

**Lake Roosevelt National Recreation Area
Fire Management Plan
September 2014**



LRNRA Gifford Prescribed Burn (2004)

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Lake Roosevelt National Recreation Area

Fire Management Plan

Reviewed and Recommended by:

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1 INTRODUCTION

1.1 Reason for a Wildland Fire Management Plan

A substantive reason for developing a wildland fire management plan is to meet policy direction issued in *NPS Directors Orders-18 Wildland Fire Management (January 1, 2008)* referred to as **DO-18**

DO-18 states:

“Each park with burnable vegetation must have an approved Fire Management Plan that will address the need for adequate funding and staffing to support its fire management program. Parks having an approved Fire Management Plan and accompanying National Environmental Policy Act (NEPA) compliance may utilize wildland fire to achieve resource benefits in predetermined fire management units. Parks lacking an approved Fire Management Plan may not use resource benefits as a primary consideration influencing the selection of a suppression strategy, but they must consider the resource impacts of suppression alternatives in their decisions.”

This document is the Wildland Fire Management Plan (FMP) for Lake Roosevelt National Recreation Area (LRNRA). The FMP Environmental Assessment (EA) and Findings of No Significant Impact (FONSI) are attached as appendices. Upon issuance, this plan will meet the requirements of the National Environmental Policy Act (NEPA), as well as the National Historic Preservation Act (NHPA) and other pertinent federal laws.

A Fire Management Plan is a detailed description of strategies and actions intended to provide direction for the effective management of wildland fire on a particular area of land. It is developed in accordance with the Federal Wildland Fire Management Policy and Program Review (USDI/USDA 2009).

National Park Service Management Policies (2006) recognize that fire is an important ecological and evolutionary force in many terrestrial ecosystems. The policy further states that fire will be managed to fulfill the need of protecting, perpetuating, or recreating natural environments or historic scenes. Fire management strategies for individual parks must be designed based on park management objectives. The resource management objectives of the park will determine how the prescribed fire component is implemented.

The NPS at LRNRA will utilize this plan to guide management decisions in response to wildland fire incidents/projects occurring within the recreation area. Presently, and in the future, all wildfires will be suppressed. The size and configuration of the park land base eliminates the option of using wildland fire to obtain other resource objectives. Prescribed fire and mechanical fuels reduction projects will continue to be incorporated into the fire management program to enhance the NPS’s ability to manage and improve the park’s ecosystem while providing for firefighter and public safety. The use of

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prescribed fire and mechanical fuels treatment components are needed at the park for the following purposes:

Restoration of the natural landscape. Prescribed fire and/or mechanical fuels treatments are needed to enhance native plant habitats, forest health, and ecological processes impacted by humans and their developments.

Vegetation control. Restoring fire as an ecological process through the use of prescribed fire is needed to maintain historic landscapes and the edge effect between native forest and shrubland communities. Promoting this ecological balance and healthy native plant communities also limits and controls the establishment of noxious weeds and exotic plants.

Forest fuel reduction. Prescribed fire and/or mechanical fuels treatments are needed to dispose of forest fuels resulting from historic fire suppression policies and current hazard fuel reduction, defensible space, forest pest impact, and hazard tree removal projects. Use of these tools will also greatly reduce the severity of wildfires and the resultant impacts to natural and cultural resources while improving the possibilities to control wildfires thus providing better protection to park and neighboring land developments.

The Fire Management Plan will also address the Wildland Urban Interface issue and defensible space considerations for neighbors immediately adjacent to park lands. Private lands border LRNRA and could be affected by NPS policy regarding the management of forest fuels in the park. The use of prescribed fire, along with mechanical means to reduce forest fuel loads, will reduce the risk for wildfires moving from park lands onto adjacent private property and threatening lives and developments. Also, wildfires that burn onto LRNRA from adjacent property should be easier to control and result in less resource damages within the park.

Other Purposes of the Plan:

There are other significant reasons for development of a wildland fire management plan. Due to the high risk nature of the fire management program it is important the Fire Management Plan (FMP) provides the following elements:

- *Consistent operational guidance*
- *A concise description for stakeholders of why and how fire will be managed in the park*
- *A concise description for park managers of the Plan's actions, roles and responsibilities*
- *A demonstrated connection between park-wide goals and objectives (contained in the GMP and other planning documents) for fire management actions*
- *Documented fire program logic and objectives*

- *Guidance to develop and maintain key partnerships with other agencies assisting LRNRA with their fire management program and with area wildland fire suppression efforts.*

1.2 General Description of the Park

1.2.1 Purpose of the Recreation Area

The purpose and significance of LRNRA, as articulated in the park's 2000 General Management Plan is as follows:

1. Provide opportunities for diverse, safe, quality, outdoor recreational experiences for the public.
2. Preserve, conserve, and protect the integrity of natural, cultural, and scenic resources.
3. Provide opportunities to enhance public appreciation and understanding about the area's significant resources.

1.2.2 Management Environment

1.2.2.1 Land ownership, significant resources, mission and management direction

In 1946 the Secretary of the Interior, by his approval of an agreement between the Bureau of Reclamation, the Bureau of Indian Affairs, and the National Park Service (NPS), designated the NPS as the manager for Coulee Dam National Recreation Area. The area included Franklin D. Roosevelt Lake, the reservoir formed behind Grand Coulee Dam, and the operational lands that were purchased up to and above the 1290 foot 'full pool' elevation. Through over 70 years of changes, including a name change to Lake Roosevelt National Recreation Area (LRNRA) in 1997, the NPS now manages approximately 47,438 acres of the 81,389 acres of total water surface, 312 miles of associated shoreline, and 12,936 acres of the 19,196 acres of U.S. Government lands purchased to allow for the operation of the reservoir. In 1990, two adjacent Native American Tribes were included in the Lake Roosevelt Cooperative Management Agreement which was prepared under the guidance of the Secretary of the Department of the Interior. The Colville Confederated Tribes and the Spokane Tribe of Indians manage the remaining water surface and operational lands contained within their respective reservation boundaries with assistance from the Bureau of Indian Affairs. The Bureau of Reclamation manages Grand Coulee Dam and associated operation zone lands near the dam.

LRNRA offers a wide variety of recreation opportunities in a diverse natural setting on a 154-mile-long lake (including the Spokane River and Kettle River arms of the lake) bordered by 312 miles of publicly owned shoreline. It contains a large section of the

upper Columbia River and a record of continuous human occupation dating back more than 9,000 years. It is contained within two distinct physiographic regions – the Okanogan Highlands, and the Columbia Plateau, both of which have been sculpted by ice age period glaciers and catastrophic floods.

The 2000 General Management Plan for LRNRA identified a number of “Management Areas” that have specific management considerations and guidelines. These management areas include: Dispersed Recreation; Developed Recreation; Concentrated Recreation; Open Waters; Passive Waters; Historic and Interpretive; and Special Uses areas. Although a number of other issues were considered (firefighter safety, WUI considerations, topography, unit size and logistic hurdles, etc.) during the prioritization process for the treatment units, an important consideration was also the type of Management Area the treatment unit was within. Treatment units addressing fuels and resource protection activities in Developed Recreation, Concentrated Recreation, and Special Uses area were given the highest priority. Next were Historic and Interpretive areas followed by Dispersed Recreation areas as the lowest priority.

1.2.2.2 Overview of physical and biotic characteristics of park

Lake Roosevelt is a reservoir formed when the Grand Coulee Dam impounded the waters of the Columbia River in the early 1940’s. The reservoir is approximately 131 miles long along the main stem of the Columbia River and extends from the dam site at Grand Coulee to near the Canadian border. It stops at the mouth of Onion Creek just south of Northport, WA. The NPS administers one or both sides of the reservoir for approximately 122 miles of the total length. The reservoir also includes 29 miles of the Spokane River arm of the reservoir and approximately 10 miles of the Kettle River arm portions of which also fall under NPS jurisdiction. At full pool, the lake’s surface elevation is 1,290 feet, the surface area is 81,389 acres, and the total shoreline is about 513 miles with the NPS administering approximately 312 miles of the shoreline. From the dam to Kettle Falls, the reservoir ranges from one-half to one mile in width and then narrows considerably in its upper reaches and tributaries. Water depths near the dam approach 400 feet deep.

The geology of the area includes two geologic provinces and is typified by:

1. The Okanogan Highlands, located north of the Columbia and Spokane Rivers, are low rounded mountains considered to be a western extension of the Northern Rocky Mountains. This portion consists of the bottom flanks of the low rounded mountains with conifer woodlands covering much of the hills and riverine valleys with small agriculture and town developments., The very northern portion of LRNRA includes a geologic area called the Kootenay Arc which has been mined for the many valuable mineral resources (silver, lead, gold, etc.) found therein.

2. The Columbia Plateau, a large basalt plateau sculpted by ice age period floods, lies south of the Spokane and Columbia Rivers. This plateau's northern escarpment forms the southern shoreline of LRNRA as the Columbia River makes an east-west run until hitting the Cascade Mountains. It forms the steep north-facing basalt breaks along the Columbia River which are forested with Douglas fir, other conifers, and associated understory plants. It also encompasses tens of thousands of acres of dryland agriculture (wheat, barley, oats, etc.) on the plateau above the river which in mid-to-late summer is extremely vulnerable to wildland fires originating from NPS lands. Associated with the agricultural areas are many farmstead residences and outbuildings.
3. In portions of both of these provinces there is much evidence of changes that occurred during the last great Ice Age. Glaciers carved their way down many of the north-south running valleys as they moved down out of Canada. Floodwaters of Lake Missoula from the collapsed glacial ice dams in the Clark Fork River Valley in Montana and Idaho washed across eastern Washington numerous times carving the valleys, that still exist today, and scouring the basalt formations of the Columbia Plateau. Lake Columbia inundated much of the lower reservoir area as it formed behind glacial ice dams near the present day Grand Coulee Dam. Along the shore of the reservoir, river valley terrace deposits consist of glacial moraines or outwash, lakebed sediments, and Missoula flood deposits that have been sculpted into terraces by more recent alluvial processes.

1.2.2.3 Role of fire in the park

National Park Service policy recognizes that fire is an important ecological and evolutionary force in many terrestrial ecosystems. The policy further states that fire will be managed to fulfill the need of protecting, perpetuating, or recreating natural environments or historic scenes. Fire management strategies for individual parks must be designed based on park management objectives. The resource management objectives of the park determine whether a prescribed fire component is needed. Vegetation at LRNRA includes at least three fire prone ecosystems, these being steppe (semi-arid grassland), shrub/steppe, and ponderosa pine forests. Fire historically played a critical role in the health and maintenance of these ecosystems and in creating edge effect between different plant communities (NPS, 1978).

Since the influx of Euro-Americans to the LRNRA region in the 1820's, varying levels of fire suppression occurred, beginning with the suppression of fires around communities and human developments (Ortmann, et. al., 1998). Fire policies began to be formalized in the early 1900's as a reflection of catastrophic fires that resulted in part from an era of settlers clearing land with fire and poor logging practices (Agee, 1993). Large scale logging using the waterways and early railways for transportation began to occur and expanded as dozer created roadways, chainsaws, harvesting equipment, and logging trucks became available to harvest and get the logs to market. The clearcut forest areas

soon regrew with dense stands of even-aged and overstocked conifers. Another form of unintended suppression increased as more livestock were brought into the area. Livestock grazing reduced the amount and continuity of the fine grassy fuels, essentially making areas less fire prone. With the establishment of Lake Roosevelt in the 1940's, efforts were likely begun to actively suppress fires in the immediate vicinity of the park. This capability improved in the 1960's, when suppression became more effective allowing fewer fires to become large. Today LRNRA fully suppresses all wildland fires on the recreation area. This is not expected to change with the approval of this plan although a prescribed fire element has been added to the management scheme to allow for this ecologically valuable tool to be used.

The suppression of fire at LRNRA eliminated a historically high frequency, low intensity fire cycle of 6 to 19 years typical of ponderosa pine forests. The benefits of these natural fires included reduction of duff material, recycling of nutrients, reduction of accumulating fuels, and pruning of trees which reduced ladder fuels into the canopy, thinning of regenerating pines, sanitizing of trees infested with dwarf mistletoe, and minimizing the encroachment of young conifers into grasslands. These benefits have not been available with the suppression of fires. Past logging and wildland fire suppression actions have led to larger forest stands that are overly dense causing a shortage of resources (nutrients, water, light) needed for vigorous growth. This limiting of resources affects not only the size and volume of the tree, but also reduces the tree's ability to fend off attacks by various endemic insects and diseases. In turn, dying trees eventually lead to heavier fuel loads on the forest floor. The exclusion of fire in the steppe, shrub-steppe, and ponderosa pine ecosystems in the future will continue the stress on vegetation as systems become more and more out-of-sync from the normal ecological processes. Importantly, the continuing buildup of forest fuels will increase the frequency and severity of wildfires threatening LRNRA visitors and adjacent property owners. Also as a result of modern transportation and recreational opportunities at LRNRA, a major influx of homes and developments have occurred immediately adjacent to the NPS lands which further increases the threat and impacts of wildland fires. This has greatly increased the Wildland Urban Interface (WUI) areas and the need for defensible space planning on both private and NPS lands. A 2013 review of county planning maps by the NPS found that there were 5,100 parcels zoned as residential within 1 km of the park boundary. Of these, 4,000 of the parcels have homes or other developments already in place. (LARO 2013 Parcel & Zoning Mapping Project – Report expected in late 2014.)

1.3 Environmental Compliance

The context of this plan was determined by the 2014 Lake Roosevelt National Recreation Area Fire Management Plan Environmental Assessment. This plan meets all of the current National Park Service environmental compliance requirements as detailed in Director's Order #12 (*Conservation Planning, Environmental Impact Analysis, and Decision-making*). DO #12 documents the National Park Service policy and procedures

by which the National Park Service carries out its responsibilities under the National Environmental Policy Act, January 1970.

The Finding of No Significant Impact (FONSI) (2014) fulfilled the requirements of the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA) and is located in Appendix 4: *Compliance Documentation*.

2 POLICY, LAND MANAGEMENT PLANNING & PARTNERSHIPS

2.1 Fire Policy

Direction for management of the park system comes from the National Park Service Organic Act of 1916 (Title 16 USC, Section 1):

"The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations to conserve the scenery and the natural and historic objects and the wildlife therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

NPS fire management actions must conform to adopted plans and policies of the Department of the Interior and the National Park Service. These include the Federal Wildland Fire Management Policy (2009), NPS Management Policies (2006), Director's Order #18 (2014) and Reference Manual #18 (2014), the guidance documents for wildland fire management in the NPS, as well as the General Management Plan for LRNRA.

The key element of the Federal Wildland Fire policy is that firefighter and public safety is the first priority. In addition, the policy states that fire, as a critical natural process, will be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. The policy also directs that fire management plans and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical, and sociological factors.

NPS Management Policies were revised and adopted on August 31, 2006 which updated the 2001 Management Policies under which the original LRNRA FMP NEPA process was conducted. Section 4.5 of the 2006 Management Policies expands the scope of issues that specifically need to be addressed in FMPs to include:

- "determining in which situations natural regeneration of a burned ecosystem is appropriate and when management actions are needed to restore, stabilize, or rehabilitate an area following wildland fire",
- "addressing the need for adequate funding and staffing to support the planned fire management program",

- “address[ing] strategies for preventing the accumulation of hazardous fuels *in specific areas* and for eliminating hazardous conditions that may have developed over time due to past fire suppression programs or ongoing development activities. These strategies will entail strategic planning, interdisciplinary coordination, and inter-organizational collaboration as needed to provide appropriate treatment using adaptive management practices that range from site specific to landscape level.”
- Measures to protect or rescue cultural resources in the event of an emergency, disaster, or fire will be developed as part of a park’s emergency operations and fire management planning processes (Section 5.3.1.1.)

NPS Management Policies direct each park to carefully consider the option of the use of wildland fire based on the specific environmental, safety and logistical conditions of each wildland fire. LRNRA carefully considered the option of use of wildland fire in developing the FMP EA and concluded that LRNRA will implement aggressive suppression actions employing Minimum Impact Suppression Tactics (MIST) to the extent possible. This includes a flexible suppression strategy that permits the appropriate approach to be used to suppress a wildland fire (contain or control) based on input from park staff, suppression forces, and adjacent landowners. A key component of this strategy, along with firefighter & public safety, is the protection of key resources from damage by both wildland fire and/or the suppression activities.

An annual review process will be used to identify any revised management policies that should be included in the plan. It is conceivable that the development of new park procedures may require additional NEPA and/or Endangered Species Act (ESA) compliance. More details on wildland fire management, including interagency and Department of the Interior policies and requirements, are contained in Director’s Order #18: Wildland Fire Management. These documents provide the detail necessary to develop the components of Fire Management Plans and other companion plans, such as monitoring or communication plans.

Additional guidance from 2006 Management Policies, Section 4.5, Fire Management

Regarding Fire Management Plans: “Parks with vegetation capable of burning will prepare a fire management plan that is consistent with federal law and departmental fire management policies, and that includes addressing the need for adequate funding and staffing to support the planned fire management program. The plan will be designed to guide a program that:

- responds to the park’s natural and cultural resource objectives;
- provides for safety considerations for park visitors, employees, and developed facilities;
- addresses potential impacts on public and private neighbors and their property adjacent to the park; and
- protects public health and safety.

Regarding Overall Strategy: “All fires burning in natural or landscaped vegetation in parks will be classified as either wildfires or prescribed fires. All wildfires will be effectively managed through application of the appropriate strategic and tactical management options. These options will be selected after comprehensive consideration of the resource values to be protected, firefighter and public safety, and costs.”

Regarding Wildland Fire Suppression: “All wildland fires will be effectively managed through application of the appropriate strategic and tactical management options as guided by the park’s fire management plan. These options will be selected after comprehensive consideration of the resource values to be protected, firefighter and public safety, costs, availability of firefighting resources, weather, and fuel conditions. “

“All parks will use a systematic decision-making process identified in their fire management plans or other documents to determine the most appropriate management strategies for all unplanned ignitions and for any naturally or management-ignited fires that are no longer meeting resource management objectives.”

2.2 Park/Resource Management Planning

The park’s General Management Plan was completed in 2000. It guides park management for the next fifteen or more years in efforts to preserve and protect the cultural and natural resources and park infrastructure while providing for the use prescribed by planning documents and National Park Service policy. The park does not have a current Resource Management Plan.

General resource management goals are outlined in the Park’s General Management Plan (2000). The General Management Plan states that a purpose of the park is to “Preserve, conserve, and protect the integrity of natural, cultural, and scenic resources”. Under the Vegetation section of the plan it specifically states:

- “The National Park Service manages vegetation to control forest pests and noxious weeds, reduce safety hazards, and maintain historic landscapes”.
- “LRNRA staff annually carries out measures to control forest pests...Decades of fire suppression, drought, soil compaction, and poor forest management practices have exacerbated the forest pest problem”.
- LRNRA staff regularly identifies, monitors, and removes hazardous trees from developed sites...”

2.3 Partnerships

Lake Roosevelt National Recreation Area is managed by the National Park Service, working closely with the Bureau of Reclamation, The Bureau of Indian Affairs, The Spokane Tribe of Indians, and The Confederated Tribes of the Colville Reservation to manage the entire Lake Roosevelt Reservoir. The management terms for this unique partnership are outlined in the 1990 Lake Roosevelt Cooperative Management Agreement as (also known as the Five-Party Agreement) as prepared by the Secretary of the U.S. Department of the Interior. Washington State agencies, local municipalities, county agencies and governments, the Lake Roosevelt Forum (a non-profit organization bringing together a host of interested parties), neighboring landowners, conservation and recreational organizations, and public visitors to the area also provide input on most management related actions and documents.

The fire management program at LRNRA is managed and supported by North Cascades National Park Fire Staff under an inter-park agreement. The superintendent of LRNRA signs a Delegation of Authority letter each year authorizing the Fire Management Officer at North Cascades N.P. to lead the fire program. A Master Wildland Fire Management Agreement exists between federal wildland firefighting agencies and the states of Oregon and Washington. Agreements and other Memorandums of Understanding (MOU's) have been developed with appropriate local fire entities depending on the location of the fire and closest forces concept. The Eastern Washington Local Operating Fire Plan specifically contains the Suppression Response Agreement between the Washington DNR and LRNRA authorizing the WA DNR to respond and suppress all LRNRA wildland fires.

The following fire-related agreements that involve LRNRA are included or referenced in Appendix 7C.9: *Cooperative and Interagency Agreements*.112 STAT. 3391.

