacier National Park Fire Management Plan is a strategic plan that defines a program of work to manage wildland fire, (includes prescribed fire and wildfire), and non-fire fuels treatments, and is based on directions contained in existing park unit planning documents. This Glacier FMP provides for fire personnel and public safety and includes strategies for managing wildland fires. It addresses how values are protected and is consistent with Glacier's resource objectives and environmental laws and regulations such as the National Environmental Policy Act (NEPA), the National and State Historic Preservation Act, the Endangered Species Act, and the Clean Air Act.

Values within this plan are typically defined as resources and infrastructure park managers deem important. Wildland fire management actions within this FMP strive to protect and enhance these important values. Examples of these values in Glacier include, but are not limited to:

- Human life
    - Public and fire personnel
- Property and infrastructure
    - Park property, improvements, and infrastructure
    - Private property within park boundaries and on adjacent lands
- Cultural resources
    - Archeological resources, culturally significant sites and landscapes, historic structures and districts, museum collections

- Natural resources
    - Wildlife, vegetation, soils, wilderness, diverse habitats, ecosystems and natural processes, air quality, water quality, viewsheds
- Shared stewardship
    - Tribal connections, private partners, public, visitors, interagency partners.

The Glacier National Park Fire Management Officer (FMO) determines program requirements to implement decisions through the FMP to meet land management objectives. The FMO is responsible for developing, maintaining, and annually evaluating the FMP to ensure accuracy and validity by completing an annual review (Interagency Standards for Fire and Fire Aviation Operations (Red Book), Chapter 3, NPS Program Organization and Responsibilities).

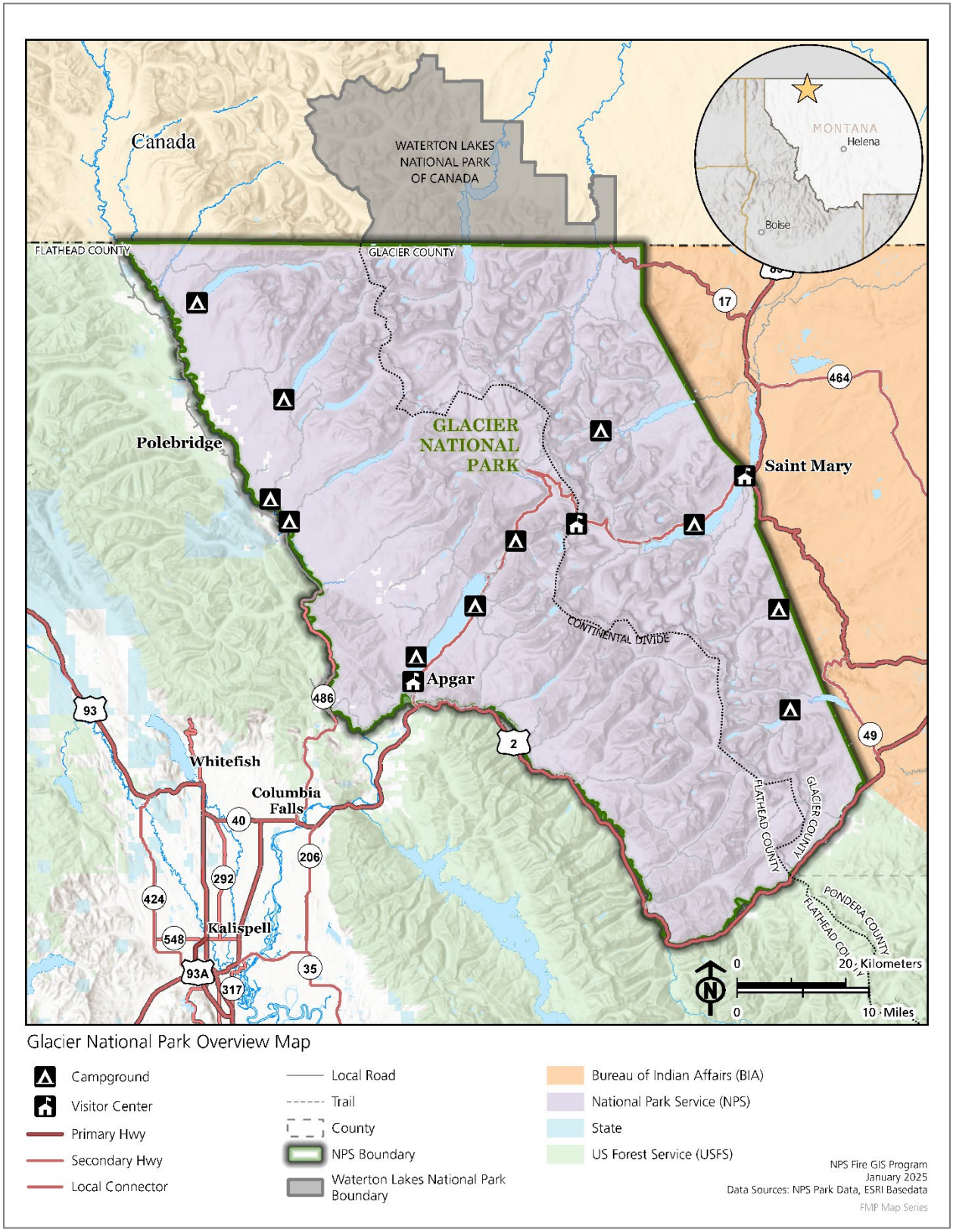


Figure 1: General vicinity map of Glacier National Park.

1.1 Program Organization

Glacier National Park Wildland Fire Management is part of the Western Montana Fire Management Zone, along with Grant-Kohrs Ranch National Historic Site. The Fire Management Officer for the zone sits at Glacier, as does all other fire funded staff. There is an Interpark agreement between the Glacier and Grant-Kohrs Superintendents to define mutual responsibilities of Glacier fire management staff and Grant-Kohrs staff; for more information refer to Appendix B. The Wildland Fire Management program at Glacier is within the Resource and Visitor Protection Division, and the FMO is supervised by the Chief of Resource and Visitor Protection. The wildland fire program's organizational chart varies from year-to-year dependent on employee retention and regionally allocated position funding. It includes administrative, leadership and specialist positions, response modules, lookouts, and fire ecology staff.

1.2 Fire Management Actions

Wildfires in Glacier National Park will be managed for protection and resource objectives. Values to be protected and resource objectives are described in Section 2.1 Goals and Objectives. Specific wildfire strategies and tactics will be selected to meet defined protection and/or resource objectives depending on the location and risk analysis through the duration of the incident. The park has two Fire Management Units (FMUs) that provide further direction in the form of strategic objectives.

Prescribed fire (broadcast burning and pile burning) may be used to reduce fuel accumulation and meet other specific project objectives such as the maintenance of desired landscape conditions. Non-fire fuel treatments are also permitted to minimize risk to life, property, and natural, historic, and cultural resources. Non-fire treatments can include the use of hand tools, power tools and heavy machinery to reduce fuel accumulation or meet other specific project objectives.

These actions are expanded upon in Section 3.1 Management of Wildfires and Section 3.2 Fuels Treatments.

1.3 Environmental Compliance

A Fire Management Plan Environmental Assessment (EA) was completed and the associated Finding of No Significant Impact (FONSI) was signed on DATE.
The following documents are compliance associated with this FMP:

- GLAC Fire Management Plan EA and FONSI (DATE). Planning, Environment & Public Comment (PEPC) ID 121694.
    - The following Threatened and Endangered species were considered in the EA: grizzly bears, Canada lynx and critical habitat, wolverine, bull trout and critical habitat, western glacier stonefly, meltwater lednian stonefly, and whitebark pine.
    - Section 7 USFWS consultation (info will be added when complete)
    - SHPO/THPO consultation (info will be added when complete)
    - Programmatic Minimum Requirement Analysis (MRA) (info will be added when complete)

1.4 Park Unit/Resource Management Planning

This fire management plan will help achieve goals and objectives listed in the following documents.

- 2016 Glacier National Park Foundation Document, PEPC 59777
    - The Foundation Document mentions the importance of naturally occurring fire to the health of many of the park's ecosystems.
    - It also mentions the larger and more severe fires occurring across the region as a threat to diverse habitats that support iconic wildlife and suggests implementing fire management strategies to protect and enhance native habitats and natural processes.
- 1999 Glacier National Park General Management Plan (GMP) and Environmental Impact Statement and Record of Decision, PEPC 39894
    - The GMP states that fires in Glacier National Park are managed to achieve a balance between suppression response strategies to protect life, property, and resources and other wildfire response strategies to achieve and maintain healthy ecosystems. GMP objectives related to fire management are:
        - Preserve and protect natural and cultural resources unimpaired for future generations.
        - Provide opportunities to experience, understand, appreciate, and enjoy Glacier National Park consistent with the preservation of resources in a state of nature.
        - Celebrate the ongoing peace, friendship, and goodwill among nations, recognizing the need for cooperation in a world of shared resources.
- 1998 Glacier National Park Resource Management Plan
    - The stated desired resource condition is to maintain the natural role of fire in the ecosystem, so it functions unimpaired by human influences while still achieving management objectives.
- 1997 Vegetation Mapping Inventory Project for Glacier National Park
    - The published report for the vegetation mapping inventory project for Waterton-Glacier International Peace Park recognizes the role fire has played in the natural setting of the parks. It also acknowledges how wildfire has dramatically pushed back forest succession, revitalizing vegetation diversity, and directly affecting wildlife use (Hop et al. 2007).