MASTER COOPERATIVE WILDLAND FIRE MANAGEMENT AND STAFFORD ACT RESPONSE AGREEMENT Oregon and Washington, Agreement # OR-RFPA09-1001, DUNS No. 798067393.

Interagency Agreement for Wildland Fire Management among BLM, BIA, NPS, FWS, & USFS (2011 to 2015)

The Northwest Wildland Fire Protection Agreement: Public Law 105-377-Nov. 12, 1998 Signators include: Oregon, Washington, Alaska, Idaho, Montana, Yukon Territory, British Columbia Province and Alberta Province.

Northwest Border Agreement (August 11, 2009) Northwest border agreement for fire protection, signators include: Province of British Columbia: Ministry of Forest and Range, USDA Forest Service: Pacific Northwest, Alaska and Northern Regions, National Park Service: Pacific West, Alaska and Intermountain Regions and Bureau of Land Management: Oregon/Washington and Idaho Offices. Provides framework under which fire suppression resources may be exchanged to allow for cooperative presuppression and wildfire protection along the border

between the United States and British Columbia Province (Ministry of Forest and Range lands)

Eastern Washington Local Operating Fire Plan between USFS (Colville and Okanogan-Wenatchee National Forests), BIA (Colville, Spokane, & Yakima Agencies), NPS (NOCA & LRNRA), Spokane District BLM, USFWS (Mid-Columbia, Little Pend Oreille, & Turnbull Wildlife Refuges), and Washington State DNR (NE & SE Regions). Note: this agreement contains the Suppression Response Agreement between WA DNR and LRNRA.

MOU regarding Interagency Fire Helicopter Standards between DOI/OAS and USDA/FS (Feb. 2013)

Master Cooperative Fire Protection Agreement , Northwest Operating Plan, Oregon Statewide Operating Plan , Washington Statewide Operating Plan (April 14, 2010)

Interpark Agreement for Fire Program Management between North Cascades National Park and Lake Roosevelt NRA (2014)

3 PARK-WIDE & FIRE MANAGEMENT UNIT CHARACTERISTICS

3.1 Park-wide Fire Management Considerations

LRNRA is a long linear park with lands along the reservoir ranging in width from a few yards to just under 1 mile in width. There are no blocks of land large enough to contain managed wildland fire without an almost immediate threat arising to neighboring lands and residences. Accordingly, LRNRA will implement an aggressive “control” strategy for all wildland fires occurring within park boundaries. The presence of private lands and multiple wildland urban interface areas adjacent to park boundaries mandates that any effects from wildland fire be minimized.

LRNRA embraces the use of prescribed fire, where appropriate, to restore ecological processes, to manage invasive species, reduce fuel loadings adjacent to park facilities and as a methodology to enhance and maintain the preferred cultural landscape.

Where practical, LRNRA will utilize mechanical fuels reduction strategies to reduce hazard fuel accumulations, enhance forest health, or as an initial entry on a site to reduce fuel loadings to make future prescribed fire projects less hazardous to implement. This approach has proven effective when residual stand retention is an objective as well. It also greatly reduces the 1000 hour fuels and the smoke generated during prescribed burn activities thereby addressing local and regional air quality concerns.

The park fire management program fully integrates into park management considerations, providing needed fire suppression initial response guidelines, fuel reduction projects,

forest health enhancement, and resource management support and protection where deemed beneficial to project outcomes.

3.1.1 Fire Management Goals and Objectives

DO-18 identifies the following as major goals for the National Park Service fire management program:

Protect Values Through Effective Risk Management: Protect life, communities and resources from adverse effects of wildland fire without compromising safety.

Restore and Maintain Fire-adapted Ecosystems: Maintain and restore fire adapted ecosystems using appropriate tools and techniques in a manner that will provide sustainable, environmental and social benefits.

Science Based Management: General and park-specific science and research guides the wildland fire program.

Integrate Wildland Fire With Other NPS Programs: Fire management programs are responsive to Service-wide and park priorities and are integrated with other NPS programs.

External Audiences Understand and Support Wildland Fire Programs: NPS fire management will communicate and coordinate with interagency organizations and other stakeholders to pursue common goals, programs and projects.

Build and Promote Organizational Effectiveness: Fire management programs achieve desired outcomes by building program capacity, leadership and effective management practices.

The overall goals of the LRNRA Fire Management Plan (2014) and GMP (2000) include the following:

The paramount goal for the fire management program is protection of life, both employee and public. Other important goals are the protection of park facilities, neighboring properties and dwellings, cultural resources, and threatened and endangered species, and perpetuation of natural resources and their associated processes.

Specific Goals and Management Objectives for the LRNRA fire management program are as follows:

Goal 1: Ensure firefighter and public safety

Protection of both firefighters and public is the first priority in Lake Roosevelt's fire management program and in every fire management activity as it is with the National Fire Plan.

Management Objectives:

- 1) Plan and carry out all other activities consistent with and subordinate to safety considerations by complying with OSHA regulations, agency and interagency safety policies. Accept less than one accident for employees per fire season.
- 2) All fire personnel will receive required training and be fully qualified for positions for which they hold during wildland fire operations. Personal protective equipment will be utilized as required during all fire management and fuels treatment activities.
- 3) Identify, inform and protect visitors and communities. Provide timely information on fire locations and associated activities and implement closures or evacuation as needed. Accept less than one accident per summer season related to fire for fire staff, residents and visitors

Goal 2: Reduce the risk and magnitude of wildland fire damages to park resources, developments and adjoining private property.

Management Objectives:

- 1) Within 80% of the park's developed zones, alter live and dead fuel accumulations and fuel continuity so that, by 2025, predicted flame lengths under typical weather conditions will be less than four feet.
- 2) In cooperation with local fire protection agencies, share the results of the current wildland fire risk analysis that rates fuels, terrain, access/egress, construction material, and emergency response times for properties adjacent to the park by 2015.
- 3) Manage prescribed fires within designated units using the most current planning and risk assessment tools available. Accept no escaped prescribed fires that require a wildfire declaration as noted in prescribed burn planning documents
- 4) Use a combination of fire management tools including prescribed fire and mechanical fuels treatments that promote forest health and reduce resistance to control for wildland fires, create 'fire breaks', and reduce wildland fire intensity should it occur. Where appropriate, remove heavier fuel loads using salvage logging, firewood removal, and removal of dense numbers of hazard trees to reduce fuel loads in specific treatment areas or modify fuels by chipping and scattering.

Goal 3: Provide for the safe, aggressive and appropriate management response to all wildland fires. Wildfires will be suppressed in a prompt, safe, aggressive, and cost-effective manner to produce fast, efficient action with minimum damage to resources.

Management Objectives:

- 1) Prevent where possible any wildland fires starting on NPS lands from burning onto adjacent lands. Also strive to minimize the impacts of wildfires starting outside the park that enter onto NPS lands.
- 2) On an annual basis, review, update, or initiate cooperative agreements to assure that interagency efforts to manage wildland fires are implemented. Currently Washington DNR provides a bulk of the initial response on wildland fires occurring in the park.
- 3) Maintain a park-based fire management program during fire season that will assist DNR efforts and that seeks to contain 95% of all unwanted fires in the park within one operational period.
- 4) Review and update the fire management plan and NOCA/LRNRA Fire Agreement annually to ensure key positions and/or assignments are filled allowing for timely response to and oversight of wildland fires.
- 5) Within each FMU, identify and implement appropriate management responses and strategies for wildland fire activities that address site-specific resource management concerns and promote MIST recommendations.

Goal 4: Implement a fire management program that restores ecological objectives in fire dependent ecosystems with an emphasis on hazard fuel reduction.

This goal will meet the following ecological goals and objectives for the specified vegetation-based fire groups:

Ponderosa Pine Savannah

Goals: Improve stand structure characteristics, reduce probability of pine bark beetle infestation, reduce loading of dead and live fuels, decrease fire severity and fire size, maintain native shrubs and herbaceous vegetation, and minimize cover of invasive species.

Objectives:

- 1) Reduce the density of seedlings and pole size trees (1-6 in = 2.5-15 cm dbh) to 2-20 trees/acre (5-50 trees/ha) as measured 2 years after final treatment prior to maintenance.
- 2) Reduce the density of small and medium sized overstory trees (6-20 in = 15-60 cm dbh) to 8-33 trees/acre (20-82 trees/ha) as measured 2 years after final treatment prior to maintenance. Thinning should occur in stages and account for post-burn mortality of up to one-third of trees.
- 3) Maintain or increase the density of large overstory trees (> 20 in = >60 cm dbh) to 1-8 trees/acre (2-20 trees/ha) as measured 5 years after final treatment prior to maintenance.

- 4) Reduce mean basal area to an average of 40 (± 25) ft² / acre as measured 2 years after final treatment prior to maintenance.
- 5) Increase canopy base height to 2 meters through mechanical removal of ladder fuels as measured 1 year post-treatment.
- 6) Maintain an average woody fuel load of 2–6 tons/acre 2 years after final treatment prior to maintenance.
- 7) Reduce litter and duff by 40-75% 2 years after final treatment prior to maintenance.
- 8) Maintain a minimum of 30 percent cover of native understory vegetation (shrubs and herbaceous) 2 years after the initial treatment.

Ponderosa Pine with Shrub Understories

Goals: Improve stand structure characteristics, reduce probability of pine bark beetle infestation, reduce loading of dead and live fuels, decrease fire severity and fire size, maintain native shrubs and herbaceous vegetation, and minimize cover of invasive species.

Objectives:

- 1) Reduce the density of seedlings and pole size trees (1-6 in = 2.5-15 cm dbh) to 2-20 trees/acre (5-50 trees/ha) as measured 2 years after final treatment prior to maintenance.
- 2) Reduce the density of small and medium sized overstory trees (6-20 in = 15-60 cm dbh) to 25-75 trees/acre (62-185) trees/ha as measured 2 years after final treatment prior to maintenance. Thinning should occur in stages and account for post-burn mortality of up to one-third of trees.
- 3) Maintain or increase the density of large overstory trees (> 20 in = >60 cm dbh) to 1-8 trees/acre (2-20 trees/ha) as measured 5 years after final treatment prior to maintenance.
- 4) Reduce mean basal area to an average of 70 (± 35) ft² / acre as measured 2 years after final treatment prior to maintenance.
- 5) Increase canopy base height to 2 meters through mechanical removal of ladder fuels as measured 1 year post-treatment.
- 6) Maintain an average woody fuel load of 2–6 tons/acre 2 years after final treatment prior to maintenance.
- 7) Reduce litter and duff by 40-75% 2 years after final treatment prior to maintenance.
- 8) Maintain a minimum of 30 percent cover of native understory vegetation (shrubs and herbaceous) 2 years after the initial treatment.
- 9) Maintain <20% relative cover of non-natives by 5 years following treatment.

There are 38 Fire effects monitoring plots in the Ponderosa pine with shrub understory vegetation type at Lake Roosevelt NRA. This data was used to examine the current pre-treatment condition and determine realistic targets for this vegetation type. The fuel reduction objectives are based upon two Pacific

Northwest forest photo series stands that exhibit low severity fire regime characteristics (Maxwell & Ward, 1980) and recommendations from the regional fire ecologist. Objectives will require multiple entries of mechanical and prescribed fire. Thinning prescriptions should be light enough to accommodate increases in post-burn mortality because thinning increases downed woody debris that increases fire severity.

Mesic Douglas-Fir/Ponderosa Pine Forest

Goals: Improve stand structure characteristics, reduce loading of dead and live fuels, decrease fire severity and fire size, maintain native shrubs and herbaceous vegetation, and minimize cover of invasive species.

Objectives:

- 1) Reduce the density of seedlings and pole size trees (1-6 in /2.5-15 cm dbh) to 20-60 trees/acre (50-150 trees/ha) as measured 2 years after final treatment prior to maintenance.
- 2) Reduce the density of small and medium sized overstory trees (6-20 in = 15-60 cm dbh) to 20-100 trees/acre (50-250) trees/ha as measured 2 years after final treatment prior to maintenance. Thinning should occur in stages and account for post-burn mortality of up to one-third of trees.
- 3) Maintain or increase the density of large overstory trees (> 20 in = >60 cm dbh) to 1-20 trees/acre (2-50 trees/ha) as measured 5 years after final treatment prior to maintenance.
- 4) Reduce mean basal area to an average of 70 (± 35) ft² / acre as measured 2 years after final treatment prior to maintenance.
- 5) Increase canopy base height to 2 meters through mechanical removal of ladder fuels as measured 1 year post-treatment.
- 6) Maintain an average woody fuel load of 2–6 tons/acre 2 years after final treatment prior to maintenance.
- 7) Reduce litter and duff by 40-75% 2 years after final treatment prior to maintenance.
- 8) Maintain a minimum of 30 percent cover of native understory vegetation (shrubs and herbaceous) 2 years after the initial treatment.
- 9) Maintain <20% relative cover of non-natives by 5 years following treatment.

The fuel reduction objectives for the mesic Douglas-fir/Ponderosa pine forest grouping are based upon fire effects monitoring plots in this vegetation type at North Cascades National Park. This data was used to examine the current pre-treatment condition and determine realistic targets for this vegetation type. The fuel reduction objectives are based on recommendations from the regional fire ecologist. Objectives will require multiple entries of mechanical and prescribed fire. Thinning prescriptions should be light enough to accommodate increases in post-burn mortality because thinning increases downed woody debris that increases fire severity.

Open Grasslands with Scattered Shrubs:

Goals: Improve composition of native perennial grasses, increase diversity of native forbs, reduce cover of shrubs and sub-shrubs, minimize cover of invasive weed species, and improve quality of habitat for grassland obligate species.

Objectives:

- 1) Increase relative cover of native perennial grasses to 30 percent.
- 2) Maintain the total shrub cover at 5-15 percent within 5 years of initial treatment.
- 3) Reduce thatch layers by 60-80% within one-year post fire.
- 4) Maintain <20% relative cover of non-native species by 5 years following treatment.

The objectives for open grasslands with scattered shrubs are based upon recommendations from the regional fire ecologist. Targets for particular native and non-native species will be developed for individual grasslands.

Bitterbrush Dominated Shrublands:

Goals: Improve stand structure characteristics and regeneration, increase diversity of herbaceous flora, reduce loading of dead and live fuels, and minimize cover of invasive weed species through **mechanical** and **manual** treatments**.

Objectives:

- 1) Reduce shrub cover to 30-60% as measured 2 years following the last treatment prior to maintenance.
- 2) Increase cover of *Chrysothamnus nauseosus* relative to total shrub cover to 10-20% within 2 years of initial treatment.
- 3) Increase cover of *Artemisia tridentata* relative to total shrub cover to 2-10% within 2 years of initial treatment.
- 4) Maintain the cover of *Purshia tridentata* relative to total shrub cover at 30-60% within 2 years of initial treatment.
- 5) Maintain an average woody fuel load of 2–6 tons/acre 2 years after final treatment prior to maintenance.
- 6) Reduce litter and duff by 40-75% 2 years after final treatment prior to maintenance.
- 7) Maintain relative cover of exotic species at <20% within 5 years of initial treatment.

** Objectives are based upon defensible space objectives and recommendations from the regional fire ecologist. Shrubs should be thinned and removed from site or pile-burned. Under-burning is likely to kill bitterbrush. Prescribed burning killed 55% of bitterbrush in Wyoming (Cook, Hershey, & Irwin, 1994), and fall-burning killed all shrubs and spring-burning killed 90% by one-year post-burn in eastern Oregon (Clark, Britton, & Sneva, 1982).

Goal 5: Ensure that all prescribed fire, defensible space, and fuels treatment projects minimize the impacts to park natural and cultural resources, developed areas, and neighboring lands and promote forest health. This includes restoration activities on park lands damaged by wildfires and suppression activities.

Management Objectives:

- 1) Annually review and continue a proactive prescribed fire, defensible space, fuels reduction and healthy forest management program to protect natural, cultural, and developed resources both within LRNRA and on neighboring lands from the devastating effects of wildland fire.
- 2) All LRNRA lands are included in treatment units or the overall FMU areas so that they can be prioritized, managed, and restored to native habitats should wildfire events occur.
- 3) Thin or remove stressed, diseased, or infested trees from overstocked stands to promote forest health and reduce the levels of insect, disease, and root fungus generated fuels during stand mortality events. This objective includes the removal of heavy fuel accumulations that may occur during the die-off or treatment actions.
- 4) On each treatment unit use prescribed fire, mechanical, and/or manual treatments to reduce fuel accumulations resulting from human activities, including from historic and current fire suppression. This includes the use of salvage logging both post wildland fire and during fuel reduction projects, use of collected wood for firewood in NPS campgrounds, donation of firewood to charities, chipping/removal of tree tops, branches, and other woody debris, and where deemed appropriate, superintendent authorized public firewood permits.
- 5) Prior to initiation of projects in each treatment unit, conduct site visits and prepare detailed plans listing the mitigation measures needed to protect known ESA or state listed, rare and/or sensitive flora and fauna. Sensitive plant communities of particular interest include riparian areas, antelope bitterbrush stands, and forested areas where nesting raptors (eagles, osprey, owls, etc.) and other birds protected under the Migratory Bird Act may be found.
- 6) Prior to initiation of projects in each treatment unit, conduct site visits and prepare detailed plans listing the mitigation measures needed to protect and preserve historic structures, landscapes, and archaeological resources from adverse effects from fire and fire management activities and use fire, where appropriate, to restore and maintain these cultural resources.
- 7) Utilize prescribed fire and mechanical/manual fuel treatments to protect, restore and maintain healthy plant communities and minimal fuel loads on 80% of the lands within the Concentrated and Developed Recreation management areas (as defined and delineated in the 2000 GMP) by 2025.

Goal 6: Educate, inform, consult, and collaborate with neighbors, local communities, and county, state, and federal agencies

Education and collaboration for fire management activities and fire dependent ecosystems and fire's role is an important and far reaching goal deserving of attention both at Lake Roosevelt and nationally as a goal of the National Fire Plan.

Management Objectives:

- 1) Provide wildland fire prevention information and education in communities adjacent to the NRA. The Kettle Falls Information Center, the Fort Spokane Visitor Center during summer operation, and the park website will play the key roles in this dissemination of information. New and updated park web pages specific to fire will be created in 2014.
- 2) Offer defensible space planning to neighbors adjacent to the park where feasible and staffing/funding levels allow. Provide WA DNR generated FireWise planning information and guidelines for landowner use.
- 3) Maintain MOU's and other partnership documents that facilitate the sharing of resources, crews, and expertise in wildland and prescribed fire management activities.
- 4) On an annual basis, review proposed treatment projects for possible cooperative, multi-jurisdictional treatments with other agencies. The benefits of this objective include a reduction or sharing of costs, the use of existing firebreaks, holding areas and staging areas, the creation of larger wildland firebreaks that protect park resources, and the expansion of the area benefitting from the use of prescribed fire.
- 5) Continue to collaborate and foster collaboration with local communities, county state, and federal fire agencies with fire management interests. Participate, if held, in at least one community wildfire protection plan (CWPP) meeting per year
- 6) Produce or update one each of the following annually: park website or social media tools, educational program, and/or a periodic publication to foster understanding and acceptance of the fire management program.

Goal 7: Use the adaptive management process to effectively incorporate scientific knowledge, monitoring and evaluation results.

Use scientific information to make revisions to the FMP and improve future fire planning efforts.

Management Objectives:

- 1) In March of each year, conduct an annual review of research, treatment results, and forest health issues that might provide a warning of regional climate change related impacts to forest health and plant communities. This may include large scale insect and disease outbreaks (possibly from warmer temperatures), significant and noted changes in precipitation patterns and amounts, climate related tree stand and/or species die-offs, and/or significant impacts from non-native and invasive plant and insect species benefitted by climate change.

- 2) Monitor and evaluate fire management activities (prescribed fire, and fuel reduction treatments), to assess their effects on natural and cultural resources. Prepare an annual monitoring report and review/discuss as a team.
- 3) Review and update the FMP prescriptions, tools, and treatment priorities in early March of each year when research results indicate adjustments should be made.
- 4) Solicit, as needed, 1 or more research proposal(s) in the next 5-year period that would: 1) fill in information gaps hampering science-based decision-making at the park level; 2) be needed to document local impacts from climate change; or, 3) support the national planning process for fire management decision-making.

Goal 8: Park staff, neighbors, and visitors are protected from unhealthy levels of air pollution from management ignited fires.