1.5 Collaborative Planning

Each agency bordering Glacier National Park, upon request of the other and within their capabilities, will assist the other with wildfire response, adhering to the standards of the requesting unit. When land of one unit is threatened by unwanted wildfire on the other unit, the threatened unit may reinforce or relieve the unit at the scene without expectation of reimbursement. Also on request, each unit will provide the other with fire reports, incident reports and other pertinent records related to the agreement. The following documents outline these collaborative planning actions, and can be found in Appendix C.

- Northern Rockies Coordination Group Northwest Montana Zone Charter
    - This group establishes and encourages interagency cooperation and support across jurisdictional and administrative boundaries, provides interagency fire

management coordination, and serves as an avenue for member agency input into the development of Northern Rockies fire management direction. Membership of this group includes Flathead County, Lincoln County, Lake County, Sanders County, Montana Department of Natural Resources – Northwestern Land Office, Glacier National Park, US Fish and Wildlife Service, Flathead National Forest, and the Kootenai National Forest.

- British Columbia and NW United States Wildfire Response Border Arrangement
    - This arrangement provides the framework for cooperative pre suppression and wildfire protection along the United States and Canada's British Columbia portion of the International Border. Signatories of the arrangement are British Columbia, Ministry of Forests; USFS Pacific NW, Alaska, and Northern Regions; NPS Pacific West, Alaska, and Intermountain Regions; and BLM for Oregon, Washington, and Idaho State Offices.

When a wildfire crosses or poses an imminent threat of crossing jurisdictional boundaries, a joint delegation of authority to a single Incident Commander or a Unified Command structure will be established by involved agencies. Agencies will keep each other informed of changing conditions. The actions described above support the National Cohesive Wildland Fire Management Strategy by allowing for safe, effective, risk-based wildfire response and resilient landscapes across boundaries.

1.6 Communication and Education

Fire communication and education will be an ongoing strategic effort. In addition to providing timely and accurate information during incident response, Glacier will foster understanding and support among staff, visitors, neighboring communities, and partners for wildfire, prescribed fire, fuels management, fire prevention, and aviation programs.

Providing information related to fire management activities is a key strategy for gaining public support and educating park staff, visitors, and neighbors. Glacier will strive to be inclusive in its fire prevention and incident information efforts by employing strategies and tactics that will reach the entire community, to include non-English speaking, deaf or hard of hearing, and other significant populations. Glacier will also strive to involve the surrounding communities in agency fire management activities in a positive manner economically, politically, and socially.

Joint strategies for public information and education programs will be developed in coordination with all cooperating agencies' public affairs and fire management offices. Outcomes will include establishing a network of contacts, and developing a proactive process that disseminates current and accurate fire information to the agencies' staff, local community, visiting public, and media.

Additional information can be found in RM -18, Chapter 20, Communication and Education.

2.0 WILDLAND FIRE PROGRAM MANAGEMENT GOALS AND OBJECTIVES

2.1 Goals and Objectives

Glacier National Park's fire management goals and objectives incorporate the park's overall direction as well as federal fire policy and strategy. They encompass risk management, wildfire response, prescribed fire, fuels management implementation, science, and collaboration. They provide program direction consistent with associated NEPA requirements and are forward looking for future climate scenarios.

Goal 1

For all fire management activities, risk management to employees and the public is given the highest priority.

Goal 1 Objectives

- All personnel involved with fire management and decision making will be provided the appropriate situational risk information with leader's intent to make informed decisions prior to exposure to risk.
- Ensure communication to park staff, visitors, neighbors, and partners as it applies to fire management actions or conditions.
- Apply risk management processes in all decision making.

Goal 2

Protect property, infrastructure, cultural and natural resources from unwanted fire effects and damage from fire management activities.

Goal 2 Objectives

- Monitor environmental conditions to ensure adequate equipment and personnel are available for wildfire response.
- Minimize negative impacts to values caused by fire management activities through training and the use of resource advisors.
- Prevent human-caused wildfires with fire prevention strategies.
- Identify and prioritize values at risk from wildfire and fire management activities to inform protection and mitigation strategies.
- Manage wildland fuels associated with resources and assets to reduce risk of unwanted fire effects.

Goal 3

Promote ecological and social conditions that create, maintain, or restore fire resilience to the landscape where the natural role of fire can function in the ecosystem.

Goal 3 Objectives

- Use fuels treatments to simulate the desired effects of wildfires.
- Manage wildfires to allow natural processes to function unimpaired by human activity where successful risk mitigation is probable.
- Continuously monitor prescriptive elements for wildfires and fire management activities to guide and adapt future fire management decisions.
- Educate the public about how wildfire and associated strategies affect the ecosystem and wilderness character of the park.

Goal 4

Foster and maintain a wildland fire management program that aligns with the park's core purpose and promotes values of shared stewardship.

Goal 4 Objectives

- Cultivate and maintain internal and external relationships through collaboration, communication, and coordination by fostering understanding and support among staff, stakeholders, and partners.
- Incorporate Indigenous knowledge and traditional practices when restoring fire to the landscape.
- Use current science to guide an adaptive and innovative fire management program.
- Utilize strategic approaches for all fire management activities that include interdisciplinary and interagency coordination.
- Facilitate reciprocal fire management activities through cooperative agreements and working relationships with tribal, international, state, federal and county government fire management entities.

3.0 WILDLAND FIRE OPERATIONAL GUIDANCE

This section of the FMP describes the management of wildfires and fuels treatments in Glacier National Park.

3.1 Management of Wildfires

All wildfires that occur within Glacier will receive a response and will be managed with protection objectives. The safety of the public and fire personnel is the primary concern when considering the protection of values threatened by wildfire. Wildfires may be managed concurrently to protect life safety, property and infrastructure and to also achieve resource objectives.

To achieve risk management and resource objectives, the following strategies may be authorized as a single strategy or combination of strategies on different areas of a wildfire.

- Control - a suppression strategy to complete a control line around a fire and to cool down all hot spots that are immediate threats to the control line until the line can be reasonably expected to hold under foreseeable conditions.
- Containment – a suppression strategy to contain or surround a fire and any spot fires with a perimeter defined by a control line or by utilizing natural barriers to fire spread that can reasonably be expected to mitigate the spread of a wildfire under prevailing and predicted conditions.
- Confinement – a strategy to limit fire spread within a predetermined area principally by use of natural or pre-constructed barriers and/or environmental conditions. This strategy is often a combination of suppression strategies and strategies that do not include full suppression.
- Point/Zone protection – a strategy to utilize suppression actions and mitigation measures to protect a value from unwanted fire effects without directly halting the continued spread of the wildfire.

- Monitor – a strategy to maintain surveillance of a wildfire or portion thereof to monitor risk factors and inform management decisions. Monitoring can be used on a portion of a wildfire using multiple strategies or as a single strategy on a wildfire.

All wildfires will be targeted with prompt, safe, and cost-effective actions utilizing a strategy indicated by the specific circumstances, location, and relative probability to achieve objectives identified in this plan. To assist fire managers, the park is divided into two Fire Management Units (FMUs) with descriptions that define differences in management considerations for each. The programmatic goals and objectives in Section 2.1 will be applied consistently to both FMUs, however, differing conditions in each FMU warrants attention to decision criteria for management of wildfires.

West FMU

This FMU consists of all park lands west of the Continental Divide. Typical fire spread in this FMU is to the east or northeast, towards the Continental Divide and higher elevations of the park, where wildfire is significantly slowed due to lack of burnable vegetation. Because the Continental Divide generally acts as a natural barrier to fire spread, and prevailing weather patterns, the probability of successfully protecting property and infrastructure values from negative fire effects is higher in this FMU than the East FMU. All wildfires in this FMU will use protection objectives to guide wildfire strategies and tactics, and when risk factors allow, resource objectives may also be used to guide wildfire strategies and tactics.

East FMU

This FMU consists of all park lands east of the Continental Divide and presents more complex wildfire management conditions than the West FMU. Typical wildfire spread is to the east or northeast, pushed by strong west winds created by air flowing over the Continental Divide. Wind speed increases as it is funneled through aligned topography to the east. Many days on the east side of the park are characterized as breezy. Most of the property and infrastructure values in this FMU are downwind of fuels and there are very few natural barriers to keep fire from leaving the park boundary. Social tolerance of wildfires occurring in this FMU is also low among the public, stakeholders, and partners due to impacts from previous wildfires. Because of these conditions, all wildfires will be managed with only protection objectives and suppression strategies.