Objectives:

- 1) Public information and/or area closure will be used to limit public exposure of smoke generated from wildland and prescribed fires. The smaller treatment units and prescriptions outlined in the FMP and prescribed fire burn plans reduce the duration of the burns and seek to limit the quantities of smoke generated.
- 2) Line supervisors will minimize fire fighter exposure to smoke and heat by rotating crew personnel when working on wildland and prescribed fires.
- 3) All prescribed burns will comply with air pollution control regulations, “no-burn day” closures, and smoke management concerns as required by the Washington Department of Natural Resources. The Washington Department of Natural Resources implements the smoke management program as formatted in the Washington State Implementation Plan. LRNRA will obtain Washington State Department of Natural Resources Smoke Management Smoke approval when burning over 100 tons of vegetative debris. Annually, fire staff will review the air quality regulations and guidelines and update agency contact lists for prescribed fire clearances.
- 4) Fuels treatment projects conducted before a prescribed burn will maximize the amount of fuels removed and salvaged during mechanical projects and after wildfires to further reduce 1000 hr fuels and air pollution in subsequent prescribed fire treatments.

3.1.2 Wildland Fire Management Actions

To accomplish FMP goals, wildfires will be suppressed and prescribed fire will be introduced where appropriate for hazard fuel reduction and/or resource benefit.

LRNRA, in accordance with NPS policy, uses Minimum Impact Suppression Tactics (MIST¹) in all fire management activities. Fire managers, in consultation with resource advisors, will balance the potential resource impacts of wildland fire with the potential impacts of fire suppression activities in choosing the response to wildland fire and appropriate MIST techniques to utilize.. Mist guidelines will generally be instituted to:

- 1) minimize soil erosion potential
- 2) minimize disturbance of cultural and archeological sites/artifacts
- 3) reduce degree of rehabilitation of fire sites
- 4) minimize visual impacts of suppression operations
- 5) minimize introduction of firefighting chemicals and various types of fuels into water ways (lake, streams, ponds)

(MIST applications for LRNRA are listed in Appendix 7C.3).

Mechanical and prescribed fire fuel reduction projects will focus on Wildland Urban Interface areas and the protection of park visitors, park infrastructure, park staff, sensitive or important natural and cultural resources, and neighboring land developments. Mitigation measures addressing potential environmental impacts will be incorporated into site specific project plans prior to the specific plan being initiated. These project plans (i.e. prescribed burn plan, fuels treatment plan, etc.) will be reviewed by a NPS interdisciplinary project review team as required by the NEPA process under the scope of this FMP. This review will include site specific considerations and mitigation measures related to NHPA and ESA regulations and NPS policy.

LRNRA may treat small “defensible space” areas on NPS lands immediately adjacent to neighboring structures (residential homes, outbuildings, commercial buildings, etc.) on a case-by-case basis. These defensible space projects would be initiated with a request from an adjacent land owner desiring to lower forest fuels in order to reduce the chance of a wildfire spreading from LRNRA lands to his/her private land or vice-versa. Upon such request, the NPS will assess the situation and could agree to perform fuels reduction if not in conflict with current NRA management policy. This may include mechanical thinning, hand piling and burning accumulated ground fuels, and brush removal for up to 200 feet from any private structure. These types of fuel reduction projects would be second priority to the scheduled projects listed, would be at the park’s discretion, and are dependent on available funds and resources. These defensible space projects are a management tool to address special cases of heavy fuel loads, significant forest mortality events, and areas where steep slopes and other site specific conditions create the potential for intense and rapidly moving wildfires coming off of NPS lands. This is not a fix-all solution for poor placement of homes immediately adjacent to U.S. Government lands at the edge of residential parcels or construction of residential buildings with roofing and siding materials that are not fire resistant.

¹ MIST is defined as the application of techniques that effectively accomplish wildland fire management objectives while minimizing the impacts to cultural and natural resources commensurate with ensuring public and firefighter safety and effective wildland fire control.

LRNRA contains significant park infrastructure related to recreation, and natural and cultural resource values. Resource management objectives drive strategies with the objectives of restoring and maintaining the naturally functioning ecosystems, restoring cultural landscapes, protecting sensitive resources and neighboring lands, while promoting forest health.

Wildland fires at LRNRA are managed with supporting cooperation of local fire departments, state wildland firefighting organizations and federal land management agencies. This approach to wildland fire management involves partnership, cooperation and collaboration and is facilitated by this fire management plan.

3.2 Fire Management Unit General Characteristics

All FMU Approved Strategic Direction

Life and property protection are the number one priority within all park sites.

As a matter of policy “MIST” techniques will be employed in all fire management operations. (List of MIST guidelines is found in Appendix 7C.3)

Use of Wildland Fire to achieve resource objectives will be restricted to prescribed fire, due to the lack of sufficient room for wildfire to be safely managed and potential for negative impacts on park developments and neighboring lands.

All FMU Fire Management Actions

Initial response will be handled by cooperating fire management organizations, as the park has few if any qualified staff consistently on site. NOCA FMO or Duty Officer will be notified immediately. The Washington State Department of Natural Resources operates under a cooperative agreement in which they have responsibility through fund reimbursement for actual suppression of any ignitions. As necessary; NOCA and/or regional staff support will arrive as soon as possible.

A “control” strategy for all wildfire initial response is required in all sites of the park.

Prescribed fire and mechanical treatments will be utilized to meet fuel reduction, resource protection and other resource management objectives.

Mechanical fuels reduction techniques will be utilized where appropriate. This includes the removal of individual or multiple hazard trees that threaten park staff and developments, visitors, and neighboring structures and developments.

ALL FMU Goals and Objectives

Goals and objectives are the same for the entire park and are listed under fire management goals and objectives.

FMU Descriptions

LRNRA is divided into 2 separate FMU's comprising all of LRNRA administered lands. The two FMUs are the *North* FMU and the *South* FMU. This division into 2 FMU's makes sense due to the following:

- 1) The same management actions related to treatment and suppression of wildland fire will occur on both FMU's. Differences between the units include the initial response times and where WA DNR suppression resources may be deployed from during initial response to an incident.
- 2) The two FMU's better line up with the two physiographic regions (Columbia Plateau and Okanogan Highlands) which have distinct geologic differences, significant differences in precipitation, and overall, major differences in the associated plant community make-up (i.e. Sage-Steppe/Grasslands versus Pine/Mixed Forest). Plant community responses to fire are also significantly different between the two FMU's.
- 3) The two FMU's align with the park's division into two districts. This includes the administrative break in the park boundaries due to the Colville Confederated Tribes and Spokane Tribe reservation zones managing the entire segment of the reservoir just north of the confluence of the Spokane and Columbia Rivers.
- 4) The steep, north aspect, basalt canyon walls found in *South* FMU do include many areas of mixed conifer forests. These steep slopes hamper both wildland fire control and management treatments. Any treatments in these areas will focus on the Concentrated, Developed, and Dispersed Recreation management areas (as defined in the 2000 GMP) located along the reservoir shoreline.

FMU Management Constraints and Guidance

- 1) All FMUs have restrictions on the use of heavy machinery in order to reduce compaction and minimize impacts to cultural resources.
- 2) Smoke management is a significant concern due to adjacent Class I airshed (Spokane Nation Reservation) and Spokane (nonattainment concerns).
- 3) Mechanical equipment such as tractors will not be used during wet periods when soil compaction can occur. Operating equipment on frozen or snow covered ground will be the preferred mitigation for both soils and cultural resource protection. Sound justifications must be noted before operation of equipment on dry soils is authorized. Low ground pressure machines will be used in any skidding operations.
- 4) MIST guidelines will be considered during all suppression operations.
- 5) Monitoring efforts are outlined in the 2013 Fire Monitoring Plan.

FMU Safety Considerations

Many of the sites within both FMU's are adjacent to major travel corridors, thereby making traffic management and protection of motorists a high priority.

Limited egress/ingress is a consideration on the larger sites in both FMU's making evacuation of the public a real challenge. The park has numerous and scattered WUI and recreational home developments that occur immediately adjacent to park lands so immediate response times and aggressive wildland fire control and fuels reduction is warranted to protect life and property.

FMU Operational Information

The use of bulldozers is dependent upon the approval of the Superintendent or Acting Superintendent, but is not expected to occur in any but extreme fire situations due to many sensitive areas.

Fire suppression operations must account for a high probability of a wildfire spreading onto neighboring lands. This is due to the lenticular nature of the park and the proximity of the wildland urban interface adjoining many areas of the park.

The use of prescribed fire must be closely monitored for air quality impacts.

The LRNRA Wildland Fire Risk Analysis displays locations of sites within the park and 1.5 miles outside the park that could be at risk. Locations shown in Appendix 7D.13.

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4 WILDLAND FIRE OPERATIONAL GUIDANCE

4.1 Safety

NPS fire management programs require safe operational procedures lessening the risk to firefighters and the public.

RM-18 reflects the following policy direction:

“Firefighter and public safety is our first priority. This Fire Management Plan and the activities defined within reflect this commitment. The commitment to and accountability for safety is a joint responsibility of all firefighters, managers, and administrators. Individuals must be responsible for their own performance and accountability. Every supervisor, employee, and volunteer is responsible for following safe work practices and procedures, as well as identifying and reporting unsafe conditions. All firefighters, fireline supervisors, fire managers, and agency administrators have the responsibility to ensure compliance with established safe firefighting practices.

All actions defined in the Fire Management Plan will conform to safety policies defined in agency and departmental policy, including, but not limited to:

- a Interagency Standards for Fire and Fire Aviation Operations (NFES 2724)*
- b NPS Director’s Order 18 Wildland Fire*
- c NPS Reference Manual 18, Chapter 3 - Standards for Operations and Safety”*
- d Guidance for Implementation of Federal Wildland Fire Management Policy*

4.1.1 Firefighter Safety

Firefighter, park staff and public safety is the number one priority of the fire management program. The firefighter safety program is all inclusive, being integrated into planning and operational decision-making. The following are components of the firefighter safety program. Particulars are found in the appendices or linked to NPS RM-18, Chapter 3 “Standards for Operations and Safety” where they can be accessed more easily.

- 1) Health screening
- 2) Wellness/fitness training and testing
- 3) Safety training
- 4) Job hazard analysis
- 5) After Action Review standards/process
- 6) Work/rest standards
- 7) Safety committee oversight
- 8) Serious accident/incident review procedures
- 9) Fireline evacuation process/procedures/standards
- 10) Critical Stress Debriefing procedures
- 11) Right of refusal of assignment
- 12) Others as appropriate

4.1.2 Public Safety

LRNRA is dedicated to ensuring the safety of each visitor and to all residents and property adjacent to the LRNRA boundary. The Superintendent may close all or a portion of a park area (including park roads and trails) when wildfire or a prescribed burn pose an imminent threat to public safety. Should closure be necessary for a state or other primary access highway, the superintendent will coordinate with the appropriate agencies to request a short-term or extended closure. A prescribed burn that exceeds prescription or extends beyond the predetermined boundary will be immediately suppressed. Any prescribed burn that is determined to pose a threat after ignition will be immediately suppressed.

In case of a wildfire:

1. Park staff will notify the Northeast Washington Interagency Communication Center (NEWICC), the Acting Duty Officer/North Cascades Fire Management Officer and the county dispatcher through a 911 telephone call.
2. Initial response suppression actions will be accomplished by the Washington DNR, qualified LRNRA personnel and local fire districts. A “closest forces” dispatching concept will be utilized and managed through NEWICC. The park will designate a contact, preferably a resource management specialist, to act as a resource advisor to initial response forces.
3. The FMO and/or Duty Officer from North Cascades National Park will be notified and would support operations as necessary and travel to LRNRA as needed.
4. Park staff would clear any visitors near the fire and conduct them into a local safety zone.
5. Park staff would conduct any necessary traffic control to ensure unimpeded access by initial response fire apparatus.
6. Park staff may conduct traffic control on entrance locations during periods of dense smoke impacting roads.

During a prescribed fire:

1. Park interpreters will post signs at various visitor locations, per the Prescribed Fire Plan, that inform visitors about a prescribed fire in progress and about smoke in the area.
2. Other information, brochures, knowledgeable staff, etc. can be available to disseminate information to the public.
3. No person will go into the burn area without personal protective equipment.
4. No visitor will be allowed in the burn area without the permission of the Superintendent, Chief of Resource Management, FMO and the Burn Boss.
5. Park staff will contact and clear any visitors observed near the prescribed fire.
6. Park staff will conduct any necessary traffic control in the prescribed fire location or on the impacted roads during periods of dense smoke and if needed local law enforcement may be used for road closures and traffic control.
7. The Superintendent may direct staff to close portions of the park trail system during a prescribed fire to ensure visitor safety and if needed local law enforcement may be used for road closures/traffic enforcement.

8. Prescribed fire managers will follow all safety protocols and personnel requirements per agency policy while conducting prescribed fire operations.

General Park Response to Wildland Fire

1. Areas of fire activity will be clearly designated at LRNRA visitor centers and a special notification will be posted on the park website for wildfires having an expected duration of more than 24 hours.
2. Residents adjacent to a treatment site will be notified in advance of any prescribed fire activities, and again if any wildland fire poses a threat to burn outside the treatment unit's boundaries and/or contingency areas.

4.2 Preparedness

Preparedness activities provide detailed procedures and standards for wildland fire operations, including pre-season and ongoing activities throughout the fire season. It also includes pre-planned procedures for initial response and incident management.

4.2.1 Coordination and Dispatching

Initial response actions for wildfires occurring within LRNRA boundaries are initiated by park personnel through contacting NEWICC (contact information contained in fire packet placed in each park vehicle) and public reporting of wildfire through utilization of the local 911 system. A closest forces initial response is the standard operating procedure. If the initial response moves to extended attack status then the assigned IC with concurrence from the Superintendent will initiate requests through the NW Coordination Center for additional support and firefighting resources utilizing NEWICC dispatch center.

The North Cascades National Park (NOCA) FMO and staff manage the fire management program at LRNRA. NOCA fire management staff provide planning and implementation resources to effectively manage the fire program. They work with LRNRA park staff and local and state entities concerning initial response agreements which provide federal fire policy guidance to park staff and cooperators and manage the ROSS database for the park.

LRNRA is a member of the NE Washington Fire Planning Unit for federal budgeting purposes (Fire Program Analysis budgeting system), with NOCA fire staff acting on LRNRA's behalf.

4.2.2 Preparedness Activities

Preparedness activities include budget planning, equipment acquisition, equipment maintenance, equipment inventory, personnel qualifications, and training. Due to the extended size of the park and limited wildland fire qualified park staff, the park wants to establish a clear operational process that will allow other agencies to effectively suppress

wildfires within the park and a clear set of objectives for other fire management activities initiated by the park and implemented by qualified individuals outside the park.

Fire readiness processes and inspections are completed through the NOCA fire organization following an Interpark Agreement and through a fire suppression response agreement with WADNR. Each of these is reviewed on an annual basis. Additionally, an operating plan is reviewed and revised annually to address fire qualified personnel, communications, dispatching, reporting, and operations.

4.2.3 Fire Prevention Program/Education and Information

The level of participation in a fire prevention program in conjunction with other agencies to protect human life and property, and prevent damage to cultural resources or physical facilities and infrastructure will occur at a level commensurate with staffing and funding availability. A program of public education regarding potential fire danger may be implemented also predicated upon staffing and budget. Visitor contacts, bulletin board materials, handouts, web pages, and interpretive material on park social media sites can be utilized to increase visitor and neighbor awareness of fire hazards. Prevention activities may include: press releases, attending initial response cooperator meetings, fire awareness signage, increased fire prevention dialogue, and park social media site updates during fire season.

It is essential that employees be well informed about fire prevention and the objectives of the park's fire management program. Further, employees must be kept informed about changes in existing conditions throughout the fire season. Trained employees need to relate information to the public essential to understanding the potential severity of human-caused wildland fires and how to prevent them. During periods of extreme or prolonged fire danger, fire prevention messages will be included in interpretive programs and placed on park social media sites. Emergency restrictions regarding fires or area closures may become necessary and typically comply with closures on other federal lands and/or Washington Department of Natural Resources closures. Such restrictions, when imposed, will usually be consistent with those implemented by cooperators. The Superintendent will authorize any closures and ensure that public notices go to local media outlets and are posted on the park's website and social media sites.

4.2.4 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). The National Park Service wildland fire qualification system meets or exceeds all NWCG standards. LRNRA will conform strictly to the requirements of the NPS wildland fire management qualification and certification system.

Fire qualification cards are mandatory for personnel engaged in fire duties, as required in RM-18. Only individuals qualified and certified at the command level appropriate to the complexity level of the incident will manage wildland fires. Fire qualification cards must be current and firefighters must have all required protective clothing and equipment with

them before being dispatched to fires. No employee will be accepted for wildland fire training or receive a fire qualification card until he or she has agreed to be available for fire assignments. Employees must understand that assignments may keep them on fire duty for extended periods.

The NOCA FMO is responsible for coordinating and documenting training, issuing fire qualification cards, certifying qualifying experience prior to its entry in ROSS (Interagency Resource Ordering Support System), and maintaining a list of all employees who are qualified for fire duties. The list will include the date of the most recent pack test and the jobs for which they are qualified (see Appendix 7 *Preparedness Activity Elements – List of Wildland Fire Qualifications for LRNRA Staff*). Updated fire training, experience, and physical fitness records will be input annually.

Fire suppression is an arduous duty. On prescribed fires, personnel may be required to shift from monitoring activities to suppression. Poor physical condition of crewmembers can endanger safety and lives during critical situations. Personnel performing fire management duties will maintain a high level of physical fitness. This will require successful completion of a fitness pack test as outlined in NPS-57 (Health fitness guidelines) and a firefighter physical per RM-18.

4.2.5 Supplies and Equipment

LRNRA maintains one fire cache in the recreation area. The fire cache is located at the Kettle Falls Office.

Table 1: Summary of Fire Cache Locations at LRNRA

Location	Lat./Long.	Equipment/Cache	Position Responsible
	WGS 84		
Kettle Falls	48.28638, -118.12003 48°17'11"N, 118°7'12"W	Cache	NOCA AFMO OPS

The fire cache contains hand tools, firefighter line packs, personal protective equipment, backpack pumps, chainsaws, hoses and appliances. Designated fire staff will be responsible for inventorying, resupplying, and stocking cache items prior to the onset of the fire season or planned ignitions. Additional equipment and supplies are available through NOCA and the interagency cache system.

4.2.6 Fire Weather and Fire Danger

Basic weather data is collected by the National Weather Service at Kettle Falls and Spring Canyon RAWS. See Table 2 for RAWS Station Information. The park receives daily summaries from the weather stations on rainfall amounts, time and duration, temperature, humidity, dew point, barometric pressure, visibility observations, hourly wind speed and direction, freezing levels. Generally, the fire season runs from mid-June

through mid-September. During drier years, the fire season may last from early May until mid-October. Strong winds are possible, but not common, in all months, especially preceding a weather front. During April through August, prevailing winds come from the west-northwest and in the remainder of the year winds are generally out of the southwest. Daily shifts in winds also occur due to elevation differences in the deep canyons of the reservoir. Morning winds primarily go up lake with a shift to down lake winds in the afternoon and evening.

Table 2: RAWS Station Information

KETTLE FALLS RAWS Located at Kettle Falls WA

LAT.	LONG	ELEVATION	NESS ID	NWS ID	AGENCY
48° 36' 30	118° 07' 10"	1310 ft.	FA501530	452916	NPS

SPRING CANYON RAWS Located at Spring Canyon WA

LAT.	LONG	ELEVATION	NESS ID	NWS ID	AGENCY
47° 56' 05	118° 56' 05"	1340 ft	FA500646	453002	NPS

4.2.7 Staffing priority levels

Step-Up Plan & Closures

A “Staffing and Action Guide” (Step-up Plan) has been developed to guide daily fire management actions on the park (Appendix 7C.1). Weather station catalogs and historic weather files based on the last ten years of data were used to generate indices for different staffing classes. Staffing classes for LRNRA were derived by using weather data from the Kettle Falls and Spring Canyon RAWS stations. The Spring Canyon RAWS is about 3 miles from Grand Coulee and covers the southern section of the park. The Kettle Falls RAWS is located at the Kettle Falls compound and covers the northern section of the park. The FMO is responsible for assuring that the appropriate management response occurs. As fire danger increases, actions outlined in the Step-up Plan will be taken to enhance prevention and preparedness.

This staffing assessment will be used in the event of any fire. The ICS-214 Unit Log or Case Incident Report will provide information for WFDSS decision documents. The WFDSS decision documents act as the record of decision for documenting appropriate action taken on fires. Available personnel/resources, fire situation, and predicted fire

behavior will determine the response level to maintaining, or curtailing normal Park operations. Minimum staffing levels will be considered annually in the Fire Management Plan.

Fire management pre-suppression activities are based upon the range of fire danger indices predicted by the National Fire Danger Rating System. As the indices increase with extreme fire danger, fire pre-suppression activities undertaken by National Park Service fire personnel will concurrently increase. These increases in pre-suppression activities are defined in the "step-up plan" as increases in "Staffing Class" as predicated by the levels of the Burning Index.

Detection

There are no staffed fire lookouts at LRNRA. Detection efforts will consist primarily of foot and vehicle patrols by park employees. The park also relies on fire reports from visitors, neighbors, and other agencies. Private and commercial pilots on aerial overflights may also alert the park to "smokes". Any fires discovered by NPS personnel or reported to them that are within the park shall be immediately reported to the 911 dispatcher.

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

Communications

Initial dispatch for in-park operations will be directed by the local emergency dispatch. An emergency 911 telephone exchange is operational for alerting initial response resources.

All fires will be reported to the designated emergency park contact (Superintendent/acting supt.) and NOCA FMO, who will maintain a documentation log of the fire, begin a fire report, and handle requests for outside assistance and resource order forms. The NOCA FMO or designee will assure that appropriate documents are collected for the documentation folder. The Regional FMO will be notified as necessary.

If initial response personnel can't control the fire or are unqualified, they will request additional resources through county dispatch. Initial response assistance can be requested from Washington DNR and local Washington Fire Districts, using a closest forces concept. In brief, the principal of closest forces will guide dispatching, both within the site and in its relationship to cooperators. The Incident Commander will request outside resources, if needed, through local dispatch channels (Northeast Washington Interagency Communication Center -NEWICC). For any fire requiring outside assistance that

involves special circumstances, the Regional FMO will be notified. No requests for assistance will be made directly to the National Interagency Fire Center (NIFC).

4.2.8 Pre-Attack Plan

At this time LRNRA does not have a Pre-Attack Plan developed. This is a task that could be completed in the future given the funding. The pre-attack plan is a comprehensive compilation of essential fire management information, which must be available at the park. The pre-attack plan should not be included in the body of the fire management plan, but held out for a quick reference guide as incidents occur. The plan should be reviewed annually prior to the fire season, and revised as necessary. RM-18, Chapter 7, Exhibit 3 provides a list of considerations for a pre-attack plan. Pre-attack plans should be made available to local cooperators and initial response resources.

To be effective, the pre-attack plan should include sensitive resource information on matters such as the specific locations of cultural sites and certain endangered species. Fire personnel must ensure that sensitive information in the plan is protected from inappropriate dissemination. Pre-attack plans will include evaluations of structures and other cultural improvements to ensure that their values (and hazards) are taken into consideration. Criteria and procedures for evacuations and closures will also be addressed. RM-18, Chapter 7, Exhibit 4 contains a sample closure/evacuation plan. Documentation relevant to the pre-attack plan will be included in Appendix 7D.13, as elements are completed.

4.2.9 Initial Response

The following general guidelines will apply to fires occurring within the park:

- 1) Immediately upon notification that a wildland fire has possibly started in-park, and after getting the best possible directions/location information, a park employee will call the Northeast Washington Interagency Communication Center (NEWICC) at **509-685-6900** or dial **911** to report the fire and start the initial attack response effort by available WA DNR suppression resources. Fire staff stationed at LRNRA may respond to assist in initial attack efforts if called out by NEWICC. LRNRA Resource Protection staff may assist in traffic control and with public safety issues upon arrival at the scene. They should only engage in initial attack wildland fire control efforts or assisting within the expected fire zone if they have current red-cards.
- 2) The first qualified red-carded WA DNR firefighter to arrive will assume the role of Incident Commander until relieved by a higher qualified firefighter, unless NEWICC has assigned an NPS crew as the first responder. During complex fires, the ICS Unified Command concept may be used with local district fire personnel acting as the joint commander.
- 3) Upon arrival of other NPS or other cooperating agency qualified Incident Commanders, it will be decided if command of the fire will remain the same or be

assumed by him/her. The decision will be communicated directly to the existing IC(s). This policy will be specified in all cooperative agreements.

- 4) If a cooperating agency arrives at the fire before an NPS representative, they will take command of the fire, begin suppression, and notify the park.
- 5) The Incident Commander will be responsible for overall direction of all resources committed to the fire and for all suppression actions. Considering the current and predicted fire conditions, the IC will assess the need for additional suppression resources and estimate the final size of the fire. The potential for spread outside of the park should be predicted, as well as the total suppression force required to initiate effective containment action at the beginning of each burning period. The IC will maintain communication with the county 911 dispatch office during the fire.
- 6) The IC will assess the need for law enforcement personnel for traffic control, investigations, evacuations, etc.
- 7) The Superintendent or their designee makes all final decisions on the fire. However, should an unplanned fire move into extended attack, a Delegation of Authority will be initiated with the IC. Once a Delegation of Authority has been authorized, the IC will make the final decisions pertaining to the fire. A copy of the Delegation of Authority form is included in the Appendix.
- 8) The Superintendent or park fire contact will notify the NOCA Fire Management Officer of the fire.

In accordance with RM- 18, wildfires will be suppressed in a prompt, safe, aggressive, and cost effective manner to produce fast, efficient action with minimum damage to resources. Suppression involves a range of possible actions from initial response to final suppression. Primary strategy on small fires will be direct attack with hand tools. Fires will be managed with a containment strategy using preexisting natural and artificial barriers. This strategy may be modified by fire behavior and resources available. Fires beyond the capacity of hand tools will be managed utilizing engines and other equipment where road access is available. Use of constructed lines should be avoided unless needed to protect critical zones, park infrastructure, neighboring homes or other important sites. Off-road vehicles may be utilized to save lives, buildings, and historic resources, and to ensure that the fire will not cross NPS boundaries. Portable pumps and complex hose lays can be used in lieu of, or to supplement, constructed fire lines. The use of structural firefighting engines and crews may assist in the rapid application of water to roadside fuels. However, the use of crews not trained in wildland firefighting should be avoided and directed to protect park or neighboring homes and structures. Employing retardant or helicopter water drops will be considered when their use might prevent a crown fire near park facilities and the wildland urban interface and/or allow local forces to contain the fire within the park. Large, smoldering snags and windfalls may need to be felled or bucked to ensure safety and to completely extinguish the fire.

Personnel and equipment must be efficiently organized to suppress fire effectively and safely. To this end, the Superintendent or their designee will assist the delegated command function on major or multiple fire situations and assist in setting priorities for the use of available resources and establishing a suppression organization. There will be

only one Incident Commander responsible to the Superintendent. The Incident Commander will designate all overhead positions on fires requiring extended attack. Reference should be made to a Delegation of Authority required by RM-18.

Fire management activities will stabilize and prevent degradation of natural and cultural resources lost in and/or damaged by impacts of wildland fires, fire suppression and/or fire management by employing Minimum Impact Suppression Tactics (MIST). Natural and artificial barriers will be used as much as possible for containment. If necessary, fire line construction will be conducted in such a way as to minimize long-term cultural and environmental impacts. Vehicle access to normally closed areas of the park will be made using existing fire roads when possible. When off-road travel is deemed necessary, vehicle access will be made only after routes avoiding documented archaeological sites have been discussed with the park's archeologist and/or marked for avoidance where safely feasible. No vegetation will be cleared for helispots, but mowing of the site may occur. Heavy equipment such as crawlers, tractors, dozers, or graders will not be used in the park unless their use is critically necessary to prevent a fire from escaping the park or destroying government buildings and historic resources or threatens adjoining housing developments. No live trees will be felled unless they present a "clear and present" danger to firefighters or are carrying the fire across park boundaries. 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 following Burned Area Emergency Response (BAER) guidelines.

Other implementation guidelines can be found in RM-18, Chapter 9, and Exhibit 5 (included in the Appendix). Use of MIST will not compromise firefighter or public safety or overtly impact overall strategic plans and tactical operations.

The cooperative agreement between LRNRA, Washington Department of Natural Resources, and local Washington State fire districts defines the areas where agencies respond automatically. This area, called the mutual threat zone, includes the entire park and an area around the perimeter. In the event of a fire within or adjacent to LRNRA, all agencies agree to take simultaneous suppression action with their fire suppression resources for fires within the mutual threat zone, to the extent of their capability.

An annual review and update of the Delegation of Authority for the wildland fire management program from the Park Superintendent to the NOCA Fire Management Officer will be accomplished during the annual fire plan review. In addition a predetermined or sample Delegation of Authority from the Superintendent to an Acting Incident Commander will be prepared for use as needed for the year.

The following items are located in the Appendices:

- 1) *Annual Delegation of Authority to FMO from Park Superintendent*
- 2) *See Redbook Chapter 3 – Fire Management Staff Roles – Park Superintendent*
- 3) *Response Plan (may be local shared interagency)*

- 4) *Step-up Plan and Staffing Plan (including reference to Duty Officer roles and responsibilities)*
- 5) *Strategic fire size-up procedures*
- 6) *Minimum impact suppression tactics guidelines that are used in the park*
- 7) *Location of Fire Danger Rating Operating Plan*
- 8) *Location of Job Hazard Analyses for wildland fire and fire aviation operations*
- 9) *Location of current copy of Agency Administrators Guide to Critical Incident Management (NFES 1356)*
- 10) *List of wildland fire qualified park personnel, reviewed and updated annually*
- 11) *Structure protection inventory and needs*
- 12) *Identify location of procedures for park evacuation and closure*
- 13) *Identify location of current fire cache inventory*
- 14) *Transfer of Command Package, including a sample Delegation of Authority from Park Superintendent to incoming incident commanders, burn bosses, and/or incident management team*
- 15) *Annual Delegation of Authority to Fire Duty Officers from Park Superintendent.*

4.3 Management of Unplanned Ignitions

4.3.1 Preparing for Unplanned Ignitions

4.3.1.1. Objectives

Initial response to unplanned ignitions will be to minimize the size of the fire at the least cost, with firefighter and public safety being the first priority in all decisions.

Land and resource direction for the park requires minimizing the negative impacts of a wildland fire: which includes planned and unplanned fires.

4.3.1.2. Risk Assessment

The National Wildfire Coordinating Group defines risk as: *The chance of fire starting as determined by the presence and activity of causative agents.* A risk assessment looks at three risk components: values, hazards and probability of occurrence.

The LRNRA fire risk analysis used ArcGIS 10 (ESRI 2011) and FlamMap 3.0 (Finney 2006) software to combine and weight expected fire locations, potential fire behavior, and values at risk to loss. The basic workflow of the analysis is to calculate risk of ignition from historical records, potential fire behavior parameters of fireline intensity and crown fire activity using FlamMap 3.0, and values at risk to loss using mapped NPS structures and vegetation data.

Ignition Risks

Ignition risk is defined as the likelihood of any given area will receive a fire start either from natural (i.e. lightning) or human causes. The assumption is that areas with more fires starts historically will receive more starts in the future compared to areas with less historical fires. Ignition risk was calculated using NPS, BIA, and Washington DNR recorded fire starts from 1993-2011 and USFS recorded fire starts from 1993-2010.

All potential ignition risks are then plotted on a topographic map of the unit. Whenever possible, GIS should be utilized and appropriately documented to meet NPS metadata standards. If no GIS support is available, the analysis can be completed manually by utilizing topographic base maps and transparent overlays. Risks to be plotted include all areas of concentrated use and incidents of human-caused fires for the past five- to ten-year period.

Determination of Hazards

Hazards are defined as the fuels and the topography on which a wildland fire will spread. The variables that contribute to fire behavior include topography (elevation, aspect, and slope), wind (speed, direction), fuel moistures, and fuel type and arrangement (surface fuels and tree canopy characteristics).

Potential fire behavior characteristics of fireline intensity (Byram 1959) and crown fire activity were modeled for the study area using FlamMap. Fireline Intensity is used as an indication of fire severity and is linked to difficulty in fire suppression efforts (Rothermel 1983).

Hazard areas are then indicated on a topographic map of the unit using GIS mapping tools. The areas of fuels and topography that present the greatest resistance to control, such as heavy fuels on steep slopes, denoted and labeled as “high hazard” areas. Areas which present moderate resistance to control, such as medium concentrations of continuous fuels in less rugged topography, should be encircled and labeled as “moderate hazard” areas. Everything remaining should be labeled as “low hazard” areas.

Determination of Values

Values are defined as areas where losses from wildland fire would be unacceptable. Since the determination of values is subjective, they must be formulated through an interdisciplinary process. For this risk assessment developed areas and NPS structures within the park and contained by a 1.5 mile buffer around the boundary of LRNRA were analyzed. Utilizing GIS areas of high and moderate value were determined.

Probability refers to the likelihood of a fire becoming an active event with potential to adversely affect values.

Technical direction for completing a wildland fire prevention analysis is contained in the National Park Service Wildland Fire Prevention Handbook. A risk assessment for the park has been completed and is found in the Appendix 7D.13.

4.3.1.3. Implementation Procedures

Preparedness activities are outlined in RM- 18 and are covered by normal site operating funds and fire funding. Preparedness efforts are to be accomplished in the periods outside the normal fire season dates. When periods of high fire danger occur outside the normal fire season dates, the appropriate action will be taken, severity funding may be requested to achieve wildland fire protection, and the Regional FMO will be notified by telephone for approval of the preparedness actions. The following preparedness actions will be taken to ensure adequate fire preparedness.

Annual Preparedness Program – the following outline details the park’s calendar year fire management program.

Spring

- 1) Contact Initial Response cooperators to discuss the upcoming fire season and any changes in park policies. Fire call-out lists will be updated.
- 2) Review, and if necessary, revise and approve all cooperative agreements.
- 3) Deliver updated fire call-out list to local dispatch when available, possibly late spring.
- 4) Ensure all firefighting tools, equipment, and supplies are ready. Hand tools are checked for sharpness, repaired, and stored so as to be easily accessible. Needed personal protective equipment, tools, and supplies should be ordered.
- 5) Mechanical fire equipment will be tested to assure readiness.
- 6) Fire access roads will be checked for accessibility and cleared if necessary.
- 7) Draft budget requests in coordination with NOCA FMO.
- 8) Arduous duty firefighters complete firefighter physicals. Physical fitness testing can begin.

Summer

- 1) Physical fitness testing will be completed for permanent and seasonal employees. Red cards will be issued and employee records updated.
- 2) Fire gear will be assigned to qualified firefighting personnel.
- 3) Daily situation reports will be reviewed during very high or extreme fire danger and whenever a fire has occurred, is in progress, or is planned.
- 4) Maintain contact with local initial response cooperators. Coordinate burn bans if appropriate. Insure that news releases are delivered to the local media in a timely manner to alert the public of changes in fire danger and park policies. “Fire restriction/danger” signs may be posted as necessary.
- 5) Fire access roads will be checked for accessibility and cleared if necessary.
- 6) Finalize budget requests in coordination with NOCA FMO.

Fall

- 1) Complete outstanding fire reports including entry into WFMI reporting system

4.3.1.4. Staffing

The NOCA FMO will oversee the fire management program at LRNRA. NOCA fire management personnel will be instrumental in staffing for projects, planning exercises and serving as representatives of the park in cooperative meetings.

The NOCA FMO, through a Delegation of Authority from the Superintendent, represents LRNRA in interagency fire commitments.

During a wildland fire incident the Park Superintendent or Acting will be responsible for approving suppression actions, or will be responsible for approving a Delegation of Authority to the Incident IC.

The park will utilize red-carded personnel stationed at the park for assignments commensurate to their qualifications. When fire management program staff are not present in the park and are needed to support fire management operations, staff will be supplied by NOCA fire management personnel, through Regional support, or interagency cooperators

Table 3: Staffing Roles

Position	Responsibilities
Superintendent Acting Superintendent	1) Fire management program overall supervision according to departmental and National Park Service policy, fire management guidelines (NPS-18), and all relevant laws and regulations. 2) Responsible for developing the park fire management plan and ensuring that supplies, equipment, and qualified personnel are available to meet the goals of this plan. 3) Coordinates fire program activities with other agencies and landowners. 4) Technical duties and accompanying responsibilities are delegated to other staff members. Other duties include: 5) Approve the park's Fire Management Plan and any proposed revisions. 6) Be apprised of the daily fire situation during fire season. 7) Be the sole authority to approve any prescribed burn plans. 8) Provide direction to Type I and Type II Incident Commanders working in the park, or designate a representative to do so.

	9) Delegates' specific authority to Collateral FMO for mobilizing equipment and personnel. 10) Oversight and dissemination of public and park website notices before and during fire use restriction & closure periods and wildland fire events
Fire Management Officer	North Cascade National Park's fire management officer is designated the park's FMO as a collateral duty and will advise the park in its wildland and planned ignition operations. Duties include: 1) Has immediate responsibility for overseeing all aspects of the fire management program. 2) Coordinate park-wide fire training and equipment acquisition. 3) Approve and implement any fire-related use restrictions. 4) Establish liaison with cooperating agencies, and coordinate and maintain cooperative agreements. 5) Prepares and/or revises annually, cooperative agreements concerning wildfire management, prescribed fire, smoke management, and cross-agency fiscal matters. 6) Formulates and directs the budget accountability program for preparedness, hazard fuels operations, emergency fire accounts and approves all fire expenditures. 7) Responds to regional and national office information requests. 8) Oversee initial response fire operations and within delegated authority arrange for additional equipment, personnel and logistical support as needed. 9) Monitor fire danger conditions, implement step-up or severity plan activities, and recommend appropriate use restrictions. 10) Maintain fire data input. 11) Coordinate annual review of this plan. 12) 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. 13) Ensure fire reports (DI-1202) are properly prepared and submitted to the Pacific West Regional Office and/or entered into WFMI. 14) Assigns NPS personnel to national and local fire call-outs, as well as all-hazard assignments 15) Represents both agencies locally, regionally, and nationally in matters pertaining to the fire program.
LRNRA Chief of	1) Translates science and research to policy and fire

Resource Management, Chief of Resource Education, and/or Chief of Resource Protection or designated contact	management practices, Other duties include: 2) Reviews project and prescribed burn plans. 3) Ensures logistical needs, including housing, office space, and fire cache needs are met during the fire season. 4) Directs staff on archeological and biological reviews and clearances 5) Directs Resource Protection ranger duties related to public notifications, road/trail closures, and public safety during wildland fire events. 6) Implements step-up or severity plan activities and recommends appropriate use restrictions. 7) Provides expertise or staff with expertise for resource education, postings of fire information to park website or social media sites, Public Contacts, and serves as PIO as needed.
Assistant Fire Management Officer or assigned Fire/Fuels Specialist	1) Ensures fire equipment readiness during the fire season. 2) Oversees initial response fire operations within delegated authority. 3) Arranges for additional equipment and support as needed. 4) Monitors fire danger conditions. 5) Maintains fire weather/fire records and fire data. -
Fire Ecologist	1) Directs staff in providing scientific expertise, technical advice, and review regarding: - Ecological effects of fire and fire suppression activities. - Effects of fire and suppression activities on cultural resources. - Distribution of vegetation, fuels, and natural and cultural resources, including sensitive resources. - Geographic information system (GIS) databases and analysis options. - Park and resource management alternatives related to fire. - Fire Management, and site-specific burn plans.
Incident Commander	1) Use strategies and tactics that are as resource sensitive as possible while maintaining the first priority of firefighter and public safety. 2) A Delegation of Authority will be provided to each Incident Commander assuming responsibility for an extended attack or Type 3 or higher fire prior to assuming responsibility for an incident. 3) Major duties of the Incident Commander are given in the

4.3.1.5. Information

NOCA fire staff, with the assistance of Regional fire staff, will assist LRNRA in developing interpretive information concerning wildland fire in the park and associated park ecosystems when funding and staff time are available.

LRNRA will utilize established media contacts to disseminate information on prescribed fire projects and on-going wildfire incidents that may impact neighbors or park operations. A listing of these contacts is found in the appendices.

4.3.1.6. Record Keeping

The fire management program requires consistent, concise and pertinent record keeping. For wildfire incidents an organized filing system of documents, letters, reports, and memos associated with the incident is required. Prescribed fire fuel reduction projects, mechanical fuel reduction projects and other resource projects utilizing prescribed fire or mechanical methods all require record keeping verifying prescriptive windows for implementation, monitor actions during the project and validation of post activity results.

The following are items will be included when appropriate:

- 1) *Approved planning document that guided management actions (e.g. WFDSS report). Include all amendments and revisions.*
- 2) *Monitoring reports and summaries of findings, along with a summary of all monitoring activities including a monitoring schedule (level 1 and 2 monitoring).*
- 3) *Revalidation and certification documents.*
- 4) *Funding codes and cost accounting.*
- 5) *Project maps. Permanently map and archive all fires greater than 10 acres, using GIS whenever possible. Park units without local access to GIS should draw upon regional resources.*

See RM 18 Information and Technology Management chapter for more information about GIS and data standards.