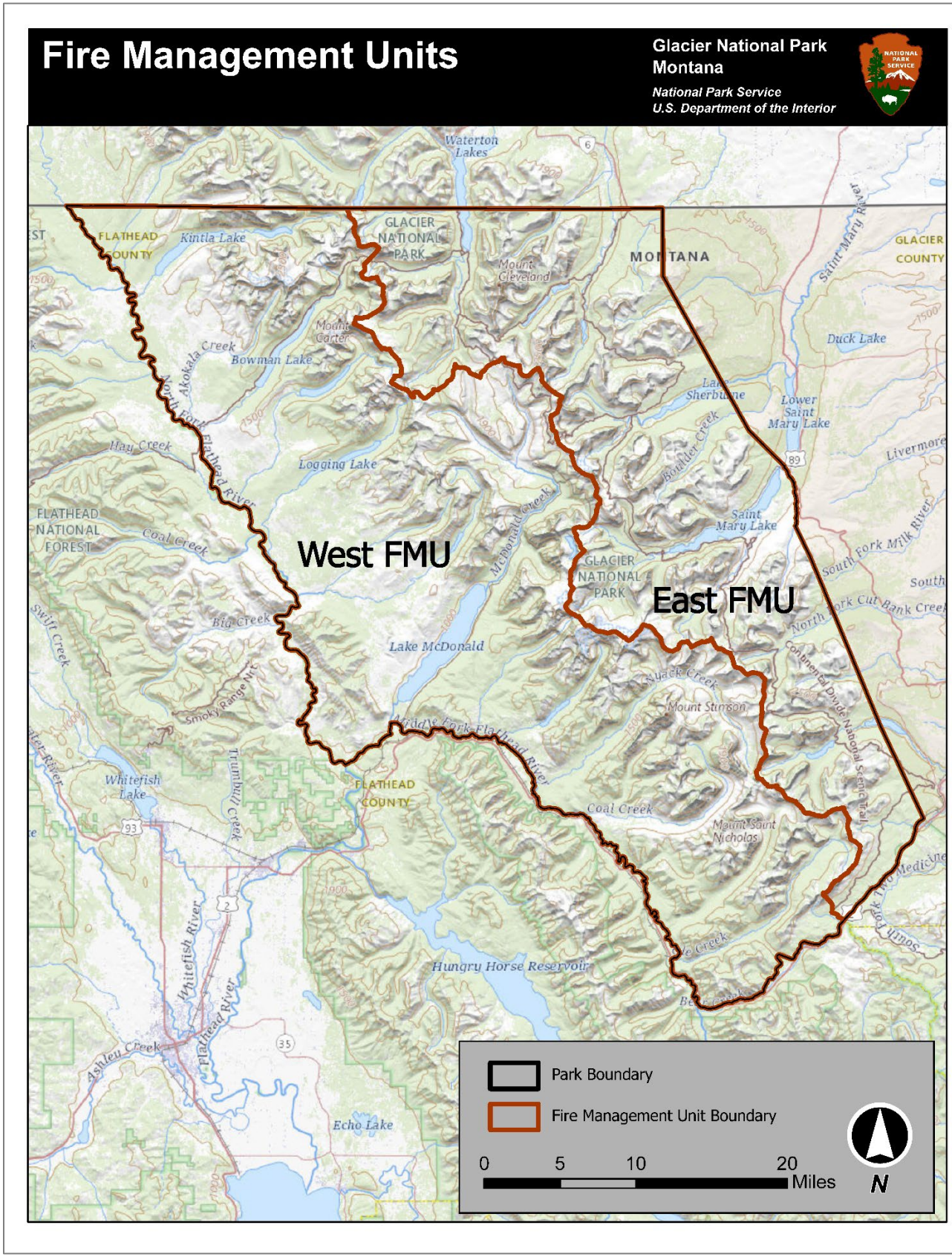


Figure 2: Map of Glacier National Park's fire management units.

3.1.1 Wildfire Response Planning

Expected Fire Behavior

Fire behavior in Glacier National Park can range from smoldering to fast moving crown fire with mid-to-long range spotting from embers depending on factors such as fuels, climate, weather, and topography. Average fire behavior typically has a rate of spread of 1 to 6 chains per hour in forested areas (one chain equals 66 feet). However, under different conditions, these same fuels can support a sustained crown fire that can move through the canopy at speeds of up to five miles per hour. The Continental Divide can modify fire behavior serving as either a natural barrier or to influence local weather and wind patterns.

When drought conditions are present, live fuel moistures can drop below 100 percent, and wildfires can be expected to exhibit extreme fire behavior and continue to burn actively through the night, particularly on slopes above inversions. Dry cold fronts out of the Pacific Northwest can be associated with frontal wind shifts and speeds that cause intense fire behavior. Indirect tactics are necessary when fires exhibit crown fire with moderate or long-range spotting. This situation is common in the heavily timbered conifer fuels of the park's forests when influences of slope, dry fuels, and/or wind are present. When fires burn under those conditions, dense smoke and air turbulence can severely reduce visibility and create problems for or curtail air operations. Such conditions also make it difficult to adequately observe a fire for size-up and reduce the effectiveness of lookouts assigned for fire personnel safety.

Initial Response Procedures

When a wildfire is detected, the closest forces concept will be used. The Glacier Duty Officer will request resources through the Kalispell Interagency Dispatch Center if sufficient local resources are not available. The Initial Response Plan in Appendix D4, will guide the type and number of dispatched resources based on the planning level and which FMU the fire is in. When additional resources are needed, they will be mobilized based on completed resource orders placed in the Interagency Resource Ordering Capability (IROC) by Kalispell Interagency Dispatch Center.

Priorities for assigning critical or limited resources to wildfire incidents during an initial response will be based on the following criteria:

- public and fire personnel safety,
- protection of improvements and private property,
- protection of cultural and natural resources,
- fire behavior potential as determined by fuels, weather, and topography,
- probability of success and consequences of failure, and
- suppression resource response times.

If an initial response to a wildfire is near the park's boundary the Duty Officer will work with neighboring agencies to jointly determine priorities and resource allocation. Resource allocation decisions will not be based on agency boundaries but will instead be made based on potential for damage to the values to be protected.

As part of the park's initial response procedures, notifications will be made to the Chief of Science and Resource Management and the Environmental Compliance Program Manager to identify appropriate emergency environmental protection measures, assign a READ, and notify consultation parties, including Tribes, Montana State Historical Preservation Office, and the US Fish and Wildlife Service for necessary consultation.

Transition from Initial Response

When a wildfire escapes initial response, or if the strategy does not involve suppression and control to the smallest possible size, the wildfire is considered an extended attack incident. The management of extended attack incidents will be documented with a formal decision prepared and signed by the park's Agency Administrator within the Wildland Fire Decision Support System (WFDSS) as described in Section 3.1.2. Incident complexity will be determined by completing a NWCG Wildland Fire Risk and Complexity Assessment (PMS 236).

All agencies with jurisdictional responsibilities or protection responsibilities should be involved in determining strategies, setting priorities, identifying objectives, and risk management.

The park will follow incident management standards as described in the Interagency Standards for Fire and Fire Aviation Operations (Red Book), Chapter 11, Incident Management and Response.

Minimum Impact Strategy and Tactics (MIST)

Agency-wide Minimum Impact Strategy and Tactics (MIST) are described in RM - 18, Chapter 2, Managing Wildland Fire, Exhibit 1. MIST is required policy for the NPS and incorporates fire personnel and public safety priorities.

All fire management activities in Glacier will be conducted to cause the least impact to park resources. The use of MIST will be emphasized to all fire management personnel.

3.1.2 Wildland Fire Decision Support System (WFDSS)

Wildland Fire Decision Support System (WFDSS) will be used to document the management objectives and strategies if a wildfire escapes initial attack or includes objectives with both protection and resource elements.

Current direction on NPS use of WFDSS can be found in the Red Book, Chapter 3 NPS Program Organization and Responsibilities and Chapter 11, Incident Management and Response. The Intermountain Region has also developed Supplemental WFDSS guidance.

Strategic Objectives and Management Requirements

Strategic Objectives and Management Requirements are derived from local unit management plans, as well as related compliance and consultation documents, and provide the framework and limitations/challenges for wildfire response. Management requirements and strategic objectives provide the foundation of the WFDSS decision.

Strategic objectives are broad statements that can be thought of as desired future conditions, while management requirements are directives, standards, specification, or constraints for a designated area.

When publishing an incident decision in WFDSS, applicable fire related protection and resource objectives and requirements are incorporated into the decision. Glacier's strategic objectives and management requirements are organized by FMU, except when they apply to the entire park, and are listed below.

Parkwide Strategic Objectives

- Manage wildfires commensurate with values at risk.
- Fire personnel and public safety will be the highest priority of every fire management activity.
- Minimize impacts to wilderness character using appropriate strategies and tactics.
- Strengthen fuel reduction treatments as needed and implement structure protection plans (where available) around potentially threatened developed areas, historic sites, and values of concern.

FMU West Strategic Objectives

- Confine all fires west of the Continental Divide and minimize impacts to wilderness character.
- Where risk management success is probable, allow wildfire to function in the ecosystem to restore fire resilience to the landscape.

FMU East Strategic Objectives

- Manage all wildfires with protection objectives.

Parkwide Management Requirements

- Use MIST for all fire management actions.
- Notify the Chief of Science and Resource Management and Environmental Compliance Program Manager of all new wildfires.
- No off-road vehicle use (including bulldozers, ATV'S, UTV's, heavy equipment) unless approved in writing by the Superintendent.
- Do not use chemical fire retardants or foams unless there is written approval by the park Superintendent except to mitigate imminent risk to human life and property.
    - Use water in lieu of fire retardant whenever possible; if retardant must be used, a 300 feet buffer around all water bodies will be employed. Other avoidance zones will be identified as necessary in consultation with resource advisors.
- Use BMPs for prevention of invasive species spread (aquatic and terrestrial) as described in the Red Book, Chapter 11.
- Identify locations for camps, staging areas, helispots, etc. in consultation with a READ and/or the park's ID team.

- Use a READ on wildfires whenever necessary and possible in coordination with the Incident Commander and/or park FMO and Chief of Science and Resources Management.
    - For Incident Management Teams, identifying the need for a READ will be included in the Superintendent's delegation of authority.

Vegetation:

- Rehabilitate and restore disturbed areas as necessary through consultation with the park's Vegetation Management Specialist.
    - Use only seeds and plants originating from the park or from approved sources in restoration activities.
    - Conserve excavated vegetated layer and topsoil for replacement of soil layers in the stratigraphic horizons from which they were excavated, i.e., topsoil would be placed as the top layer.
    - Monitor and treat disturbed areas as necessary for non-native invasive plants.
- Use erosion-control devices on steep slopes and cover bare soil to prevent soil movement and promote rapid revegetation of a site following suppression actions.
- Clean and inspect all equipment and materials prior to entering the park to prevent the spread of non-native invasive plants.
- Protect all whitebark pine PLUS trees and restoration sites.
    - Consult the park's Vegetation Management Specialist for protection measures and any work that may impact mature, naturally regenerating, and restored whitebark pine and to provide a map of these locations.
- Use natural barriers and/or human-made features for control lines or general management boundaries whenever possible.
    - A resource advisor from the park will assist in cases where sensitive vegetation habitat exists or is suspected.
- Consult park resource management staff or a resource advisor on appropriate locations for ignition (i.e., burn outs and backfiring), mixing of fuel, helicopter bucket dipping, and water drafting operations from streams and lakes.
- Wildfire management activities, including temporary fire facilities (e.g., camps) will not be placed within a minimum of 300 feet of riparian areas, water bodies, areas of peatlands, fens, and other groundwater dependent ecosystems to avoid disturbing or compacting soil, damaging riparian vegetation, and potential sediment input into streams. If no practical alternative exists, all appropriate measures to maintain, restore, or enhance aquatic and riparian dependent resources will be used in consultation with the park's Vegetation Management Specialist and/or Aquatic Program Manager. Any such impacted riparian areas will be restored to pre-fire conditions.
- Rehabilitate fire lines to previous, natural conditions to reduce erosion and sedimentation risks to streams and other waterbodies.

- Develop and follow a spill plan in case of a fuel or hazardous material leak; Glacier's Safety Office will review the plan.
    - Personnel will inspect engines, fuel lines, and fittings as well as other equipment for leaks prior to beginning project activities each day.
    - Appropriate spill containment supplies will be on site to address a spill on shore and on the water.
    - Properly store petroleum products (include the use of spill-proof and bear-proof containers).

Wetlands

- Restore wetlands disturbed from wildfire suppression activities in consultation with the park's Vegetation Management Specialist.

Wildlife

- Contact the USFWS as soon as reasonably possible in the event of an unplanned wildfire incident where suppression activities may impact federally listed species.
- Involve the USFWS in the Burned Area Emergency Rehabilitation (BAER) team to minimize impacts to federally listed species during rehabilitation activities following a wildfire.
- Securely store food and garbage in accordance with park regulations to avoid attracting bears and other wildlife or providing wildlife with food rewards. Bear resistant containers must be used for food and garbage storage.
- Train personnel on appropriate behavior in the presence of bears and other wildlife.
- Install temporary toilets so they are secure from wind, bears, and other wildlife.
- Avoid sensitive wildlife areas, such as bald and golden eagle and common loon nesting locations if feasible in consultation with a READ to minimize the potential for disturbance, including during aircraft and uncrewed aircraft systems (UAS) operations.
- The following conservation measures as agreed to with the USFWS in Glacier's programmatic BA for administrative flights (NPS 2023) are required for all park administrative flights and will be followed for any non-emergency flights associated with this plan:
    - Flights will follow suggested flight paths away from sensitive areas. Where possible, flight paths will follow road corridors and occur over developed areas. The flight manager will be responsible for coordinating with the park biologist to identify sensitive sites prior to the flight.
    - Flights will occur one hour after sunrise and one hour before sunset from 1 May to 1 October to minimize impacts to grizzly bears. Grizzly bear denning activity peaks during den emergence from 15 March to 15 May and during den construction from 15 October to 15 November. No flights will occur over known dens or potential den habitat during den emergence and den construction. In order to conserve prey species,

flights will avoid ungulate winter range from 15 January to 1 May when wintering ungulates are most vulnerable.
    - Restricting flights to the 1 May to 1 October period, or minimizing them outside that period, will eliminate or minimize impacts to sensitive wildlife.
    - The helicopter will fly at a minimum of 2000 feet AGL over the park whenever possible, depending on mountainous topography, weather, and except when it is landing or taking off or when it is delivering supplies via long line.
    - To minimize impacts on denning Canada lynx, no flights will be permitted over known den sites from 1 May to 30 Aug.
    - Flight paths will be designated so as to avoid open alpine meadows, talus slopes, or other areas where grizzly bears congregate but do not have access to cover. If a low-level flight or landing is needed in an alpine area and a bear is seen, the flight will be postponed. If the flight cannot be postponed, the flight will keep a maximum distance from the bear(s).
- Follow protocols to prevent aquatic invasive species (AIS) in accordance with Glacier's AIS Action Plan (NPS 2018a).
    - Inspect and clean equipment prior to use in a waterbody or when moving between watersheds, equipment (including boats, rafts, drafting equipment, water tenders, and helicopter buckets) to reduce the potential for the introduction of AIS. The *Guide to Preventing Aquatic Invasive Species Transport by Wildland Fire Operations* (PMS 444) will be adhered to.
- Sediment producing actions upstream of known or potential spawning areas are to be avoided during the native fish spawning/rearing period of September 1 through May 15; the park's Aquatic Program Manager will be consulted regarding sensitive locations.
- Water pumps must be screened prevent capture of fish. During the spawning season for native fish, pumping sites will be located away from spawning gravels and known native fish spawning locations.
- Avoid activities whenever feasible in the upper-most extent of high-elevation streams that originate from glacial meltwater and could be inhabited by the western glacier stonefly. Sensitive locations would be identified in consultation with the park's Aquatics Program Manager.
- When working in or near stonefly stream habitat (as identified in consultation with the park's Aquatics Program Manager), use rocky or hardened surfaces as much as possible for walking and equipment staging and avoid walking or working in streamside vegetation. Personnel will work from existing stream crossings whenever feasible and avoid the creation of multiple paths or social trails.

<u>Air Quality</u>

- All fire management activities other than suppression of unwanted wildland fires will follow Montana/Idaho Airshed Group guidelines for best

management practices and ensure particulate concentrations do not exceed standards that may result in reduced air quality or impact visibility and public health.

Recommended Wilderness

- Apply the minimum requirements analysis framework whenever feasible during emergency responses when working in recommended wilderness, using the least impactful methods while still meeting protection and resource objectives.
- Avoid helicopter, fixed-wing operations, and the use of UAS in recommended wilderness whenever feasible while still meeting protection and resource objectives.
    - Flight paths will avoid wilderness and other sensitive areas as feasible, depending on risk management considerations.
    - Launching and landing aircraft from outside of the recommended wilderness boundary is preferred.
    - To minimize administrative flights over recommended wilderness, the park will make every effort to include routine helicopter flights for fire management within the 50-flight limit on administrative flights. Flights will be considered with other proposed administrative flights, coordinated with other projects, and combined with other hauling needs whenever possible.
- Minimize the use of motorized equipment and use hand tools whenever feasible within recommended wilderness while still meeting protection and resource objectives.
- Avoid installations in recommended wilderness whenever feasible while still meeting protection and resource objectives. If necessary:
    - Installations will remain in place only for the minimum amount of time needed (i.e., installations would be removed when no longer operationally necessary).
    - Installations will be discrete, hidden from public view, and designed to blend with natural surroundings as much as possible.
- Fire management personnel will practice principles of Leave No Trace outdoor ethics.

Natural Soundscapes

- Select motorized equipment for the lowest possible noise production while still using equipment that would meet project objectives.
- Do not idle equipment any longer than is necessary.

Cultural Resources

- Develop measures in consultation with the park's Cultural Resources Specialist and Tribes to avoid ethnographic features (e.g., plants harvested for traditional purposes).

- Consult a cultural resource specialist or resource advisor if known cultural resources are threatened by an unplanned wildfire and associated suppression strategies.
- Remove all staples (or other means) used for affixing fire-resistant wrapping to historic structures when no longer needed.
- Use of chemical fire retardants is prohibited in the vicinity of historic structures unless there is imminent threat from wildfire to the structure.
- Stop immediately if cultural material is found during ground disturbing activities and notify the park's Cultural Resources Specialist. If archeological resources are identified, work will not resume until resources are recorded.
- Wildfire activities that pose a potential threat to cultural resources may require specific on-site protection strategies and monitoring. A qualified cultural resource specialist will provide guidance on implementing the following BMPs as conditions warrant.
    - Locate, identify, and isolate sites that are vulnerable.
    - Remove fuel concentrations from proximity to known cultural sites.
    - Educate fire personnel about the need to protect cultural resources.
    - Minimize ground disturbance wherever possible.
    - Conduct post-fire cultural resource surveys to identify, evaluate, and document impacts.

Visitor Use and Experience

- Public engagement, education, and interpretation of wildland fire management in the park will continue.
- Inform the public of any closures or restrictions by means of media releases and postings on the park's website, backcountry permit offices, and visitor centers, as applicable. Post signs informing visitors of temporary area closures at trailheads and roads, as necessary.