4.3.2 Expected Fire Behavior

Associated National Forest Fire Laboratory (NFFL) and National Fire Danger Rating System (NFDRS) models are used for fire behavior predictions (Anderson 1982, Deeming and others 1977) and preparedness planning respectively. NFFL fuel models are used for predicting fire behavior. The following NFFL Fuel Models (FM) represent the wide range of vegetation types within the boundaries of LRNRA. Common fuel models in LRNRA are fuel models 1, 2, 6, 10 and 11. A summary of fuel/fire characteristics

follows in Table 4

Table 4: Summary of Fuel/Fire Characteristics

NFFL Fuel Model	Rates of Spread	Residual Burn Time	Resistance to Control
1	Very high	Short	Low
2	Very high	Relatively short	Moderately low
6	high	Relatively short	Moderately low
10	moderate	moderate	moderate
11	moderate	moderate	moderate

Specific discussion of fuels models at LRNRA is found in Appendix 7D.13: LRNRA Fuel Models.

4.3.3 Initial Response Procedure.

4.3.3.1 Information Needed To Set Initial Response Priorities.

Incident response for all units of LRNRA is the same: control the spread of the wildfire in a safe, cost-effective manner. Response to a single incident is straight-forward based on the chosen suppression strategy. Complexity arises when multiple wildfire incidents occur simultaneously. Under multiple incidents, initial response priority is given to those incidents that have the highest potential to threaten life and property in that order. A map showing the park wildland urban interface zones is found in Appendix 7D 13the LRNRA Wildland Fire Risk Analysis completed for the park.

4.3.3.2 Incident Documentation and Reporting

A record of each wildfire incident will be initiated in the WFDSS system as soon as practical. Management of the incident information and decisions will be captured in the WFDSS system. Each fire will be reported in the WFMI system of record within 10 days of the fire being declared out.

4.3.3.3. Criteria For Selecting The Initial Response

The initial response for all single incidents is the same. Cooperator initial response is determined by the cooperator's standard operating dispatch procedures.

4.3.3.3 Response Times

Initial Response is initiated through park call to NEWICC or a public report of wildfire to the local 911 system. Response times vary by site due to distance from responding cooperator and that cooperator's standard response times.

4.3.3.4 Management Requirements and Restrictions

Use of bulldozers is dependent upon the approval of the Superintendent or Acting Superintendent.

Use of assigned Resource advisors is recommended to assist in working in and around cultural sites, potential habitat for flora and fauna species of concern and areas of known T&E Species.

MIST guidelines are to be followed as long as safety is not compromised.

4.3.3.5 Other Special Issues or Concerns

It is the responsibility of the LRNRA staff (NOCA FMO) to initiate contact with the firefighting cooperators and discuss the needs of the park when suppressing wildfires within park boundaries. Much of the initial response period will be managed by the cooperator dispatched to the incident, therefore it is important that fire management goals/procedures are known to the Initial Response (IR) forces prior to dispatch.

4.3.4 Transition to Extended Response and Large Fire

Criteria for Transition

If the initial response suppression action is not successful within 24 hours of the initial fire report, the incident will transition to extended attack. Due to the nature of the park (long, linear shape without much depth) many if not all of the fires that have not been contained within 24 hours have exited park boundaries and will become multi-agency managed wildfires. Fire operations will be determined through the Wildland Fire Decision Support System. The Incident Commander will be responsible for implementing management decisions evolving from the Wildland Fire Decision Support System analysis. A Delegation of Authority, found in Appendix 7: *Preparedness Activity Elements*: Delegation of Authority from Park Superintendent will be used to convey incident management responsibilities.

If through WFDSS analysis the complexity of the incident requires a higher level of management incident team, then the current IC or FMO, with approval of the Superintendent, will order the appropriate type of management team through the NW Coordination Center, located in Portland, OR.

During emergency incidents additional supplies and equipment beyond the capabilities of the local cache may be needed. Cache items may be obtained from the Pacific Northwest National Interagency Support Cache in Redmond, OR and all emergency cache orders will be processed through the NW Coordination Center or Expanded Dispatch.

Implementation Plan Requirements and Responsibilities.

Wildland Fire Decision Support System (WFDSS)

The Wildland Fire Decision Support System (WFDSS) is a web based decision support system, which replaces the Wildland Fire Situation Analysis (WFSA), Wildland Fire Implementation plan (WFIP), Long Term Implementation Plan (LTIP) and Strategic Implementation Plan (SIP). These documents have been combined into a single dynamic process within the WFDSS. WFDSS utilizes GIS information that incorporates modeling, documentation of a decision process, and multiple databases. These features are combined into a system that gives the decision maker maximum flexibility in defining their course of action and subsequent strategic and tactical actions based on planning documents, incident specific analysis and risk assessment. As an internet based system with multiple database links; WFDSS can give decision support in a timely and efficient manner.

WFDSS fire management support comes from NOCA Fire staff. Preloading of WFDSS information should be accomplished prior to fire season. Actual usage of the WFDSS planning model will require knowledgeable expertise, generally supplied by locally trained personnel, or personnel brought in from the NOCA fire organization or the Pacific West Regional fire organization. Approval of WFDSS strategies is the responsibility of the Park Superintendent, NPS Regional Director or the NPS National Director depending on the anticipated cost of the approved suppression strategy. For more info on WFDSS see Appendix 7: *Preparedness Activity Elements: WFDSS Objectives and Requirements.*

Delegation of Authority

In order to transfer command of a Type 1, 2, or 3 incident from park staff to an Incident Commander, a Delegation of Authority is required between the Superintendent and the IC. The Delegation can be pre-written, modified slightly to match the needs of the incident and signed by the IC and Superintendent. Essentially the delegation allows the IC to manage the incident, freeing the Superintendent to focus on oversight of the incident.

The Delegation of Authority needs to clearly state communication responsibilities between the park and the incoming team concerning activity associated with the fire.

The delegation should also detail the role of resource advisors, their decision making authority and when possible assigned personnel names.

A draft Delegation of Authority is in Appendix 7: *Preparedness Activity Elements: Delegation of Authority from Park Superintendent.*

4.4 Burned Area Emergency Response (BAER)

The BAER program encompasses the immediate actions taken to minimize post-wildfire threats to life and property and to prevent unacceptable resource degradation resulting from a wildfire. BAER consists of two funding activities, Emergency Stabilization (ES) and Burned Area Rehabilitation (BAR).

Funds for post-wildfire treatments and activities will only be allocated for actions identified in approved ES or BAR plans.

The National Park Service Fire Management BAER Program is dedicated to protecting lives, property, and resources while promoting the restoration and maintenance of healthy ecosystems. The BAER program determines the need to prescribe and implement emergency treatments to meet the following objectives:

- Stabilize and prevent further unacceptable degradation to natural and cultural resources resulting from the effects of a fire.
- Repair or improve lands damaged directly by a wildland fire.
- Natural recovery after a wildfire is preferable if immediate stabilization and rehabilitation needs have been met or are assessed to not be necessary.

Fire suppression activity damage repair is not the responsibility of the BAER program. These are actions that are planned and performed primarily by the suppression incident organization as soon as possible prior to demobilization. However, some actions may need to be conducted by the local unit following containment and incident management team demobilization. For fires where the local agency administrator delegates the authority for fire suppression repair to an incident management team, the incident management team must document the fire suppression activity repair actions and those still needed to ensure that all planned actions are completed during transition back to the local unit.

Expanded information on this program is found on the following handbook:
http://www.fws.gov/fire/ifcc/esr/policy/es_handbook_2-7-06.pdf /

4.4.1 Minimum Impact Suppression Tactics

Minimum impact suppression tactics (MIST) are designed to reduce the overall long-term impacts of a wildland fire suppression operation. All MIST tactics must provide for safety first and protection of property. The proper use of MIST tactics will reduce overall fire operations impacts on the landscape, thereby reducing overall fire suppression costs.

Minimum impact suppression tactics will be employed to protect all resources. Natural and artificial barriers will be used as much as possible for containment. Fuel conditions, fast burning grasses, and cultural resources of the site are concerns, which increase the difficulty of suppressing fires on site. Ground forces with hand tools and engines are the primary suppression method.

Portable pumps, backpack pumps, flappers, rakes, leaf blowers, shovels, pulaskis, and chainsaws may be used with due consideration for cultural resource values. Limitations have been placed on the types of mechanized equipment, which may be used at the site. Dozers shall not be used within the site boundaries, unless authorized by the Superintendent.

Portable pumps and hose lays can be used in lieu of or to supplement constructed firelines. Engines are primarily utilized where roads currently exist. Off-road driving will be permitted when critical to holding a fire line or for firefighter safety. Where possible, the incident resource advisor or park archeologist should be consulted to ensure that cultural resources are not impacted. These engines are designed to be self-contained and can supply water.

Mop-up and patrol should be methodically planned and executed in control situations. Fires can burn into the duff. Conducting a reburn following containment in areas where firelines are threatened is possible.

See MIST under RM-18 Chapter 2: Response to Wildland Fire, for further direction. Web link is as follows: www.nps.gov/.../resources/documents/reference-manual-18.pdf

4.4.2 Emergency Stabilization

Emergency stabilization is an extension of emergency actions and consists of planned actions taken to minimize threats to life or property resulting from the effects of a wildfire. These actions may also include stabilization, repair, replacement, or construction of physical improvements in order to prevent unacceptable degradation to natural and cultural resources. The objectives of emergency stabilization are to first determine the need for emergency treatments, and then to prescribe and implement the treatments. Life and property is the first priority. Cultural and natural resources treated through emergency stabilization should be unique and immediately threatened.

4.4.3 Burned Area Rehabilitation

Burned area rehabilitation consists of non-emergency efforts undertaken to repair or improve wildfire-damaged lands unlikely to recover naturally, or to repair or replace minor facilities damaged by wildfire. The objectives of burned area rehabilitation are to (1) evaluate actual and potential long-term post-wildfire impacts to critical cultural and natural resources and to identify those areas unlikely to recover naturally from severe wildfire damage; (2) to develop and implement cost-effective plans to emulate historical or pre-wildfire ecosystem structure, function, diversity, and dynamics consistent with approved land management plans, or if that is infeasible, to restore or establish a healthy, stable ecosystem in which native species are well represented; and (3) to repair or replace minor facilities damaged by wildfire.

4.5 Management of Planned Fuels Treatments

Development of fuels treatment projects will be a cooperative effort between LRNRA park staff and NOCA Fire Staff. Fuels reduction projects will focus on areas adjacent to park infra-structure and areas of wildland urban interface. Fuel loadings generated through other resource management projects will also be modified to a degree commensurate with the associated risk to life and property.

4.5.1 Fuels Planning and Documentation

The fuels management program will implement fire management policies and help achieve resource management and fire management goals as defined in:

- *Federal Wildland Fire Management Policy and Program Review;*
- *Managing Impacts of Wildfires on Communities and the Environment, and Protecting People and Sustaining Resources in Fire Adapted Ecosystems – A Cohesive Strategy (USDOJ/USDA); and A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan.*

4.5.1.1 Participants in Fuels Program

NOCA Fire Staff will provide planning and logistical support to the LRNRA's fuels management program. Staffing of projects will include NOCA fire personnel, Regional fire personnel and Regional fire staff when needed. LRNRA fire qualified personnel may be available to fill qualifying positions.

When appropriate cooperator personnel could be utilized for projects, especially for conducting prescribed burns and for training purposes.

Development of five-year project plans is accomplished cooperatively with LRNRA staff, and NOCA Fire Management staff. Planning team members are chosen depending on the scope/location of the projects, the natural and cultural resource issues, and the complexity of project plans included in the FMP.

Updating the five-year plan involves NOCA Fire Staff, LRNRA Superintendent, LRNRA Chief of Integrated Resources, LRNRA Environmental Specialist, LRNRA Archeologist and the LRNRA Facility Manager at a minimum and is completed annually. It is important to note that the updating process does require a review of the environmental impacts of new projects and an assessment of whether the current environmental assessment is still viable. Utilization of the NPS Environmental Screening Form is the recommended guide for assessing current viability of the current NEPA documentation for individual projects in the fire management program.

4.5.1.2 Candidate Projects.

Proposed candidate project priorities and focus for the next five years are:

- Boundary protection through reduction in hazard fuel loads along NPS boundaries near WUI areas
- Defensible space around structures and particularly near WUI areas
- Protection of NPS facilities and infrastructure in developed areas
- Fuel modification in important forested areas: fuel breaks, areas with multiple hazard trees due to insect or disease infestations, and forest health enhancement projects.

The current multi-year plan is shown in Appendix 5: *Multi-year Fuels Treatment Plan*.

4.5.1.3 Project Prioritization Criteria.

Project prioritization for fire management is driven by the expected degree of hazard to park infra-structure and the wildland urban interface. Sequencing of projects will be important as the park does not have the resources or funding to all of the projects at one time.

Resource management driven projects prioritization will be driven by funding. Again sequencing of inter-related projects to achieve the preferred outcome will drive project completion.

4.5.1.4 Updating the Fuels Treatment Plan.

The fuels treatment plan will be updated annually, usually during the annual FMP review period. At the time of updating the fuels plan and an assessment of the effectiveness of completed projects will be accomplished, with the results of the assessment being applied to up-coming projects. The assessment could lead to dropping projects, modifying projects or introducing new projects. This adaptive management approach will assist managers in developing the most effective projects possible under that years funding and staffing constraints.

It is important to note that the LRNRA Superintendent must approve changes to the five year plan. This could be bundled with approval of the fire management plan or included as part of the annual FMP review process. .

4.5.2 General Fuels Management Implementation Procedures

4.5.2.1 Guidance

The LRNRA Fire Management program advocates a long-term fuels management program that may include prescribed fire and non-fire applications and tools (mechanical and manual) for fuel treatment and ecosystem management. Fuel reduction projects would reduce fuel accumulations in and around park developed areas, wildland urban interface zones, in areas experiencing forest health issues (insect & disease outbreaks), near cultural sites, and to a limited extent, maintain historical landscapes where desired by park staff. Prescribed fire would be used in conjunction with mechanical and manual fuel treatments to reduce fuel accumulations, address important forest health issues, and create firebreaks that reduce the resource threats from spread of wildland fires.

All fuels management planning and project implementation will follow RM 18, chapter 7 guidelines.

4.5.3 Prescribed Fire Treatments

4.5.3.1 *Guidance*

Prescribed fire planning and implementation will be in accordance with RM 18 Chapter 7, Fuels Management chapter and Interagency Standards for Fire and Fire Aviation Operations, and the Interagency Prescribed Fire Implementation Procedures Reference Guide. This includes the preparation of prescribed fire burn plans for each treatment unit. Each burn plan will be carefully reviewed and have associated interdisciplinary site visits conducted so that all NEPA, NHPA, and ESA clearances occur before the plan is signed by the superintendent. RM 18 includes all of the important topics and issues that should be incorporated into a prescribed fire burn plan.

4.5.3.2 *Treatment Review*

In order to validate desired prescribed fire outcomes it is important to follow a consistent post-treatment format. The basis for the format is found in RM-18 Chapter 5 – Adaptive Management Process. Development and implementation of a monitoring plan provides valuable feedback to managers concerning Fire Management programs.

4.5.4 Non-Fire Fuel Treatments

Non-fire treatments can be effective in achieving management goals such as hazardous fuels reduction, addressing forest health issues, and facilitation of ecosystem restoration and fire regime maintenance. Many non-fire treatment projects are designed to achieve resource benefits and protection benefits simultaneously. Non-fire fuel treatment projects are designed to modify fuel loadings to a condition where firefighters are more likely to be successful in initial response actions and wildland fires may hit a firebreak or reduction in intensity and impacts. Generally the goal is to modify the fuel bed so an active fire would exhibit flame lengths of 4 feet or less.

Non-fire fuel treatments can be precursor tools used to prepare an area for subsequent prescribed burns, they can be used to significantly reduce fuel loads on their own, they can be actions taken to address significant threats to forest health that are creating extensive fuel loads, or they can be post wildland fire actions that again reduce significant fuel loads before future fires occur.

The treatment tools available include, but are not limited to, mechanical, chemical, biological, and manual methods. Non-fire treatments may be used as an alternative to or in conjunction with prescribed fire applications. Types of non-fire fuel treatments that could occur in LRNRA are:

- Lopping and scattering of fuels
- Mechanical cutting of fuels so they are flush to the ground and readily available during prescribed fire events
- Machine or hand piling of fuels into burn piles or for chipping of fuels
- Mechanical harvesting of large numbers of trees using timber harvesting equipment for felling, bunching, and/or removal of salvageable materials.
- Park specific invasive species eradication project included in this plan would be the cutting, stump treatment, and piling of a number of invasive black locust and

tree of heaven trees into burn piles for future burning. These invasive trees have invaded a number of developed sites throughout the park and specific burn plans will be prepared for each or a suite of sites as treatments occur. The use of fire for other invasive species is not anticipated at this time.

- The park has three historic areas that may benefit from prescribed fire or non-fire fuels treatments in order to protect the historic buildings and other developments. These include sites at Fort Spokane (maintain open grasslands fields), Mission Point (reduce fuel loads around a historic building and numerous archeological sites), and the Old Town of Kettle Falls (dense conifer and black locust tree encroachment into the historic town site – also a significant WUI area).

This FMP also adds a discussion related to a number of salvage options that will be discussed and evaluated in the companion Environmental Assessment document. These include:

- As stated above salvage operations using mechanical tools and manual labor may occur whereby significant amounts of firewood sized wood could be removed by NPS staff, volunteers, charity or non-profit organizations, and/or through firewood collection permits issued by the park superintendent.
- Also noted above would be salvage operations where much of the fuel wood may be removed by contracted timber harvest/removal equipment. The contractor in these cases researches the most economical salvage prices for the wood, documents these expected values in the bid proposal, and reduces the overall project costs accordingly if that bid is accepted. This can include chipping some of the fuels generated and delivery to local cogeneration or other plants.
- One park operation issue that is generating large quantities of fuels in NPS developed areas and along the park boundary is the removal of hazard trees that threaten life or property. Due to significant die-offs of large diameter trees from root fungi, native insect pests, and disease, the park is handling ever increasing amounts of wood that would represent dangerous levels of fuel if left in these developed areas. Fuels generated from hazard tree removal operations will therefore be removed by any of the following: NPS staff, volunteers, charity or non-profit organizations, and/or through firewood collection permits issued by the park superintendent. Much of this wood may be made available and utilized as free firewood in campgrounds.

4.5.4.1 Guidance

Planning and implementation of non-fire fuels management projects will be in accordance with Reference Manual 18, Chapter 7 - Fuels Management.

4.5.4.2 Planning

Planning for non-fire treatment requires problem identification, goal and objective setting, information collection, alternative analysis, action implementation, and evaluation of results. If not already defined in the FMP, the non-fire treatment plan must

be approved by the park superintendent and attached as an appendix to the fire management plan. If the proposed actions are not already covered under a compliance document, then compliance must be completed. In particular, site visits that ensure no ESA or state listed species occur on the treatment unit must be conducted. A park archeologist will also visit each site prior to project initiation to complete a site specific NHPA review that will be sent to the WA State Historic Preservation Office and the two Tribal Historic Preservation Offices for approval. This review will include marking and protection of known sites, mitigation measures that will be taken dependent on the tools and equipment that will be used, and conduct a limited search for any new sites.

Planning standards for non-fire projects is found in RM 18 Chapter 7 section 6 on Non-Fire fuel treatment requirements.

4.5.4.3 Treatment Review

Non-fire treatments also require a review process. The review process involves applicable LRNRA staff and NOCA Fire Staff reviewing documentation of the project, validating objectives, prescriptions and outcomes. Discussion of failures are essential so future projects can be adjusted accordingly. More complete disclosure of the review process is found in RM-18 Chapter 7: *Fuels Management*. NPS website location is as follows: http://www.nps.gov/fire/download/fir_wil_rm18.pdf

4.6 Prevention, Mitigation & Education

Educating the public on the value of fire as a natural process is important to increasing public understanding and support for the fire and fuels management program. The park will actively participate with neighboring agencies and fire departments in developing and implementing fire prevention programs. The development of a risk analysis for the park and adjacent lands will be used to facilitate management decisions on where best to apply limited funds for fire prevention purposes.

Mitigation

Notification to other agencies, fire departments and neighbors of planned fire management activities prior to operations.

Where deemed needed: decreasing fuel loadings near values at risk.

Implementation of closures of LRNRA lands when required due to fire risk.

Limitations on spark producing activities when the industrial fire precaution class warrants the action.