3.2 Wildland Fuels Management

Fuels Management Goals and Objectives

Glacier National Park's programmatic fuel management goals and objectives are:

- **Goal**: Restore fire to the landscape where opportunities are limited for wildfire to meet resource objectives.
    - Objective: Use prescribed fire to mimic wildfire effects in a planned environment.

- **Goal**: Maintain, restore, and promote fire resilience in diverse habitats and cultural landscapes.
    - Objective: Use prescribed fire or non-fire treatments to manipulate specific plant communities.

- **Goal**: Safe and effective wildfire response is enhanced through vegetation management and values at risk have improved resiliency to fire-related impacts.

- Objective: Use fuels treatments to reduce vegetation accumulation associated with wildfire risk in proximity to values.
- Objective: Create and maintain defensible space, as described in this plan, for infrastructure values.

These goals and objectives support the Glacier fire management programmatic goals listed above in Section 2.

Fuels Treatments

Glacier will use prescribed fire treatments to achieve specific protection and resource objectives. Prescribed fire treatments for restoration, maintenance, and protection of values will typically occur in both the West and East FMUs.

Non-fire fuel treatments will also be used near developments or other values that may be damaged or destroyed by a wildfire. In many instances mechanical (e.g., weed whips, chainsaws, chippers, etc.) fuels reduction projects will occur in areas where fuel accumulations are too high to use prescribed fire safely and effectively. Fuels removed during mechanical fuels reduction will typically be disposed of using pile burning or hauled away to an external disposal site (see General Fuels Management Implementation Procedures below).

Each prescribed fire and non-fire fuels treatment will have a site specific plan outlining goals, objectives, methods, and mitigations and an interdisciplinary team (ID team) will review the plan. The ID team will consist of natural and cultural resource managers (including a park wildlife biologist, botanist, archeologist, wilderness coordinator, and environmental compliance specialist), fire personnel, and other park staff as required. Neighboring agencies will be consulted when appropriate, and all treatments will have project level environmental review and compliance completed as necessary, including a MRA if a project is in recommended wilderness.

General Fuels Management Implementation Procedures

Activities proposed in the Fire Management Plan will be planned and implemented in accordance with RM 18, Chapter 7, Fuels Management, the NWCG Standards for Prescribed Fire Planning and Implementation, and the Red Book, Chapter 17, Fuels Management.

Glacier will most often complete mechanical fuels treatments around values at risk, as described below in the Defensible Space section. If management determines prescribed fire (planned ignition) is the best method to accomplish a proposed treatment, the most current Interagency Prescribed Fire Planning and Implementation Procedures Guide will be used. All burn plans will be developed with input from the ID team and will be approved by the AA. Pile burns are a type of prescribed fire, therefore if a fuels treatment takes place and the preferred method of biomass disposal is through pile burns, an approved burn plan will be used.

During mechanical fuel treatments, disposal of the cut fuels can be accomplished by a variety of methods. Below is a description of how biomass material may be disposed of, and any one method or combination of methods can be used during a treatment.

- Burning on site: creating small burn piles of woody material from fuels treatments that are typically burned during the fall and spring.
- Hauling and burning off site: woody material from fuels treatments can be hauled off site to large, consolidated burn piles in safe locations preapproved by park management. There are several locations that are used annually, and all new consolidated pile locations will be approved through the park ID team.
- Chipping: this method would chip small diameter woody materials and scatter the chips on site or haul the chips offsite for disposal. This method is possible near roadways but may not be an option for an entire treatment unit.
- Scattering: cut material is dispersed away from values without creating additional fire hazard.
- Fuelwood: woody material cut during fuels treatments would be used for fuelwood if of the appropriate size, etc.
- Building materials: larger diameter fuels can be used as parking barricades, posts, corral rails, amphitheater seats, and as replacement logs in historic structures.

Best Management Practices (BMPs) from the 2025 FMP EA for fuels treatments include:

- Involve park resource specialists during prescribed burn and non-fire fuel treatment planning to ensure treatments do not conflict with objectives for resource protection.
- Strengthen fuel reduction treatments as needed and design structure protection plans (where available) around potentially threatened developed areas, historic sites, and values of concern.
- Monitor all fuels management projects and subsequent site-specific treatment prescriptions through the Glacier Fire Management office.
- Consider resource sensitivity, including aesthetics, in all treatment prescriptions and plans.
- Feather the borders of treatment areas in an irregular pattern and with increasing density (with distance from the value to be protected) to improve the visual quality of the treatment.
- Leave clumps of trees for aesthetic purposes, depending upon their potential to contribute to adverse fire behavior. Irregular spacing of trees that remain will be encouraged to maintain a random appearance.
- Leave some standing dead, diseased, or insect infested trees, when not a safety hazard, for wildlife habitat snags.
- Prune tree limbs to reduce ladder fuels from the ground to the forest canopy. Pruning will occur at variable heights to prevent an unnatural appearance to the forest.
- Minimize ground disturbance during fuel reduction treatments. Burn piles, dragging of material, and the use of wheeled or tracked equipment are mechanisms of ground disturbance that will be monitored and mitigated.
- Flush cut all stumps from thinned trees. Stump grinding may be an option in developed areas.
- Leave an appropriate species composition that reflects the natural succession of the forest.
- Minimize disturbance to employees and the public as much as possible during fuel treatments.

- Apply the Minimum Requirement Analysis process to fuel treatments proposed within recommended wilderness.
- Use an air curtain burner to dispose of slash from non-fire fuel treatments if practical and feasible and consistent with resource management objectives.
- Before initiating prescribed burning or fuel reduction projects, identify and document non-native invasive plant species that are present or likely to invade the disturbed areas. The treatment scope will include post-project monitoring and a treatment plan as needed.
- Rehabilitate areas of disturbance as necessary through consultation with the park's Vegetation Management Specialist.
    - Use only seeds and plants originating from the park or from approved sources rehabilitation activities.
    - Conserve excavated vegetated layer and topsoil for replacement of soil layers in the stratigraphic horizons from which they were excavated, i.e., topsoil would be placed at the top layer.
    - Monitor and treat disturbed areas as necessary for non-native invasive plants.
- Clean and inspect all equipment and materials prior to entering the park to prevent the spread of non-native invasive plants. Pre-determined areas may be avoided entirely during fuels treatments.
- Select access routes to treatment sites to minimize vegetation trampling and soil compaction.
- Survey prescribed burn and non-fire fuel treatment areas for rare plants prior to treatment in consultation with the park's Vegetation Management Specialist. If found, rare plants will be marked and avoided as feasible or salvaged.
- Mark and avoid whitebark pine if found in fuels treatment areas.
- Train fire management personnel in the identification of whitebark pine.
- Install sediment control (e.g., silt fences, waddles, etc.) prior to the initiation of fire management activities along waterbodies where natural vegetation is not sufficient to filter out sediment between the work area and any nearby waterbodies and prevent runoff from reaching waterbodies.
- Survey treatment areas for wetland resources before the treatment begins to identify the presence and extent of wetlands; sensitive wetland resources would be marked and avoided.
- Train personnel on appropriate behavior in the presence of bears and other wildlife.
- Consult with the park's wildlife program prior to treatments regarding the presence of nesting birds and/or roosting bats. A survey for nesting birds and/or bats may be required.
    - If the species are present, vegetation removal will not occur until after they have left or before they arrive and will be scheduled in consultation with the park's wildlife program. (In general, nesting season occurs between June 1 and July 15 on the west side of the park, and June 1 and July 22 on the east side. These dates could change depending on species, location, and weather conditions.)

- Avoid sediment producing actions upstream of known or potential spawning areas during the native fish spawning/rearing period of September 1 through May 15. Consult the park's Aquatic Program Manager regarding sensitive locations.
- Use rocky or hardened surfaces as much as possible for walking and equipment staging in or near stonefly stream habitat (as identified in consultation with the park's Aquatics Program Manager).
- Avoid walking or working in streamside vegetation. Work from existing stream crossings whenever feasible and avoid the creation of multiple paths or social trails.
- Design of prescribed burns will include scheduling prescribed burns during periods and seasons of good ventilation, limiting the amount of burning to be performed during any one time, using ignition and burning techniques that minimize smoke production, and selecting fuel preparation methods that minimize dirt and moisture content to control smoke levels.
- When smoke dispersion forecasts are unfavorable, or smoke impacts cannot be minimized, promote alternative methods of treatment.
- Apply the minimum requirements analysis framework for any planned actions and, whenever feasible, during emergency responses when working in recommended wilderness, using the least impactful methods while still meeting the treatment's goals and objectives.
- Contact tribal officials well in advance of planned fire management projects to determine if traditional use areas are included in the planning area.
- Include cultural resource monitoring as needed in consultation with the park's Cultural Resources Specialist.
- If cultural material is found during ground disturbing activities, ground disturbance would stop immediately, and the park's Cultural Resources Specialist notified.
    - If archeological resources are identified, work would not resume until resources are recorded.
- Treatments that pose a potential threat to cultural resources may require specific on-site protection strategies and monitoring. A qualified cultural resource specialist would provide guidance on implementing the following BMPs as conditions warrant.
    - Locate, identify, and isolate sites that are vulnerable to fire effects or fire management activities.
    - Conduct cultural resource surveys as needed in consultation with the park's Cultural Resources Specialist in areas where treatments are proposed.
    - Remove fuel concentrations from close proximity to known cultural sites.
    - Educate fire personnel about the need to protect cultural resources.
    - Minimize ground disturbance wherever possible.
- Conduct post-fire cultural resource surveys to identify, evaluate, and document impacts.
- Develop and follow a spill plan in case of a fuel or hazardous material leak. The plan will be reviewed by the Glacier's Safety Office.
    - Personnel will inspect engines, fuel lines, and fittings as well as other equipment for leaks prior to beginning project activities each day.
    - Appropriate spill containment supplies will be on site to address a spill on shore and on the water.

    - Petroleum products will be properly stored, to include the use of spill-proof and bear-resistant containers.
- Avoid known bald and golden eagle nesting locations, if possible, to minimize the potential for disturbance, including during aircraft and UAS operations.
- The following conservation measures, as agreed to with the USFWS in Glacier's programmatic BA for administrative flights (NPS 2023), are required for all non-emergency flights:
    - Follow suggested flight paths away from sensitive areas. Where possible, flight paths will follow road corridors and occur over developed areas. The flight manager will be responsible for coordinating with the park biologist to identify sensitive sites prior to the flight.
    - Flights will occur one hour after sunrise and one hour before sunset from 1 May to 1 October to minimize impacts to grizzly bears. Grizzly bear denning activity peaks during den emergence from 15 March to 15 May and during den construction from 15 October to 15 November. No flights will occur over known dens or potential den habitat, during den emergence and den construction.
    - Avoid ungulate winter range from 15 January to 1 May when wintering ungulates are most vulnerable.
    - Restrict flights to the 1 May to 1 October period, or minimizing them outside that period, will eliminate or minimize impacts to sensitive wildlife.
    - The helicopter will fly at a minimum of 2000 feet above ground level over the park whenever possible, depending on mountainous topography, weather, and except when it is landing or taking off or when it is delivering supplies via long line.
    - No flights will be permitted over known Canada lynx den sites from 1 May to 30 Aug.
    - Designated flights paths will avoid open alpine meadows, talus slopes, or other areas where grizzly bears congregate but do not have access to cover. If a low-level flight or landing is needed in an alpine area and a bear is seen, the flight will be postponed. If the flight cannot be postponed, the flight will keep a maximum distance from the bear(s).
    - Every attempt will be made to include non-emergency helicopter flights for fire management within the 50-flight limit for administrative flights. Flights will be coordinated with other projects and combined with other hauling needs whenever possible.
- Practice principles of 'Leave No Trace' outdoor ethics.

Multi-Year Fuels Treatment Plan

To implement the fuels management program safely and effectively, Glacier will conduct comprehensive planning consistent with its strategic direction. The Interior Fuels and Post-fire Reporting System (IFPRS) is the current authoritative application for tracking and reporting estimated and completed accomplishments. Department of the Interior agencies are required to annually submit and verify a three-year Estimated Program of Work (POW) in IFPRS, which helps the Department of Interior formulates its annual budgetary proposals and make future funding requests to the President and Congress.

In addition, Glacier uses a long-term planning process to track all stages of fuels project implementation over the entire planning horizon. Fire managers work with park staff (ID teams, resource managers, and other specialists) on each proposed treatment project to review and update the fuels program's strategic direction. The annual review includes analyses of completed structure and/or risk assessments for park values. The park's Multi-Year Treatment Plan is in Appendix E and is a guide for what projects may occur over the course of the next few years.

The Active Management (Fuels) v 2.0 ArcGIS Dashboard for displays fuels treatments accomplished by the National Park Service's Wildland Fire Management program.

Defensible Space

The NPS has adopted the International Code Council's (ICC's) International Urban-Wildland Interface Code (2021) through the parameters described in Executive Order Wildland-Urban Interface Federal Risk Mitigation (May 18, 2016). Contained in the ICC's code (sections 603 and 604) are descriptions of defensible space and maintenance requirements for wildland urban interface (WUI) areas. Reference RM - 18, Chapter 7, Fuels Management for additional information.

The basic application of these standards (which are the same as FireWise standards) include removing dead and dying plant material, mowing, irrigating grasses, thinning live woody vegetation, and pruning low branches. These treatments reduce the likelihood of a structure igniting during a wildfire and provide fire personnel with safe opportunities for effective suppression actions.

Defensible space treatments in Glacier will be most intensive within 30-50 feet of the value at risk (e.g., building, resource site, etc.), where most or all the combustible surface fuel will be removed, most or all small to mid-diameter trees will be removed, and the largest trees will be limbed up to break up fuel continuity between the ground and the tree canopy. From 50-150 feet from the value at risk, most dead and downed fuels will be removed, some small to mid-diameter trees will be left in a spaced configuration that prevents fire spread from canopy to canopy and does not create a fuel ladder to overstory trees. Some logs that have decayed into the ground will be left in place. Beyond 150 feet from the value, the concentration of surface fuel retained will increase with the distance from the value and will phase into natural or near natural conditions at 400-500 feet. Species composition of the forest is also a key factor in how many trees are removed. Volatile, low branched trees like firs, for example, may be spaced at 20 feet intervals within the first 50 feet of the treatment area, whereas lodgepole, with its lack of lower branches, may be spaced 8-12 feet apart. Typical tools used will include chainsaws and brushers, in addition to hand operated pole saws, handsaws, loppers, and clippers.

All government owned structures within Glacier have been assessed for wildfire risk using the NPS Wildfire Risk Assessment program. Privately owned structures within the park have varying degrees of assessment for wildfire risk. Current information and future updates on NPS Structure Protection needs can be found at NPS Wildland Fire Risk Assessment

(WFRA) https://wildfire-risk-assessments-nifc.hub.arcgis.com/. These structure assessments are valuable in determining where to allocate limited fuels management resources.

Additional determining factors for prioritization of defensible space treatments are funding, operational efficiencies, and social or political concerns.

3.3 Preparedness

The Kalispell Interagency Dispatch Center Fire Danger Operating Plan (FDOP) is developed and maintained by interagency fire managers to document a decision-making process for the implementation of safe, efficient, and effective wildfire management actions. The Fire Management Officer is responsible for developing and validating preparedness plans that are approved by the park Superintendent as part of the Fire Management Plan. Program preparedness reviews will be conducted annually. Refer to Red Book, Chapter 10, Preparedness and NPS Reference Manual 18 Wildland Fire Management, Preparedness, Chapter 5 for preparedness planning requirements.

Preparedness Activities

The park has identified specific actions to be taken with each identified Preparedness Level (see Preparedness Plan in Appendix D2). These will take into consideration other cooperators staffing and other anticipated needs. Glacier's Staffing Plan (Appendix D3) describes how resources are pre-positioned according to fire danger breakpoints as well as criteria for step-up staffing, and the Initial Response Plan in Appendix D4 outlines how initial responses to wildfires will be handled. Additionally, annual readiness reviews are completed to ensure staff and equipment are operational and ready for the upcoming fire season.

Short term emergency step-up accounts are authorized at the park level based on identified actions in the park's Staffing Plan, while severity funding requests are made through the Intermountain Regional Fire Management Office and approved at the Agency's Regional and National levels. Severity funding is intended to meet longer term response capacity needs. Approval of severity funding and augmentation of the park's fire response and management capabilities is based on predictive service forecasts and actual activity levels that exceed planned program levels.

During the fire season, regional and local predictive service support is available from the Northern Rockies Coordination Center. Glacier fire management staff also continually develop and maintain geospatial data in preparation for fire response, including locations of resource values, infrastructure, transportation systems, ownership, fire history, fuel models, fire regimes, water sources, and aviation hazards to enhance wildfire strategy decision making during the fire season.

Coordination and Dispatching

Glacier National Park uses the Kalispell Interagency Dispatch Center, which is a Tier 3 dispatch center. Kalispell Dispatch is the conduit for mobilizing and tracking of resources responding to incidents, aircraft flight following, establishing an expanded dispatch function when necessary, daily situation, and large incident reporting for the park. More information

can be found in the Northern Rockies Coordination Group Northwest Montana Zone Charter in Appendix C and described above in Section 1.5 Collaborative Planning.

Wildfires may involve multiple jurisdictions where more than one government, state, or local entity has a legally mandated responsibility and authority. Fire protection responsibility usually rests with the agency that has jurisdiction for an area, but the MT Stafford Act Agreement, NRCG NW MT Zone Charter and Ops Guide, and British Columbia NW United States Wildfire Response Border Arrangement all provide for cross boundary assistance.

Duty Officer

A Glacier National Park Wildland Fire Duty Officer will be identified at all times. Availability of the park Duty Officer is dependent on the park Preparedness Plan level and varies from 24 hours a day to only office hours during the winter (see Appendix D3 for more information). The park Superintendent authorizes the Fire Management Officer to provide a delegation of authority to Duty Officers in Glacier, and a Duty Officer will have a minimum qualification of ICT4 (currency not required).

The Duty Officer will be available seven days a week during fire season, conduct morning briefings, coordinate initial fire response, and make appropriate notifications. The DO is a critical conduit between fire responses and park leadership.

Agency Administrator

The Glacier Agency Administrator (AA) will be the Superintendent unless the Superintendent chooses to delegate another park employee to this position. The AA (or their delegate), and the Chief of Resource and Visitor Protection, the FMO's supervisor, will obtain Agency Administrator qualifications (AADM) in Incident Qualifications and Certification System (IQCS) within two years of accepting the position, if not already qualified. In addition, the AA is responsible to approve wildfire decisions and provide their rationale behind the decision in WFDSS. They will also complete periodic validations, as necessary, of the decision.