As outlined in the prevention section, emergency closures or restrictions may become necessary during periods of extreme or extended fire danger. The Superintendent has

authority under Title 36 of the Code of Federal Regulations, Section 1.5 to restrict or temporarily close parts of the park.

4.6.1 Prevention/Mitigation

Wildfire prevention is an important component of the park's overall fire communication and education strategy in order to support an integrated wildland fire communication and education program.

The development of a Fire Prevention Analysis and Fire Prevention Plan is required for parks that have over 26 human-caused fires during the last 10 years. A wildland fire risk analysis has been completed for the park and is found in Appendix 7D.13. The wildland fire analysis provides valuable information on the types of human-caused fires that are occurring in the park, where they are and the audience that is responsible. The result is that prevention messages can target the responsible groups and focus enforcement activities towards those groups lowering the incidence rates over time. If required the Prevention Plan format can be found in RM-18.

For more detailed information see: RM-18, Chapter 6 for additional requirements.
http://www.nps.gov/fire/download/fir_wil_rm18.pdf

4.6.2 Communications/Education

Educating the public on the value of fire as a natural process is important to increasing public understanding and support for the fire and fuels management program. The Resource Education division, in coordination with resource and fire staff, has the primary responsibility for providing this education. The U.S. Forest Service, National Interagency Fire Center, and National Park Service fire information-related web sites have a wealth of information about fire and its role as a natural agent. Resource Education can use most of that material unchanged as a great deal of it covers forests or the wildland/urban interface.

The Washington Department of Natural Resources (WA DNR) is preparing a 2020 Strategic Plan for wildland fire prevention. With assistance from local fire districts and conservation districts they promote wise private lands planning focusing on wildland fire protection, the interaction between forest health, wildfire readiness, wildfire prevention and wildfire suppression. One important tool that they and their partners offer and the NPS also promotes is Firewise planning. A host of handouts and planning tools are available from WA DNR offices and their website and other Firewise websites..

LRNRA staff will use the most appropriate and effective means to explain the overall fire management program. This may include supplemental handouts, signage, personal contacts, or media releases. Interpretive presentations deemed necessary will address the fire management program and explain the role of fire in the environment. Fire and natural resource staff will offer site visits and Firewise planning assistance to neighbors when staffing/funding allows. During periods of High Fire Danger, notices will be posted at Visitor Centers, at site bulletin boards, on the park website, and posted to park social

media sites. During Extreme Fire Danger periods, all fires are prohibited, including the use of fire grates, grills, and stoves. Restrictions and closures of site areas may be deemed necessary. Interpretive activities will include a fire safety message. Material developed to document the park's use of prescribed fires will continue to be saved, improved, and developed.

Prior to the lighting of any planned ignition, the Superintendent, through the Chief of Resource Education or other designated staff person, will make information available to visitors, local residents, and the press about what is scheduled to happen in the site and why. On-site information will be provided to alleviate visitor concern about the apparent destruction of site resources by fire or the impairment of views due to temporary smoke. This information will include prescribed burn objectives and control techniques, current fire location and behavior, effects caused by the fire, impacts on private and public facilities and services, and restrictions and closures within the site.

As outlined in the prevention section, emergency closures or restrictions may become necessary during periods of extreme or extended fire danger. The Superintendent has authority under Title 36 of the Code of Federal Regulations, Section 1.5 to restrict or temporarily close parts of the park.

The goals of the fire prevention and education program(s) include:

- 1) Inform the public and employees about NPS fire management concepts and practices, including cooperation with the local fire departments and coordination with other agencies in the area.
- 2) Educate the public on the natural role of wildfire within the ecosystem, and reinforcing the importance of fire prevention planning.
- 3) Integrate fire prevention information and public education into other park programs (such as Interpretation and Education)

Objectives: In order to obtain these goals the park will:

- Provide critical information on the role of fire in ecosystems and the need for hazardous fuel reduction to reduce threats from wildland fire to human lives and property.
- Provide tools for public contact personnel to explain to all audiences the purpose, findings and recommendations of the Fire Management Plan.
- Provide employees with regular, concise, informative and timely updates on fire program developments, information on fire education, reports on wildland and prescribed fires, and other such information deemed necessary to keep them current on fire management issues.

Actions: Joint strategies for the public information and education program include the following:

- Develop and establish a proactive process that disseminates current and accurate fire information to a network of contacts in agency staffs, the general public and media outlets.

- Continue to incorporate the principles of the role of fire in the LRNRA's ecosystem and the importance of fire as a resource management tool into park web pages, interpretive programs, exhibits, periodicals, brochures, and on park social media sites.
- Forward all fire-related press releases to the Resource Education Program Manager and/or the superintendent and keep members of the headquarters staff well informed of fire activity.
- Utilize temporary roadside exhibits to transmit key messages especially during prescribed fire events.
- Inform all audiences that the NPS continues to stress that public and firefighter safety is the agency's number one priority.
- Develop prevention plans to reduce the number of human-caused ignitions.

4.7 Air Quality/Smoke Management

Air quality in the Pacific Northwest region is very good compared to other areas of the United States (Eilers et al., 1994). Principal air masses for the region are derived from the atmosphere over the Pacific Ocean where the air is clean and moist. Clean air and visibility of scenic vistas are important resource values to be protected in LRNRA. Fire management activities have the potential to impact these resource values and it is therefore imperative that air quality and visibility be given full consideration in all fire management planning and operations.

The objectives for smoke management and compliance within the Clean Air Act are similar to those for fire management: to encourage a natural process so long as it does not endanger public health and safety. The Washington Department of Ecology will set the gross parameters for public health. Washington Department of Ecology has the responsibility for management and oversight of the state air quality program. Washington State Department of Natural Resources is responsible for implementation of the forest management smoke/burning program.

Washington Department of Ecology maintains air quality monitoring stations throughout Washington State. The closest air quality monitoring station is in Kettle Falls; there are none in LRNRA proper.

Smoke levels become unacceptable when they impair visibility to such a degree that they detract from visitor enjoyment of the primary LRNRA resource with emphasis on the vistas of LRNRA. Dense smoke within LRNRA is generally unacceptable; however, it may be tolerated for short periods if the winds assure good mixing. LRNRA will also evaluate the forecasted impact of smoke on local communities and visitor safety.

Management of smoke from prescribed burns will be two-fold. First a plume prediction will be completed, with a preferable zone of impact indicated as part of the prescribed burn plan. Secondly park managers will follow Washington State SIP guidelines for obtaining permission from the DNR for determining project implementation days and

will monitor predicted impacts from smoke from the prescribed burn, outside of the project area.

It may be necessary to extinguish ongoing prescribed fires when smoke affects a sensitive area or creates a significant negative public response. All fire activities may have to be curtailed when an extended inversion or air pollution episode is in effect. Appropriate suppression response to wildland fires will consider air quality concerns. Complaints regarding smoke will be documented and communicated to the Park FMO and Superintendent.

Prescribed burns would result in minor to moderate, short-term adverse impacts to area air quality during the duration of the burn. The use of vehicles and mechanized equipment could generate fumes in the form of smoke and exhaust from the use of fossil fuels, and generate dust and particulate matter. Smoke consists of dispersed airborne solids and liquid particulates that could remain suspended in the atmosphere for a few days to several months. Particulates can reduce visibility and contribute to respiratory problems. Very small particulates can travel great distances and add to regional haze problems. Regional haze can sometimes result from multiple burn days and/or multiple owners burning within an air shed over too short a period of time to allow for dispersion.

Protection measures

The Washington State Department of Natural Resources Smoke Management office in Olympia, Washington provides smoke management guidance for Washington State. Smoke permits are required when burning over 100 tons of vegetative debris. Coordination with the DNR and local fire jurisdictions is crucial to minimizing impacts to air quality. All burning in Washington State units will be reported using the BASS web based or most current reporting system.

The implementation plan has a twofold aim: (1) prevent smoke from prescribed burns from accumulating in smoke-sensitive receptor areas, or SSRAs (designated cities or populated areas), as well as other areas determined to be sensitive to smoke, and (2) provide maximum opportunity for essential prescribed burning while minimizing emissions impacts.

4.7.1 Air quality issues

LRNRA is a designated Class II for air quality considerations. Pasayten Wilderness to the west and Glacier National Park, to the east are Class I airsheds. The Spokane Tribal Reservation is also designated a Class I airshed and requires additional consideration since it lies in the center of the reservoir and along the entire north half of the Spokane Arm of the reservoir. A concern with smoke intrusions into British Columbia, Canada is also a consideration, as well as the Greater Spokane Area. The park lies within a federal and a state designated air quality attainment area, a geographic area in which the quality of the air is better than the applicable national ambient air quality standards. The Fire Management Plan will be in compliance with the Clean Air Act as amended in 1977 and

Washington State emission standards for open burning. Reference to Washington State SIP guidelines is in Appendix 7D.11

4.7.2 Smoke Management Program

The Washington DNR manages the state's smoke management program. They also issue smoke/burning approvals when burning of over 100 tons of vegetative debris will occur. LRNRA will abide by the rules and regulations delineated in the Washington Smoke Implementation Plans (SIPs) and obtain all required smoke approvals prior to implementing a prescribed burn. Reference website:
http://www.dnr.wa.gov/Publications/rp_burn_smptoc.pdf.

4.8 Data & Records Management

Records and data management concerning information in the fire management program is very important. Considerable time and effort are expended in gathering and managing records concerning: wildfires, prescribed fires, mechanical fuels reduction projects, budget analysis, personnel training and personnel qualifications.

It is important that required documentation is completed in a timely manner, as accurately as possible. Data should be available through normal accessing procedures, using the required standards for input.

One of the most critical areas of reporting is that associated with wildfire operations. Maintenance of decision documentation, fire spatial data and other information associated with a wildfire requires a formalized system of record keeping. Much of this information is contained in the *Interagency Incident Business Management Guide*.

Ultimately the Fire Management Officer is responsible for ensuring data entry is completed. Table 5 summarizes current data entry needs.

Table 5: Current Data Entry Needs

Data Entry Report	Responsible Position	Timeframe
<i>NFPORS</i>	Fuels Specialist	<i>March 10/ post completion</i>
<i>WFMI</i>	FMO	<i>Post –Fire Season</i>
<i>Smoke reporting</i>	Fuels Technician/burn boss	<i>Prior to project/post completion</i>
<i>Budget</i>	FMO	<i>Winter</i>
<i>Fire Reports</i>	IC	<i>Post Fire – 3 days</i>
<i>Personnel Qualifications</i>	FMO	<i>Post-Fire Season</i>
<i>Monitoring Reports</i>	Fuels Technician	<i>Post – project</i>
<i>WFDSS</i>	FMO	<i>Pre-season, during incident</i>
<i>Project plans</i>	Fuels specialist	<i>Pre/post project implementation</i>

4.9 Organizational & Budgetary Parameters

The Fire Management Program Center (FMPC), National Interagency Fire Center, will issue an annual budget structure and allocation report to LRNRA, through NOCA. Allocated amounts will be entered in the Federal Finance System (FFS) at the allocation (ALCT) level by the FMPC for the following activities: Preparedness, Burned Area Rehabilitation, Hazardous Fuels Reduction, Wildland Urban Interface, and Rural Fire Assistance. LRNRA will stay within the line item spending authority for each activity until additional funding is requested and approved.

The WASO Budget Office covers Emergency Suppression, Use of Wildland Fire and Emergency Stabilization obligations and expenditures at the regional allotment (ALOT) level at year-end. Expenditures in the Emergency Suppression and the Burned Area Rehabilitation Activities are tracked through unique project accounts using the Fire Code guidelines.

The Fire Program Analysis System (FPA) replaces the previous NPS FIREPRO planning and budgeting program. FPA will also replace the fire planning and budgeting systems in use by four other federal land management agencies. FPA implementation is being phased in, with interim budgeting processes in effect.

The NOCA Fire Staff will be responsible for developing/tracking fire related budgets at LRNRA.

The following is the organizational structure and duties of positions associated with fire management at LRNRA.

Park Superintendent

Role previously discussed in staffing section, 4.3.1.4, on page 38

LRNRA Fire Management Officer

- Sets goals and objectives for the wildland fire program, including staff supervision.
- Ensures LRNRA has the capability and skills to safely implement wildland fire programs as identified in the fire management plan.
- Ensures all personnel are qualified and tracks qualifications and experience using IQCS.
- Establish liaison with cooperating agencies, and coordinates and maintains cooperative agreements.
- Monitors fire danger and recommends fire restrictions in concert with neighboring agencies.
- Coordinates with LRNRA staff on fire management actions and issues.
- Monitors actions taken on wildland fires, and ensures proper and adequate documentation.
- Approves Fire Report ensuring proper preparation and submission to WFMI.

- Initiates taskbooks for wildland fire positions and certifies completion.
- Formulates and directs the budget accountability program for preparedness, hazard fuels operations, emergency fire accounts and approves all FPA expenditures.
- Prepares WFDSSs as needed.
- Reviews all burns plans for prescribed fires.
- Reviews procedures for off-unit dispatches of park personnel.

Fuels/Prescribed Fire Specialist

- Prepares prescribed burn plans and fuel reduction plans and inputs information to NFPORS for NOCA and LRNRA.
- Provides input into five-year fuels treatment plans for NOCA and LRNRA.
- Conducts prescribed burns as Burn Boss or secures another qualified person.
- Coordinates prescribed fire and mechanical hazardous fuels reduction operations for NOCA and LRNRA.
- Serves as Incident Commander or other capacity on wildland fires per qualifications.
- Manages National Fire Plan Operating and Reporting System (NFPORS) data entries for NOCA and LRNRA.
- Develops and prioritizes projects, submits projects for funding and prepares compliance documentation.
- Serves as acting FMO and Fire Duty Officer as needed.
- Coordinates, prioritizes and schedules the work of the NOCA Hazardous Fuels Reduction Crew within the parks and elsewhere as requested.
- Coordinates project planning in consultation with other park divisions where necessary for resource protection and continuity of operations.
- Responsible for the development, coordination, and dissemination of internal and external communication of fire management program activities in the region.
- Supports fire management program activities at the regional and national levels through fire education and information.
- Assists developing and managing partnerships and projects which expand fire education capacity.
- Responds to public inquiries about prescribed fire and wildfire as requested.
- Serves as an interdisciplinary team member to integrate fire management, resource protection, and public education.

Fuels Crew supervisor

- Assist with planning and implementation of LRNRA project work.
- Oversee crew activities related to hazard fuels work; act as project lead when working on site.
- Works with community stakeholders and various local, state, and federal agencies to provide fire education and information.
- Serves as Incident Commander or other capacity on wildland fires per qualifications.
- Assists with monitoring of all fire management activities.

Assistant Crew Leader

- Ensures personnel and equipment readiness and capability for safe initial response.
- Assists with annual refresher training.
- Leads NOCA fire crews in daily readiness activities, including fire safety briefings.
- Supervises temporary fire technicians in fuels treatment implementation.

Shared Positions

Fire Education and Information Specialist (Support will be requested when needed as this position does not currently exist.

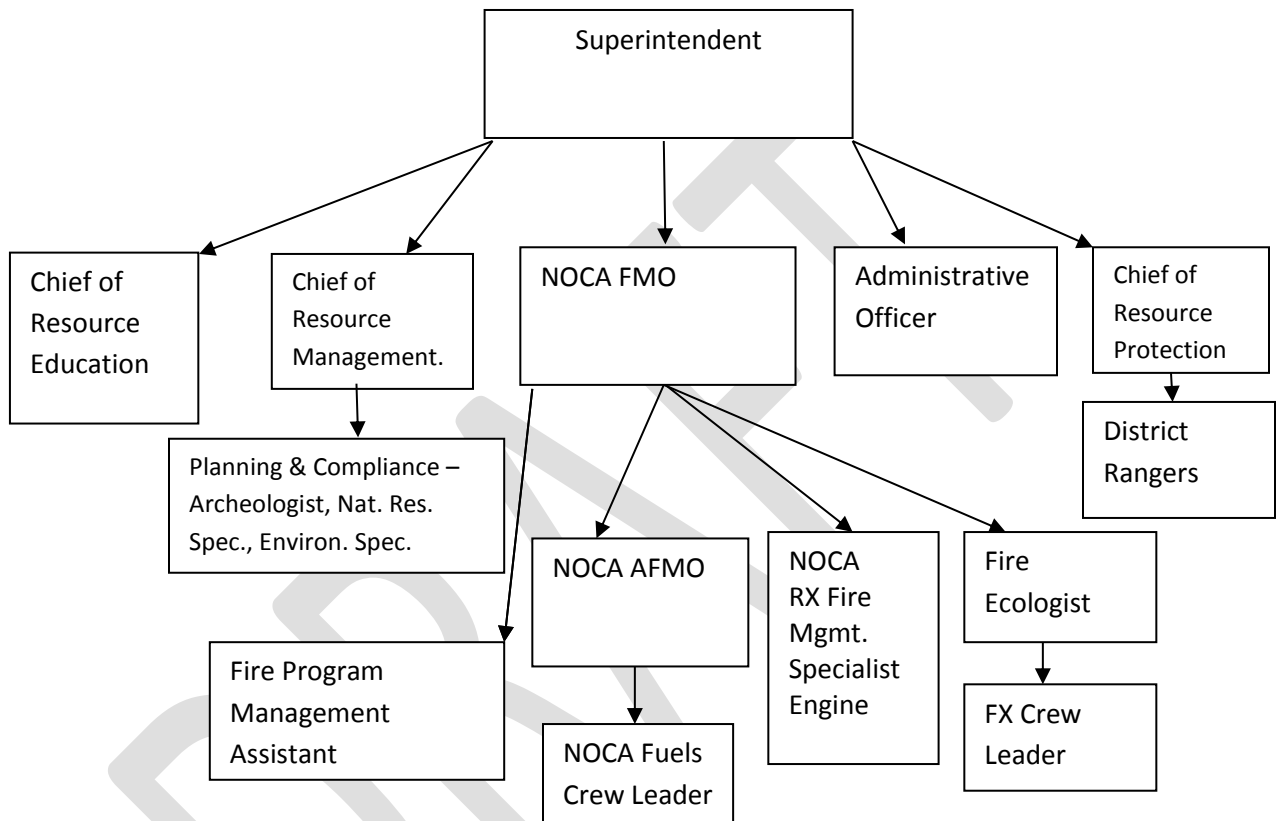
Fire Ecologist

- Manages and analyzes fire effects data.
- Manages and refines monitoring program including the communication of measurable objectives, monitoring schedules, protocols and data analysis procedures. Writes the fire monitoring plan.
- Hires, trains, and supervises fire effects monitors.
- Assist with writing prescribed fire objectives and prescriptions for burning.
- Provides expertise on the role of fire in ecosystems and advice on how fire can be used to accomplish management objectives.
- Oversees long-term fire ecology planning.
- Identifies research needs, solicits researchers, writes proposals, and applies for funding for research projects.
- Serves as a liaison between fire managers and resource management at host and cluster parks.
- Contributes to and reviews compliance and other management documents.

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Illustration 1: LRNRA Fire Organization

LRNRA Fire Organization



Duty Officer

Duty officers are essential for implementing initial responses to emerging incidents. The duty officer initiates contacts with cooperators for suppression response. Duty officer responsibilities may be performed by any individual with a signed Delegation of Authority from the local agency administrator. However, it is preferable to have a duty officer that is ICT3 qualified, but a minimum of ICT4. Duty Officers serve on a predetermined rotation, with coverage extended during park closure periods.

Clarification of the roles and expectations has or will be developed in memorandums of understanding and agreements between the NPS and local cooperators. Discussion of these agreements is shown in Appendix 7: Preparedness Activity Elements.

5 Adaptive Management Strategy

The fire management organization is committed to developing a program that delivers consistent management desired results in all of their projects. Much of the information fire managers utilize to plan projects results in a range of outcomes. If the outcome is positive fire managers, through monitoring of environmental/fuels conditions, can use that documentation to duplicate the outcome when desired in the future.

If the outcome is negative, again by analyzing monitoring data, a fire manager can modify future planning prescriptions to steer away from negative outputs. The ability to make mid-course changes of philosophy and implementation strategies in response to changing information on fire effects is the heart of adaptive management.

Adaptive management is an iterative learning process requiring continual evaluation of the results of management actions and the associated management objectives. The NPS Fire Management Program is committed to implementing adaptive management across the spectrum of fire management activities. Adaptive management consists of several steps including:

- *Setting clear, meaningful fire management objectives*
- *Designing fire management activities that will accomplish objectives*
- *Implementing the fire management actions using best available knowledge and practices*
- *Monitoring to determine whether outcomes meet objectives*
- *Evaluating and adjusting management activities and/or objectives as needed based on outcomes/monitoring*
- *Initiating new research as needed to fill in knowledge gaps.*
- *Communicating results, new information, and changes in management activities or objectives to all stakeholders.*

Source for the following information: DOI Adaptive Management Initiative Website
<http://www.doi.gov/initiatives/AdaptiveManagement/whatis.html>

Adaptive management focuses on learning and adapting, through partnerships of managers, scientists, and other stakeholders who learn together how to create and maintain sustainable ecosystems.