The Superintendent will also follow all AA performance requirements for fire operations in the Red Book, Chapter 3, NPS Program Organization and Responsibilities, and will ensure a delegation of authority is signed annually to the park Fire Management Officer.

Prevention

Prevention activities in Glacier will consist of signs and other educational materials posted at key locations about wildfire danger. The park will also share prevention messages through interpreters, patrols, and other staff contacts, and may consider restrictions or closures to public access and use of national park lands in collaboration with surrounding partners per the Northwest Area Restrictions and Closures (Appendix G). Restrictions and closures are designed to reduce human-caused fire risk, and to provide increased public safety by controlling occupancy of public lands that may be threatened by wildfire.

Safety Program

The Glacier Superintendent is responsible for providing a documented occupational safety and health program (Director's Order #50B). The park's Safety and Health Program is accessible to all employees on the park SharePoint site and provides for annual training and review of procedures, conditions, and resources to guide employee safety. Procedures for handling serious injury or death are included in the Safety and Health Program on the park's Safety SharePoint site.

Evacuation Plans for developed areas of the park and guidance for employees and supervisors under evacuation orders are on the Emergency Resources tab of the park's SharePoint site for all employees to access.

Job Hazard Analysis

The FMO is required to ensure the completion of job hazard analyses (JHAs) for fire and fire aviation activities, so mitigation measures are taken to reduce risk. Red Book, Chapter 3, NPS Program Organization and Responsibilities. Job Hazard Analysis tools specific to fire management duties are available on the park Fire Management network drive, MS Teams, and hard copy for ease of reference.

3.4 Post-Fire Programs and Response

Glacier National Park is responsible for taking prompt action after a wildfire to minimize threats to life or property, and to prevent unacceptable degradation of natural and cultural resources. Damages resulting from wildfires are addressed through four activities:

- Suppression Repair: This effort intends to repair suppression damages and is the responsibility of the Incident Commander. It is paid for with wildfire suppression funding.
- Emergency Stabilization: The intent is to protect life and property and critical resource values and is the responsibility of the Superintendent. It is paid for with Emergency Stabilization (ES) funding.
- Rehabilitation: The intent is to repair wildfire damaged lands that are unlikely to recover naturally to management approved conditions, or to repair or replace minor facilities damaged by wildfire. It is paid for from Burned Area Rehabilitation (BAR) funds.
- Restoration**:** The intent is to continue the rehabilitation efforts started in the BAR process beyond the time limitation set by the Department of Interior. It is paid for by regular program funds.

RM - 18, Chapter 18, Post Wildfire Programs and the Red Book, Chapter 11, Incident Management and Response provide direction on current processes and timeframes.

3.5 Air Quality/Smoke Management

Glacier is a member of the Montana/Idaho Airshed Group. The purpose of the Airshed Group is to minimize or prevent smoke impacts to communities while using fire to accomplish land management objectives. The Montana/Idaho Airshed Group Operating Guide contains agreements, guidelines, plans, and procedures for the successful operation of the Airshed

Group, including compliance with all federal, state, and local regulations for open burning. Each agency supports and adheres to the standards of the Airshed Group.

Glacier will obtain necessary burn and/or air quality permits from the State of Montana prior to implementation of any prescribed burning. All prescribed fire plans will include appropriate consideration of smoke production, duration, and impacts. Also, all prescribed fires will be reported to Kalispell Interagency Dispatch ahead of time and will follow all smoke management guidelines and restrictions.

Additional Smoke Management information can be found in RM 18, Chapter 9, Air Quality and Smoke Management.

3.5.1 Air Quality Issues

Glacier National Park is designated a Class I Airshed. Additional smoke sensitive areas are Highway 2 which runs parallel to the southern boundary of Glacier, Highway 89 and 17 which run parallel to the eastern boundary of the park, the towns of West Glacier, Essex, and East Glacier on the park boundary, Waterton Valley Canada, and the town of Browning. In addition, Class 1 Airsheds as defined by the Environmental Protection Agency, and Impact Zones as defined by the Montana Airshed Group are listed below. All non-wilderness designated National Forest Service lands are considered Class II airsheds, as are the Blackfeet Nation lands to the east of the park.

Class I airsheds:

- Flathead Indian Reservation, approximately 30 miles southwest.
- Bob Marshall Wilderness Complex (Bob Marshall, Scapegoat, and Great Bear Wilderness, Flathead, Helena-Lewis and Clark, and Lolo National Forests, approximately 45 miles south.
- Mission Mountains Wilderness, Flathead National Forest, approximately 50 miles southwest.
- Cabinet Mountains Wilderness, Kootenai National Forest, approximately 95 miles west.

Impact zones:

- Kalispell and the Flathead Valley, MT approximately 15 miles west.
- Eureka, MT approximately 50 miles west.
- Seeley Lake, MT approximately 75 miles south.
- Libby, MT approximately 90 miles west.
- Thompson Falls, MT approximately 90 miles west southwest.
- Missoula, MT approximately 100 miles south.

3.5.2 Smoke Management Activities

All prescribed fire smoke will be monitored from ignition until the project is complete for adverse impacts to nearby sensitive areas, Class I airsheds, and impact zones. Primarily this includes the Flathead Valley. If smoke direction or amount is deemed to be undesirable during the test fire, the prescribed fire will not continue and will be

extinguished. Additionally, Glacier will report prescribed fire acreages to the Montana/Idaho Airshed Group annually and review total acreages for the smoke permit.

3.6 Data and Records Management

All wildland fire data and records will be managed in accordance with NPS policy. Below is a list of wildland fire data and records, along with how they will be managed and stored. The FMO will ensure the management of wildland fire data and records in the appropriate systems.

Fire Reports

All verified wildland fire incidents will have a fire report, which includes data about the incident, along with a geospatial fire occurrence location point. The authoritative storage location is in Interagency Fire Occurrence Reporting Modules (InFORM). Fire reports must be entered and certified within 10 days of the incident being declared out. The FMO is responsible for ensuring all fire reports and data are entered and certified in InFORM.

Wildfire and Prescribed Fire Perimeter Polygons

All wildfire and prescribed fire perimeter geospatial data will also be stored in InFORM with the corresponding fire report; all wildfires greater than 10 acres in size are required to have a fire perimeter within InFORM. All prescribed fire perimeters will also be stored in IFPRS with fuels treatment data. See above section of Fire Reports for more information on responsibilities for wildfire and prescribed fire perimeter data.

Non-Fire Fuels Treatment Polygons

All non-fire fuels treatment polygons will be stored in IFPRS along with data about the treatment. More information on fuel treatment data can be found above in Section 3.2 Fuels Treatments.

Incident Management Qualifications

Incident management qualifications, experience, and training are managed in Incident Qualifications Certification System (IQCS). Training and qualification records are maintained in the Fire Management Office in hard copy form for legacy records, and electronically in IQCS for new records moving forward. The Glacier FMO is the certifying official in IQCS and generates qualification cards annually for qualified incident responders.

4.0 PROGRAM MONITORING AND EVALUATION

4.1 Monitoring

Glacier National Park's fire ecology program consists of a Fire Ecologist and Fire Effects Monitors. The fire ecology program supports the programmatic goals and objectives of the fire management program.

Goals of the Glacier fire ecology monitoring program are as follows.

- Verify the prescribed fire program objectives are being met through documentation and analysis of fire effects.

- Inform fire management decisions with analysis of conditions in the fire environment and verify the effectiveness of implemented decisions and actions taken using appropriate temporal monitoring and analysis.
- Increase knowledge of fire behavior and effects on ecosystems to apply to adaptive fire management decisions.
- Use monitoring data and analysis to inform the public.
- Identify topics where research should be initiated.
- Promote opportunities for the program to sustain skillsets and innovate in the field of fire ecology and monitoring.

Fire monitoring is part of the adaptive management process and required by policy. Fire monitoring includes wildfire, prescribed fire, and non-fire fuels treatments and is described in RM-18 Chapter 8, Fire Ecology and Monitoring with more details in the NPS Fire Monitoring Handbook (NPS 2003). The 2003 NPS Fire Monitoring Handbook (FMH) defines four levels of monitoring for short and long term, along with standardized plot protocols. The variables to be monitored will be those determined according to fire management goals and objectives, and by consulting the Glacier Fire Ecologist.

4.2 Research

Past, current, and future fire research provides a better understanding of the role of fire in local ecosystems and this information will continue to be instrumental in effective fire planning and a basis for adaptive management. This section outlines previous research which has contributed to increasing knowledge of fire's role in Glacier as well as future needs for additional research.

Below is a summary of key published research important to Glacier's Fire Management program.

- Key and Benson (2003) developed the Normalized Burn Ratio using two 1994 Glacier wildfires to field test the performance of radiometric measures as estimators of burn severity. Consequently, the severity of all fires that have occurred within the park dating back to 1988 has been mapped using this method. It has also produced detailed and accurate final fire perimeters.
- Willard, Wakimoto, and Ryan (1995) researched post fire vegetation recovery within the 1988 Red Bench fire in wet sedge meadows. Their findings showed plant cover and species richness increased post fire.
- Hoecker and Turner (2021) looked at tree and ground vegetation recovery after atypical short-interval (15 yrs.) fire versus a typical long-interval fire (100-300 yrs.) in Glacier. They found reduced tree and ground vegetation, but an increase in shrubs after short-interval fires. They predicted that increased fire activity will produce sparser forests and the structure and composition of vegetation within short-interval fire perimeters could shift in the future.

Below is a list of future fire research that could benefit Glacier fire managers.

- Expand current research on post-fire and climate change vegetation succession to a wider variety of species, such as whitebark pine.

- More research to expand on the fire history in the North Fork area of the park.
- Research on fire effects in decadent aspen stands on the east side of the park to determine if fuel treatments could restore them, and if conifer encroachment is a concern in these stands.
- A soil inventory for the Big Prairie area and investigation of whether certain soil types are preventing or enhancing conifer encroachment in meadows to help inform fuels treatment plans.
- Research to assess fire impacts on ungulate winter range which could include:
    - Determine and describe winter range characteristics for mule deer, elk, and moose on various aged recent burns.
    - Construct a model to predict fire effects on winter ungulate habitat including forest canopy, snow depth, forage, and winter densities of ungulates.

4.3 Climate Change

Climate change is affecting vegetation structure, composition, function, and ecosystem processes throughout the United States and within Glacier, presenting new challenges for managing wildfires as the fire environment changes with the climate. Trends point toward increases in temperature, reduced snowpack, more severe drought, increase in area burned by wildfires, tree mortality, and biome shifts (Gonzalez 2020).

A changing climate can affect wildland fire management by extending the length of fire season. More days of fire season can lead to more days with intense fire behavior, higher burn severity, increased fire frequency, and larger fire size, than were previously common in Glacier. These changes may alter ecosystems, vegetation patterns, fire regimes and the way wildfires are managed on the landscape.

Data show current temperatures in Glacier have shifted above the historic range of variability (Hegewisch and Abatzoglou 2024) and are predicted to increase 2-4°F between the years 2025-2049 (Alder and Hostetler 2024). Wildfires are already burning areas more frequently and at higher severities than in the past (Parks and Abatzoglou 2020). If future fire environments are warmer and precipitation patterns change, protecting life safety, and park values will become more challenging.

There is opportunity for the park to evaluate areas as fire refugia to maintain seed sources and habitats, and thereby resist climate change impacts. Wildland fire may also be a beneficial disturbance function in creating resilience to climate change, and opportunities for the park to identify areas where wildland fire will create more climate change resilient conditions.

Glacier keeps climate change and sustainability at the forefront of all management through adaptation, science, communication, and mitigation. Fire managers will learn and respond to climate change concurrently with the park and partners. The monitoring and adaptive management principles employed throughout this plan will be used to help managers address climate change as it pertains to wildfire risk and wildland fire effects.

4.4 Evaluations, Reviews, and Updates

Fire Program Review

The National Park Service has developed a Wildland Fire Program Review Guide that describes the program review framework. For more information reference RM - 18, Chapter 16, Evaluations, Reviews, and Investigations. Reviews may be scheduled on a regular cycle, or requested by park, regional or national leadership.

The Intermountain Region conducts Annual Program Assessments that evaluate the health of a program across nine program areas. Findings and trends identified in these assessments assist regional managers in focusing their formal review schedule.

Wildland Fire Incident Review

All wildland fires and fire-related incidents will be reviewed in accordance with RM - 18, Chapter 16, Evaluations, Reviews, and Investigations and the Red Book, Chapter 18, Reviews, and Investigations.

Annual Fire Management Plan Update

An annual review is required for this Fire Management Plan. The review process is described in RM - 18, Chapter 4, Fire Management Plans. Any needed updates to this FMP will be identified and made a part of this process. After park review and updates are completed, the FMP will be submitted to the Regional Fire Planners who will validate its currency and ensure alignment with RM-18 and the Red Book. Once reviewed, the Fire Planners will return it to the park where updated Superintendent and FMO signatures will be applied to the plan.

This FMP's appendices will also be reviewed annually and replaced with current (signed, if applicable) documents. Electronic copies of the FMP and required appendices with current ink or certified electronic signatures are uploaded to the Annual Park Preparedness folder on the IMR Fire and Aviation SharePoint Site. Fire Management Plans that have not undergone annual updates within the specified timeframe are not considered current.

NWCG GLOSSARY

The National Wildfire Coordinating Group (NWCG) Glossary of Wildland Fire provides an extensive listing of approved terms and definitions used by the NWCG community. It contains terms commonly used by NWCG in the areas of wildland fire and incident management and is not intended to list all terms used by NWCG groups and member agencies. The NWCG has directed that all committee and subgroup product glossaries be contained within the NWCG Glossary of Wildland Fire to maintain definition consistency and clarity among documents.

REFERENCES CITED

Alder, J. R. and S. W. Hostetler. 2024. USGS National Climate Change Viewer. US Geological Survey https://doi.org/10.5066/F7W9575T. Accessed on February 26, 2024.

Gonzalez, P. 2020. Human-caused climate change in United States national parks and solutions for the future. *Parks Stewardship Forum*, 36(2). http://dx.doi.org/10.5070/P536248262 Retrieved from https://escholarship.org/uc/item/9443s1kq

Hegewisch, K. C. and J. T. Abatzoglou. 'Historical Climate Tracker' web tool. Climate Toolbox (https://climatetoolbox.org/) accessed on February 13, 2024.

Hoecker, T. J. and M. G. Turner. 2021. A short-interval reburn catalyzes departures from historical structure and composition in a mesic mixed-conifer forest. Forest Ecology and Management. Volume 504, 15 January 2022, 119814. Retrieved from https://doi.org/10.1016/j.foreco.2021.119814.

Hop, K. M., M. Reid, J. Dieck, S. Lubinski, and S. Copper. 2007. U.S. Geological Survey-National Park Service Vegetation Mapping Program: Waterton-Glacier International Peace Park. U.S. Geological Survey, Upper Midwest Environmental Sciences Center, La Crosse, Wisconsin, August 2007. 131 pp. + Appendixes A-L.

Key, C. H. and N.C. Benson. 2003. The normalized burn ration (NBR): a Landsat TM radiometric measure of burn severity. US Geological Survey Northern Rocky Mountain Science Center, US Department of Interior.

National Park Service. 2003. Fire Monitoring Handbook. Fire Management Program Center, National Interagency Fire Center, Boise, ID.

National Park Service. 2008. Director's Order 18: Wildland Fire Management. National Park Service, Washington, D.C.

National Park Service. 2020. Wildland Fire Strategic Plan 2020-2024. National Park Service Branch of Wildland Fire, Boise, ID.

Parks S. A. and J. T. Abatzoglou. 2020. Warmer and Drier Fire Seasons Contribute to Increases in Area Burned at High Severity in Western US Forests from 1985 to 2017. Geophysical Research Letters, 47, e2020GL089858. https://doi.org/10.1029/2020GL089858

Willard, E. E., R. H. Wakimoto, and K. C. Ryan. 1995. Vegetation recovery in sedge meadow communities within the Red Bench Fire, Glacier National Park. Pages 102-110 in Susan I. Cerulean and R. Todd Engstrom, eds. Fire in wetlands: a management perspective. Proceedings of the Tall Timbers Fire Ecology Conference, No. 19. Tall Timbers Research Station, Tallahassee, FL.

USEFUL WEB LINKS

Directors Order #18: Wildland Fire Management; National Park Service

Directors Order #50B: Occupational Safety and Health Program

Executive Order Wildland-Urban Interface Federal Risk Mitigation (May 18, 2016)

Fire Wise Standards

FMH, Fire Monitoring Handbook

InFORM, Interagency Fire Occurrence Reporting Modules

Interagency Standards for Fire and Fire Aviation Operations, (Red Book) NFES 2724

International Code Council's (ICC's) International Urban-Wildland Interface Code

National Cohesive Wildland Fire Management Strategy

National Environmental Policy Act (NEPA)

NPS DataStore

NPS-IMRO-Fire Managers-Annual Park Preparedness Docs

NPS Wildland Fire Risk Assessment (WFRA)

NWCG Standards for Prescribed Fire Planning and Implementation, PMS 484

NWCG Wildland Fire Risk and Complexity Assessment, PMS 236

Planning, Environment and Public Comment (PEPC)

Reference Manual #18: Wildland Fire Management; National Park Service

Wildland Fire Decision Support System (WFDSS)

WFDSS Management Requirements

WFDSS Strategic Objectives

WFDSS Supplemental Guidance for NPS Units in Intermountain Region

Wildland Fire Strategic Plan, 2020-2024

APPENDICES

Appendix A1 – Delegation of Authority for Fire Management Officer
Appendix B – Interpark Agreement between Glacier National Park and Grant-Kohrs Ranch National Historic Site
Appendix C1 – Montana Cooperative Fire Management Agreement Operations Plan
Appendix C2 – Northern Rockies Coordination Group Northwest MT Zone Charter and Operations Plan
Appendix C3 – British Columbia and Northwest United States Wildfire Response Border Arrangement
Appendix D1 – Kalispell Dispatch Center FDOP
Appendix D2 and D3 – Glacier Preparedness Plan and Step-Up Staffing Plan
Appendix D4 – Glacier Initial Response Plan
Appendix D5a –Valley Bottom FDRA Pocket Card
Appendix D5b – High Elevation FDRA Pocket Card
Appendix E – Multi Year Fuel Treatment Plan
Appendix F – (when complete) Fire Monitoring Plan
Appendix G – Northwest Area Fire Restrictions Plan