Adaptive management:

- *helps managers maintain FLEXIBILITY in their decisions, knowing that uncertainties exist and provides managers the latitude to change direction*
- *will improve UNDERSTANDING of ecological systems to achieve management objectives*
- *is about taking ACTION to improve progress towards desired outcomes*

5.1 Fire Management Objectives

The first and most important step in adaptive management is determining clear objectives for the fire management program and the resource conditions that are affected by fire management activities. Fire management objectives are listed in section 3.1.1. Through the fire management planning process, program activities are designed and implemented to meet these objectives.

Desired resource conditions are necessary to formulate clear objectives in order to determine if fire management activities are having the intended effects on the ecosystem. These desired conditions will come from LRNRA RMP/Vegetation Management Plans. NOCA Fire management staff will work with LRNRA resource management staff to develop fire-related desired resource conditions so that the adaptive management process is effective.

Fire management goals and objectives are found in section 3.1.1 of the LRNRA FMP.

5.2 Monitoring

Monitoring is not only part of the adaptive management process, but also a fundamental NPS management policy to be fulfilled. The 2006 NPS Management Policies. Section 4.5, states that:

“Naturally ignited and human-ignited fires managed to achieve resource management and fuel treatment objectives.... Such fires will also include monitoring programs that record fire behavior, smoke behavior, fire decisions, and fire effects to provide information on whether specific objectives are met and to improve future fire management strategies.”

Monitoring is an essential component of a successful fire management program. LRNRA will follow the monitoring protocols developed for all operations. The monitoring program is engrained in NPS fire management operations and much has been learned since its inception. Reference the *NPS Fire Monitoring Handbook* for details of the program. Also work closely with other resource specialist in monitoring park “vital signs” as depicted in the NPS Inventory and Monitoring Program. Monitoring protocols are cumulative, depending on the stage of monitoring. The following is brief review of the stages:

Monitoring protocols define and establish levels of monitoring activity relative to fire and resource management objectives and fire management strategies. At each successive level, monitoring is more extensive and complex; the levels are cumulative, requiring users to include all levels below the highest specified:

- Level 1 - Environmental Monitoring
- Level 2 - Fire Conditions
- Level 3 - Short-term Change
- Level 4 - Long-term Change

Procedures and recommended frequencies for monitoring and analysis are specified for each level.

5.3 Evaluation

Monitoring processes are meaningless without a formalized process of evaluation. The type of evaluation is dependent upon the monitoring data. Refer to the NPS Fire Monitoring Handbook for definitive methodologies of evaluation

5.4 Fire Research

Existing research pertinent to NE Washington flora and fauna will be examined to aid in determining desired ecological conditions, developing appropriate management goals and objectives, determining fire management actions, and writing appropriate treatment plans. Strength of the adaptive management process allows managers to incorporate research findings as another link in refining land management objectives, and modifying management actions and/or treatment objectives.

A critical need outlined as an objective in this 2013 FMP is the need for fire researchers to research and monitor for significant potential impacts from climate change. The long, linear nature of the park and nearly 100 mile north-south run of the reservoir/river makes it a potentially important site for monitoring changes in forest composition and health due to climatic changes. Fire research may be an important tool that provides a warning of potential impacts from climate change that could promulgate forest health and plant community species changes on a large scale. This may include large scale insect and disease outbreaks from warmer temperatures, significant changes in precipitation patterns and amounts, climate change related tree die-offs and shifts in species distribution, and/or significant impacts from non-native and invasive plant and insect species benefitted by climate change

Fire managers working with LRNRA staff will utilize pertinent research options and regional/local research results and reports to adjust project monitoring objectives and implementation procedures.

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Appendix 2 Wildland Fire Definitions

A comprehensive compilation of wildland fire terms is found at: <http://www.nwcg.gov/pms/pubs/glossary/pms205.pdf>. The following is a selection of terms frequently utilized in fire management plans.

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 to guide wildland fire management actions and meet protection and fire use objectives.

Contain – To surround a fire, and any spot fires, with control line as needed, which can reasonably be expected to check the fire's spread under prevailing and predicted conditions.

Confine – To limit fire spread within a predetermined area principally by use of natural and pre-constructed barriers or environmental conditions. Suppression action may be minimal and limited to surveillance or monitoring under appropriate conditions.

Control – To complete a control line around a fire, any spot fires, and any interior islands to be saved and cool down all hot spots that are immediate threats to the control line.

Disputed Fire Management Responsibility – Any wildland fire where responsibility for management is not agreed upon due to lack of agreements or different interpretations, etc.

Disputed fire policy – Differing fire policies between suppression agencies when the fire involves multiple ownership is an example.

Energy Release Component – A number that expresses the rate of heat release (in BTUs / sec) per unit area (in square feet) within the flaming zone of the fire.

Expected Weather Conditions – Weather conditions indicated as common, likely, or highly probable based on current and expected trends and their comparison to historical weather records. These are the most probable weather conditions for this location and time.

Experienced Severe Weather Conditions – Weather conditions that occur infrequently, but have been experienced during the period of weather records. For example, rare weather conditions that significantly influence fires may have occurred only once, but their record can be used to establish a baseline for worst case scenario.

Extended Exposure to Unusually Hazardous Line Conditions – Extended burnout or backfire situations, rock slides, cliffs, extremely steep terrain, abnormal fuel situations such as frost-killed foliage, etc.

Fire Frequency – The historic return interval of fire in a defined environment.

Fire Management Area (FMA) – A geographic area within a Fire Management Unit that represents a pre-defined ultimate acceptable management area for a fire managed for resource benefits. This pre-define area can constitute a Maximum Manageable Area (MMA)n and is useful for those units having light fuel types conducive to rapid fire spread rates.

Fire Management Plan (FMP) – 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 plans such as preparedness plans, preplanned dispatch plans, prescribed fire plans and prevention plans.

Fire Management Unit (FMU) – Any land management area definable by objectives, topographic features, access, values to be protected, political boundaries, fuel types, major fire regimes, etc., that sets it apart from the management characteristics of an adjacent unit. FMU's are delineated in Fire Management Plans.

Holding Actions – Planned actions required to achieve wildland and prescribed fire management objectives.

Initial Response – An aggressive suppression consistent with firefighter and public safety and values to be protected.

Management Action Points – (also called “Trigger Points”)-Either geographic points on the ground or specific points in time where an escalation or alteration of management actions is necessitated. These points are defined and the management actions taken are clearly described in an approved Wildland Fire Plan (WFIP) or Prescribed Fire Plan. Timely implementation of the actions when the fire reached the action point is generally critical to successful accomplishment of the objectives.

Maximum Manageable Area (MMA) – The firm limits of management capability to accommodate the social, political, and resource impacts of a wildland fire. Once established as part of an approved plan, the general impact area is fixed and not subject to change.

Mitigation Actions – On-the-ground activities that will serve to increase the defensibility of the Maximum Manageable Area, check, direct, or delay the spread of fire, and minimize threats to life, property, and resources. They can include mechanical and physical non-fire tasks, specific fire applications and limited suppression actions. These actions will be used to construct firelines, reduce excessive fuel concentrations, reduce vertical fuel continuity, create fuel breaks or barriers around critical or sensitive sites or

resources, create “blacklines” through controlled burnouts, and to limit fire spread and behavior.

Potential for Blow-up Conditions – Any combination of fuels, weather and topography excessively endangering personnel.

Preparedness – Activities that lead to a safe, effective, and cost effective fire management program in support of land and resource management objectives through appropriate planning and coordination. This term replaces pre-suppression.

Pre-existing controversies – These may or may not be fire management related. Any controversy drawing public attention to an area may present unusual problems to the fire overhead and local management.

Prescribed Fire – Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

Prescribed Fire Plan – A plan required for each fire ignited by managers. It must be prepared by qualified personnel and approved by appropriate Agency Administrator prior to implementation.

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

Smoke Management – Any situation which creates a significant public response, such as smoke in a metropolitan area or visual pollution in high-use scenic areas.

Threatened and Endangered Species – Threat to habitat of such species, or in the case of flora, threat to the species itself.

Use of Wildland Fire – The management of wildland fires to accomplish specific, pre-stated resource management objectives in pre-defined geographic areas as outlined in the Fire Management Plan.

Wildfire – An unwanted wildland fire.

Wildland Fire – Any non-structure fire, that occurs in the wildland. This term encompasses fires previously called both wildfires, prescribed natural fires and prescribed fires.

Wildland Fire Management Program – The full range of activities and functions necessary for planning, preparedness, emergency suppression operations, and emergency rehabilitation of wildland fires, and prescribed fire operations including non-activity fuels management to reduce risks to public safety and restore and sustain ecosystem health.

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Wildland Fire Decision Support System (WFDSS) – A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economic, political, and resource management objectives.

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Appendix 3 Current Species of Concern

Priority Species

INVERTEBRATES

MOLLUSKS

Bivalves (Bivalva)

Common Name	Scientific Name	Status	Counties
California Floater	<i>Anodonta californiensis</i>	State: Candidate Federal: SOC	Ferry, Lincoln, Stevens



ANTHROPODS

Butterflies (Lepidoptera)

Common Name	Scientific Name	Status	Counties
Silver-bordered Fritillary	<i>Boloria selene atrocostalis</i>	State: Candidate	Ferry, Lincoln, Stevens



VERTARATES

FISH

Minnow (Cyprinidae)

Common Name	Scientific Name	Status	Counties
Lake Chub	<i>Couesius plumbeus</i>	State: Candidate	Stevens



Umatilla Dace	<i>Rhinichthys umatilla</i>	State: Candidate	Ferry, Stevens
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Trout, Salmon, Whitefish (Salmonidae)

Common Name	Scientific Name	Status	Counties
Bull Trout/Dolly Varden	<i>Salvelinus confluentus/</i> <i>S. malma</i>	State: Candidate Federal: Threatened	Ferry, Lincoln, Stevens



ANPHIBIANS

Frogs and Toads (Anura)

Common Name	Scientific Name	Status	Counties
Columbia Spotted Frog	<i>Rana luteiventris</i>	State: Candidate	Ferry, Lincoln, Stevens



Western Toad	<i>Anaxyrus boreas</i> (formerly <i>Bufo boreas</i>)	State: Candidate Federal: SOC	Ferry, Lincoln, Stevens
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REPTILES

Snakes and Lizards (Squamata)

Common Name	Scientific Name	Status	Counties
Sagebrush Lizard	<i>Sceloporus graciosus</i>	State: Candidate Federal: SOC	Lincoln



Striped Whipsnake	<i>Masticophis taeniatus</i>	State: Candidate	Lincoln
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BIRDS

Marine Birds

Common Name	Scientific Name	Status	Counties
American White Pelican	<i>Pelecanus erythrorhynchos</i>	State: Endangered	Lincoln



Common Loon	<i>Gavia immer</i>	State: Sensitive	Ferry, Stevens
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Western Grebe	<i>Aechmophorus occidentalis</i>	State: Candidate	Ferry, Lincoln, Stevens
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Hawks, Falcons, and Eagles (Falconiformes)

Common Name	Scientific Name	Status	Counties
Bald Eagle	<i>Haliaeetus leucocephalus</i>	State: Sensitive Federal: SOC	Ferry, Lincoln, Stevens



Ferruginous Hawk	<i>Buteo regalis</i>	State: Threatened Federal: SOC	Lincoln
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Golden Eagle	<i>Aquila chrysaetos</i>	State: Candidate	Ferry, Lincoln, Stevens
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Merlin	<i>Falco columbarius</i>	State: Candidate	Ferry, Lincoln, Stevens
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Northern Goshawk	<i>Accipiter gentilis</i>	State: Candidate	Ferry, Stevens
		Federal: SOC	



Peregrine Falcon	<i>Falco peregrinus</i>	State: Sensitive	Ferry, Lincoln, Stevens
		Federal: SOC	



Upland Game Birds (Galliformes)

Common Name	Scientific Name	Status	Counties
Sage Grouse	<i>Centrocercus urophasianus</i>	State: Threatened	Lincoln
		Federal: Candidate	



Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	State: Threatened	Lincoln
		Federal: SOC	



Cranes (Gruiformes)

Common Name	Scientific Name	Status	Counties
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Sandhill Crane	<i>Grus canadensis</i>	State: Endangered	Lincoln
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Shorebirds (Charadriiformes)

Common Name	Scientific Name	Status	Counties
Upland Sandpiper	<i>Bartramia longicauda</i>	State: Endangered	Ferry, Lincoln, Stevens



Cuckoos (Cuculiformes)

Common Name	Scientific Name	Status	Counties
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	State: Candidate Federal: Candidate	Ferry, Lincoln, Stevens



Owls (Strigiformes)

Common Name	Scientific Name	Status	Counties
Burrowing Owl	<i>Athene cunicularia</i>	State: Candidate Federal: SOC	Ferry, Lincoln



Flammulated Owl	<i>Otus flammeolus</i>	State: Candidate	Ferry, Lincoln, Stevens
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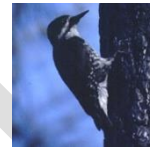
Swifts (Apodiformes)

Common Name	Scientific Name	Status	Counties
Vaux's Swift	<i>Chaetura vauxi</i>	State: Candidate	Ferry, Lincoln, Stevens



Woodpeckers (Piciformes)

Common Name	Scientific Name	Status	Counties
Black-backed Woodpecker	<i>Picoides arcticus</i>	State: Candidate	Ferry, Lincoln, Stevens



Lewis Woodpecker	<i>Melanerpes lewis</i>	State: Candidate	Ferry, Lincoln, Stevens
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Pileated Woodpecker	<i>Dryocopus pileatus</i>	State: Candidate	Ferry, Lincoln, Stevens
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White-headed Woodpecker	<i>Picoides albolarvatus</i>	State: Candidate	Ferry, Lincoln, Stevens
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Perching Birds (Passeriformes)

Common Name	Scientific Name	Status	Counties
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Loggerhead Shrike	<i>Lanius ludovicianus</i>	State: Candidate	Lincoln
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Sage Sparrow	<i>Amphispiza belli</i>	State: Candidate	Lincoln
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Sage Thrasher	<i>Oreoscoptes montanus</i>	State: Candidate	Lincoln
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MAMMALS

Shrews (Insectivora)

Common Name	Scientific Name	Status	Counties
Merriam's Shrew	<i>Sorex merriami</i>	State: Candidate	Lincoln



Preble's Shrew	<i>Sorex preblei</i>	State: Candidate	Ferry, Lincoln
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Bats (Chiroptera)

Common Name	Scientific Name	Status	Counties
Townsend Big-eared Bat	<i>Corynorhinus townsendii</i>	State: Candidate Federal: SOC	Ferry, Lincoln, Stevens



Rabbits (Lagomorpha)

Common Name	Scientific Name	Status	Counties
Black-tailed Jackrabbit	<i>Lepus californicus</i>	State: Candidate	Lincoln



Pygmy Rabbit	<i>Brachylagus idahoensis</i>	State: Endangered	Lincoln
		Federal: Endangered	



White-tailed Jackrabbit	<i>Lepus townsendii</i>	State: Candidate	Ferry, Lincoln
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Rodents (Rodentia)

Common Name	Scientific Name	Status	Counties
Washington Ground Squirrel	<i>Urocitellus washingtoni</i> (formerly <i>Spermophilus washingtoni</i>)	State: Candidate Federal: Candidate	Lincoln



Terrestrial Carnivores (Carnivora)

Common Name	Scientific Name	Status	Counties
Fisher	<i>Martes pennanti</i>	State: Endangered Federal: Candidate	Ferry, Stevens



Gray Wolf

Canis lupus

State:
Endangered

Federal:
Candidate

Ferry, Stevens



Grizzly Bear

Ursus arctos

State:
Endangered

Federal:
Threatened

Ferry, Stevens



Lynx

*Lynx
canadensis*

State:
Threatened

Federal:
threatened

Ferry, Stevens



Wolverine

Gulo gulo

State:
Candidate

Federal: SOC

Ferry, Stevens



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Appendix 4

Compliance Documentation for FMP

Appendix 4A: List of Individuals and Organizations Consulted During Plan Development

Appendix 4B: List of Contributors and Reviewers

Appendix 4C: Environmental Compliance: FONSI

Appendix 4D: NHPA (Sec 106)

Appendix 4E: ESA (Sec 107)

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Appendix 4A

Consultation and Coordination

The following individuals were consulted concerning elements of this plan:

Consultants

Robin Wills, Pacific West Regional Fire Ecologist

Corky Conover, Pacific West Region Fuels Specialist

Jeff Manley, NPS National Fire Planner

Alan Schmierer, NPS Pacific West Region Compliance Coordinator

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Appendix 4B

List of Contributors and Reviewers

The park consulted with regional Fire Staff and other resource management specialists within the NPS concerning the role of fire management in the park.

Contributors and Reviewers of this plan include:

Name	Position
Ken Hyde	LRNRA Chief of Resource Management
Tonya Neider	LRNRA Prescribed Fire Management Specialist
Jon Edwards	LRNRA Environmental Protection Specialist
Karen Kopper	Zone Fire Ecologist
Robin Wills	Regional Fire Ecologist
Corky Conover	Pacific West Region Fuels Specialist
Mark Dupre	Regional GIS Specialist
Jeff Manley	NPS National Fire Planner
Dee Townsend	North Cascades NP Fire Management Officer
Scott Ebel	North Cascades NP Assistant Fire Management Officer, Suppression
Rick Smedley	Senior Fire Management Specialist, ELYON International, Vancouver, WA

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Appendix 4C

Environmental Compliance

Lake Roosevelt National Recreation Area Fire Management Plan Environmental Assessment is found in the fire management files located on the park share drive. They are also included on the NPS PEPC website. The FONSI for the FMP EA was approved and signed **DATE**.

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Appendix 4D
NHPA (Section 106)

National Historic Preservation Act compliance is found in the LRNRA Fire Management Plan Environmental Assessment (**DATE**) and the associated FONSI (**DATE**).

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Appendix 4E
ESA (Section 7)

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Federal Threatened, Endangered, and Sensitive Species:

Table 6: Federal Managed Species

Common Name	Scientific Name	Status	Notes
Mammals			
Grizzly Bear	<i>Ursus arctos horribilis</i>	Federally Endangered State Endangered	Recent Sightings Stevens
Gray Wolf	<i>Canis lupus</i>	Federally Endangered State Endangered	Recent Monitoring by WDFW Ferry/Stevens
Canada Lynx	<i>Lynx canadensis</i>	Federally Endangered State Threatened	Reported from northern end of Lake Roosevelt
Plants			
Ute Ladies' -tresses	<i>Spiranthes diluvialis</i>	Federally Endangered	
Spalding's Silene	<i>Silene spaldingii</i>	Federally Endangered	

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Appendix 5

Proposed Multi-Year Fuels Treatment Plan

The multi-year proposed fuels treatment plan is a moving window of proposed treatments, subject to change annually depending upon weather and site conditions, funding availability, as well as recent fire occurrence. The current NEPA approved list of proposed projects is found in Appendix 5 of the 2014 LRNRA FMP EA.

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Appendix 6

2014 LRNRA Wildland Fire Monitoring Plan

The 2014 LRNRA Wildland Fire Monitoring Plan hard copy is located in the Fire Office located at Kettle Falls and a copy is located at the North Cascades NP Fire Office. A digital copy is located on the share drive located at both parks under the fire folder.

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Appendix 7

Preparedness Activity Elements

Appendix 7A: Programmatic Delegation of Authority: Superintendent to Wildland Fire Management Lead

Appendix 7B: Agency Administrator's In-Coming Team Briefing

Appendix 7C: Delegation of Authority: Park Superintendent to Incident to Incident Management Team

Appendix 7D: Initial Response Plan Elements

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Appendix 7A

Programmatic Delegation of Authority: Superintendent to Wildland Fire Management Lead

Interpark Operating Agreement

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INTERPARK OPERATING AGREEMENT

Between

NORTH CASCADES NATIONAL PARK SERVICE COMPLEX

And

LAKE ROOSEVELT NATIONAL RECREATION AREA

This AGREEMENT is hereby entered into by and between North Cascades National Park Service Complex, hereinafter known as NOCA and Lake Roosevelt National Recreation Area, hereinafter known as LARO.

1. Purpose

The primary purpose of this agreement is to establish a vehicle for understanding roles and responsibilities for assisting LARO by NOCA fire staff for the planning, implementation and upward reporting of fuels treatment and defensible space projects on LARO lands. The secondary purpose of this agreement is to provide an understanding of how NOCA will support LARO with fire suppression - related activities.

1.1 Line Officer Program accountability

The Superintendents at Lake Roosevelt National Recreation Area and the North Cascades Park Service Complex each maintain their current organizations and levels of accountability.

2. Fuels management planning and operations

All planning, implementation, monitoring and upward reporting of LARO fuel reduction projects will be carried out by NOCA staff. NOCA staff will request assistance from LARO Resource Management staff for logistical help and public notification as needed during project implementation. Responsibility for press releases falls under the LARO Chief of Resource Education. Responsibility for all other community notification and coordination, especially during wildfires and prescribed burns, falls under the LARO Chief Ranger. Logistical needs for housing will be coordinated through the housing representative at the hosting district. All annual inter-park planning and operational needs will be documented in an annual program of work.

A LARO Fire Management Plan will be maintained and updated as-needed in accordance with NPS policy. An updated plan, with the associated NEPA compliance, will be finalized in FY2014 and will direct the fire and fuels management activities for LARO. The LARO Chief of Resource Management and NOCA FMO are the primary contacts in the maintenance and use of this important planning document.

2.1 Annual Planning Meeting

Every February, NOCA and LARO Management Team staff will meet to discuss targets for current & next fiscal years. Project lists will be reviewed and agreed upon by both NPS units and

information will be used to submit a budget through NFPORS in March. The NOCA Fire Management Officer will ensure accurate and timely budget requests and project completion tracking through NFPORS for the LARO program. This meeting will provide the information and understanding required to develop a combined Park program of work and to ensure all compliance requirements are met. Superintendents will continue to sign verification forms assuring accountability for their individual Park's program of work.

2.2 Project and compliance budgets

All monies needed for planning and implementation will be submitted and tracked by NOCA fire staff. The NOCA Fire Management Officer (FMO) is the responsible party for securing dollars and ensuring appropriate spending according to national spending rules set forth by the Fire Management business rules. The NOCA Fire Management Program Assistant (FMPA) will set up and track project accounts for both Park's. The LARO fuels budget appropriated for compliance work for our year targets will be the responsibility of LARO's Chief of Resource Management. As such, this position will be responsible for the completion of compliance targets and the spending of budget monies per the Fire Management Business Rules. LARO will provide budget requests for compliance or mitigation to NOCA fire staff to make complete cost sheets & submittal through NFPORS funding processes. This is now budgeted through project dollars.

2.3 Prescribed fire projects

NOCA staff will be responsible for the planning and execution of prescribed fires at LARO. This includes securing any additional resources required by the burn plan and completing agreements that enable participation by interagency resources. The NOCA Prescribed Fire Specialist and/or AFMO Suppression will oversee completion of the burn plans and complete project planning and coordination. The Prescribed Fire Managers and Burn Bosses will be assigned by the NOCA FMO.

The LARO superintendent is the line officer who approves LARO burn plans. The LARO District Rangers will also be required to approve burn plans for any prescribed fires planned within their Districts. Burn Plans will spell out how LARO staff will provide assistance in completing burn targets. Currently, LARO is committed to writing press releases (at the request and with assistance of NOCA personnel), providing personnel on site for public notification, providing road flaggers for smoke concerns and EMT(s) when required in the burn plan.

Press releases will be requested through Chief of Resource Education. All other requests for assistance will be made through LARO's Chief of Resource Management and/or Chief Ranger or their delegate.

Ordering resources outside of NOCA or LARO for prescribed fires will be requested through Puget Sound Interagency Coordination Center (425) 783-6150 with updates to Northeast Washington Interagency Communication Center (509) 685-6900.

WADNR is required to bill for smoke emissions from prescribed burns per the State Smoke Management Implementation Plan. Invoices are sent to NOCA FMO for processing payments.

2.4 Mechanical fuel reduction and defensible space projects

All planning and execution of thinning for fuel reduction will be performed by NOCA fire management staff. Thinning projects are planned by the NOCA Prescribed Fire Specialist and implemented through the NOCA AFMO Suppression. Daily supervision of the thinning crew will be performed by the NOCA Fuels Crew Leader. Oversight and feedback on quality and quantity of thinning will be ensured by the NOCA Prescribed Fire Specialist and/or NOCA AFMO Suppression and LARO Natural Resource Staff. The point of contact for planning will be the NOCA Prescribed Fire Specialist. Operational concerns will be brought to the attention of the NOCA AFMO Suppression.

The Prescribed Fire Specialist will coordinate any use of contracts to complete mechanical fuel reduction and prescribed fire projects. The Contracting Officer at LARO will complete and award contracts. COTR's will be identified by name, and will be accountable for contract compliance. The primary logistical contact for LARO on these projects is the Chief of Resource Management.

2.5 Public notification and press releases

The NOCA Prescribed Fire Specialist is responsible for making all requests for press releases through Chief of Resource Education, who will also handle any direct media relations. Public contacts and notification will be performed by LARO personnel under the supervision of the Resource Protection Division.

2.6 LARO radio communication

This agreement authorizes NOCA employees to transmit on LARO assigned frequencies when operating at LARO. Emergency or support communication by NOCA personnel working at LARO will go through appropriate district office either by radio or telephone. Chief Ranger will notify NOCA staff of any changes to radio systems or frequencies.

2.7 Monitoring fire ecology plots

Permanent plots will continue to be established and read by the Columbia Cascades Fire Effects Monitoring Crew stationed at NOCA. Work is supervised by the Lead Fire Effects Monitor with oversight by the Fire Ecologist. This agreement does not change the monitoring groups function.

2.8 LARO work space

LARO will provide a secure workspace for NOCA fire personnel on the Kettle Falls Compound and will address any other needs to enable smooth implementation of this agreement. The workspace will include two desks, 2 phones & lines, 2 networked computer jacks, and a networked printer for use by NOCA staff while working at LARO. LARO also includes a permanent work space (desk, phone, computer jack) for the Prescribed Fire Specialist. Location will be determined by position needs (currently at Headquarters Office).

2.9 LARO transient space

LARO will provide transient quarters for a crew of up to 10 fuels personnel from the beginning of April to mid-December in Kettle Falls. Crew will have access to shower, restroom and kitchen facilities. This facility will meet all health and safety codes required of federal housing.

2.9.1 Use of LARO equipment and storage space

NOCA personnel will have access and will use LARO fuels management property purchased or funded through fuels management accounts and now cached at LARO. NOCA personnel will maintain and upgrade equipment as needed. Other LARO equipment such as hoses and fittings may also be used by NOCA on LARO projects, and NOCA equipment will be used to complete LARO projects. If any equipment is damaged, repair or replacement costs will be charged to appropriate project (or fire) account on which said equipment was damaged or destroyed.

A secure cache for the storage of saws and equipment will be maintained at LARO for use by NOCA employees in Kettle Falls. A joint NOCA/LARO Fire Cache replacement proposal has been prepared and is currently waiting funding. The LARO Chief of Resource Management is the primary contact on this proposal.

2.10 Annual review

The NOCA FMO will travel to LARO in November to conduct a review of the past fire season with key LARO and NOCA staff. Subjects to be covered will include project management, actual accomplishment of acreage identified and funded for treatment, upcoming compliance needs, and communication and coordination between LARO and NOCA staff.

3. Fire suppression operations

A reimbursable wildfire suppression agreement with the Washington Department of Natural Resources is in place as stated in the Eastern Washington Wildfire Operating Plan. WADNR sends fire suppression invoices to NOCA FMO by December 31 annually. Payment processes are completed by NOCA FPMA or PWR Fire Budget Analyst. LARO's roles and responsibilities for dispatch and suppression of wildland fires will be spelled out in the LARO Annual Operating Plan. LARO employees with red cards will be made available to assist with the LARO suppression program. NOCA will have no obligation for direct suppression assistance but may assist with suppression responses if NOCA personnel are available on site. NOCA FMO or Duty Officer will be immediately notified of any wildfire on LARO lands. FMO will be available to represent LARO on large fire incidents at the request of the Superintendent.

3.1 Training

The Chief Ranger at LARO will be responsible for arranging refreshers and pack tests for LARO firefighters. NOCA AFMO Suppression will notify LARO employees of fire refresher and WCT training opportunities or will coordinate a course.

The LARO Chief Ranger is responsible for identifying training needs and opportunities for LARO collateral duty fire personnel. Emphasis should be put on developing leadership positions in initial attack and qualifications required for the appropriate use of the engine for prescribed fire use. The NOCA FMO will assist LARO in developing position qualifications through prescribed and wildfire assignments, and if appropriate, through the use of NOCA preparedness funds.

3.2 Red card issuance, training records and arduous duty physicals

The LARO Chief Ranger will be responsible for coordinating with the NOCA Fire Management Program Assistant for updating LARO personnel training and experience records in IQCS and to ensure that firefighter red cards are signed by the NOCA FMO.

The Chief Ranger will also be responsible for issuing names to the NOCA Fire Management Program Assistant for LARO firefighters requiring arduous duty physicals. The NOCA FMPPA will schedule physicals and record results.

3.3 Fire and Fuels treatment reporting

NOCA will report all LARO fires into the WFMI & WFDSS databases. The VRP division supervisors and Chief Ranger at LARO will provide or complete all wildland fire suppression reports and submit to NOCA AFMO Suppression who will enter reports into the WFMI national fire records database and a NOCA Duty Officer will assure timeliness entry of fires into WFDSS database and report fires for statistical tracking to PSICC. Fire suppression reports may be completed by Incident Commanders in charge of the fire. Fuels Treatment reporting requirements (smoke, WFMI, NFPORS, and Statistics to PSICC) will be completed by NOCA fire staff.

3.4 Off -Park and prescribed fire dispatching

Fire dispatching to national incidents and for prescribed fire at LARO is performed through NOCA Fire Duty Officer or PFM to PSICC Puget Sound Interagency Coordination Center. NEWICC is kept apprised of available resources. Annually, LARO and NEWICC will review planned prescribed fire assistance dispatch needs. The Chief Ranger will provide Fire Duty Officer with a list of LARO resources available for off-park dispatch.

3.5 Remote automated weather stations

The NOCA AFMO Suppression will continue to schedule and ensure annual maintenance for the two RAWs (Kettle Falls, Spring Canyon) located at LARO. Maintenance records for these two stations will be kept at NOCA.

4. Authorizing Signatures

4.1 Commencement and expiration

The above language is mutually agreed to and understood by all parties.

This instrument is executed as of the date of the last signature and is effective through December 31, 2019 at which time it will be reviewed for any revisions or need to cease.

THE PARTIES HERETO have executed this instrument:

USDI NATIONAL PARK SERVICE

Karen Taylor-Goodrich
Superintendent

Date

Dan Foster
Superintendent

Date

North Cascades NPS Complex

Lake Roosevelt NRA

Dee Townsend Date
Fire Management Officer (FMO)
North Cascades NPS Complex
4.2 Principal Contacts

Marty Huseman Date
Chief Ranger
Lake Roosevelt NRA

The principal contacts for this agreement/plan are:

Karen Taylor-Goodrich, Superintendent
North Cascades NPS Complex
810 State Route 20
Sedro Woolley WA 98284
(360) 854-7205

Dan Foster, Superintendent
Lake Roosevelt National Recreation Area
1008 Crest Drive
Coulee Dam, WA 99116
(509) 754-7812

Dee Townsend, FMO
North Cascades NPS Complex
7280 Ranger Station Rd.
Marblemount WA 98267
(360) 854-7350

Marty Huseman, Chief Ranger
Lake Roosevelt National Recreation Area
1008 Crest Drive
Coulee Dam, WA 99116
(509) 754-7813

Tonya Neider, Rx Fire Spec.
Lake Roosevelt National Recreation Area
1008 Crest Drive
Coulee Dam, WA. 99116
(509) 754-7816

Ken Hyde, Resource & Compliance Chief
Lake Roosevelt National Recreation Area
1008 Crest Drive
Coulee Dam, WA 99116
(509) 754-7814

Scott Ebel, Suppression/Ops.
AFMO
Area
North Cascades NPS Complex
7280 Ranger Station Rd.
Marblemount WA 98267
(360) 854-7352

Thomas Parry, Chief of Education
Lake Roosevelt National Recreation
1441 Kettle Park Rd.
Kettle Falls WA, WA 99141
(509) 738-2300 (Chamber and Visitor Center)

Lesha Hastings
Fire Program Management Assistant
North Cascades NPS Complex
7280 Ranger Station Rd.
Marblemount WA 98267
(360) 854-7351

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Appendix 7B
Agency Administrator's In-Coming Team Briefing

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DRAFT

Agency Administrator's Briefing to Incident Management Team

General Information

Incident Name

Approx. Size @

Date

Time

Location

Date of Start

Overhead and Suppression Resources Currently on Incident And Present IC

General Fire Situation in Area

Resources Ordered

Other Organizations Requiring Coordination (Area Command, Expanded Dispatch, MAC, Buying Team, Payment Team, Tribal Government, Other Agency Jurisdictions)

Law Enforcement/Ongoing Investigations

Financial Considerations/Limitations

Fire Behavior Considerations

Weather Situation

Fuel Types

Topography

Fire Behavior

Appropriate Management Response Considerations Established
Through and for the WFS Development Priorities

Environmental Constraints

Utility Corridors

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Air Operations

Effectiveness

Hazards

Air Space Restrictions

Airports, Heliports, Helispots

Suppression Policies

Other

Environmental, Social, Political, Economic, and Cultural Resource Considerations

Environmental

Social

Political

Economic

Cultural Resource

|

Communications

Radio

Telephone

Electronic (Computers)

Expanded Dispatch

Procurement Arrangements

Agreements

Tribal Government

Infrared Status

Security Considerations

Incident Management Direction and Considerations

Wildland Fire Situation Analysis

|

Delegation of Authority

Agency Administrator's Representative

Incident Business Advisor

Resource Advisor

Suppression Priorities

Forest Supervisor/Incident Commander Contact

Time

Process

News Media and Incident Information Management

Training Considerations

Interagency/Private Property Considerations (costs, etc.)

Mop Up Standards

Rehabilitation Considerations

Initial Attack Responsibility

Support to Other Incidents

Disposition of Unit Resources on the Incident

Close Out and Debriefing

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Human Welfare

Safety

Health

Civil Rights

Distribute Support Documents

WFSA (Common WFSA if Unified Command?)

Delegation of Authority Letter

Map & Photos

Fire Management, Pre-Attack, Land Management Plans

Weather Forecast

Special Management Area Documents

Phone Directory, Fax Number

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Agreements

Incident Status Summary (ICS - 209)

Business Management Documents

Payments (Vendors and Casuals)

Claims

Injury Compensation

Incident Business Guidelines (ISOPS)

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Appendix 7C

Delegation of Authority: Park Superintendent to In-coming Incident Management Team

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DRAFT

Limited Delegation of Authority

Memorandum

To: _____, Incident Commander

From: _____ Superintendent, Lake Roosevelt National
Recreation Area

Subject: Limited Delegation of Authority

Effective as of ____ / ____ / ____ (month/day/year), at hours, I have delegated you limited authority to manage the _____ fire, number _____, in Lake Roosevelt National Recreation Area (LRNRA).

As Superintendent I maintain ultimate responsibility for the protection of LRNRA resources and the lives of visitors and employees. You have full authority and responsibility for managing the incident activities within the confines of the law, National Park Service Policy, the direction given in the Incident Briefing and this Delegation.

Specific direction for this Incident and my considerations for management are:

1. Provide for firefighter, visitor, employee and neighbor SAFETY FIRST.
2. My preferred suppression strategy for this fire is one of: *(check one)* ☐ **Confine** ☐ **Contain** ☐ **Control**. This strategy should be implemented with as little resource damage as possible.

Attached are the NPS definitions of CONFINE, CONTAIN, and CONTROL strategies (Exhibit 1) and Minimum Impact Suppression Guidelines (Exhibit 2.)

3. Dozers or tractor plows may be used within LRNRA in extreme situations to protect human life and property, after consultation with the Agency Advisor.
4. Fire engines or trailer-mounted slip-on pumpers may be used as water sources. Chainsaws, portable pumps, and other motorized devices may be used as required within LRNRA.
5. Cultural features requiring priority protection are:

6. Key resource considerations are:

7. Constructed firelines must be rehabilitated as per NPS policy.

8. Disruption of visitor access and use should be kept to a minimum if consistent with public safety.

9. Training opportunities for LRNRA personnel shall be provided when possible to strengthen our organizational capabilities.

10. A close-out fire analysis and evaluation will be conducted by me or my representative prior to team departure. I request at least 24 hour advance notice for this meeting.

11. My Agency Advisor is:

Signed:

Superintendent

Lake Roosevelt National Recreation Area

Name (*printed*)

Date: _____

Incident Commander

Name (*printed*)

Date: _____

Appendix 7D

Initial Response Plan Elements

Appendix 7D.1: Step-up and Staffing Plan
Appendix 7D.2: LRNRA Operations and Coordination Plan
Appendix 7D.3: Minimum Impact Suppression Tactics
Appendix 7D.4: Burned Area Emergency Rehabilitation
Appendix 7D.5: Location of Fire Danger Rating Operating Plan
Appendix 7D.6: Job Hazard Analysis for Wildland Fire and Fire Aviation Operations
Appendix 7D.7: Location of Agency Administrators Guide to Critical Incident Management (PMS 926)
Appendix 7D.8: List of Wildland Fire Qualifications for LRNRA Staff
Appendix 7D.9: Cooperative and Interagency Agreements
Appendix 7D.10: Notification Procedure
Appendix 7D.10.a: Serious Injury or Death Procedure
Appendix 7D.10.b: CRITICAL INCIDENT STRESS MANAGEMENT
Appendix 7D.11: Smoke Management Plan
Appendix 7D.12: WFDSS Objectives and Requirements
Appendix 7D.13: Prevention Analysis
Appendix 7D.14: Mobilization Plan
Appendix 7D.15: Monitoring Plan
Appendix 7D.16: Historic Building Inventory
Appendix 7D.17: Fire Cache Location
Appendix 7D.18: Fire History for LRNRA
Appendix 7D.19: Fire Communications Plan
Appendix 7D.20 Radio Frequencies
Appendix 7D. 21 Annual FMP Update Checklist
Appendix 7D.22 Weather Information

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Appendix 7D.1: Step-up and Staffing Plan

Table 7: Burning Index, Staffing Classes, and Expected Fire Behavior

Staffing Class	Burning Index	Fire Behavior
I	0-10	Fires should present a low level of control difficulty. Fires occurring at this level can generally be controlled with existing forces.
II	11-22	Fires may present a moderate level of control difficulty. Fires occurring at this level can generally be controlled with existing forces. Expect the grasses, but few of the shrubs, to burn in the grasslands and savannas. Expect fire in forests to be limited to the needle layer and possibly to low underbrush.
III	23-44	Fires will present a moderate to high level of control difficulty depending upon access, size, and values at risk. Expect active burning in all fuel types during the peak burning hours. Fire may holdover in heavy brush or will be more difficult and time consuming
IV	45-72	Fire may present a high level of control difficulty depending upon access, size, and values at risk. Initial response and reinforcing crews may have difficulty controlling a fire at this level. Expect active burning in all fuel types during all daytime hours, along with potential extreme fire behavior during the peak burning hours. Expect active burning into the night with holdovers in brush and pine. Mop-up will be difficult and time consuming.
V	73+	Fire may present a high level of control difficulty depending upon access, size, and values at risk. Initial response and reinforcing crews may have difficulty controlling a fire at this level. Expect active burning in all fuel types during all daytime hours, along with potential extreme fire behavior during the peak burning hours. Expect active burning into the night with holdovers in brush and pine. Mop-up will be very difficult and time- consuming

Table 8: Preparedness Actions

Preparedness Actions	Staffing Class				
	I	II	III	IV	V

Staff					
Firefighters to carry PPE with them while on duty	X	X	X	X	X
Firefighters may be assigned to an engine at a station or patrol				X	X
Extend firefighters work weeks and/or tours of duty				X	X
Stage an Incident Commander (ICT4) at Kettle Falls				X	X
Equipment					
Conduct weekly checks of all engines and equipment	X	X	X	X	X
Prevention Activities					
Post Appropriate signs at campgrounds and public use areas			X	X	X
Interpretive staff include fire message in programs and contacts			X	X	X
Law enforcement staff will increase patrols				X	X
Issue news release and/or public service announcement				X	X
Close campgrounds to all open fires (except stoves)					X
Administrative					
Monitor fire weather forecasts and NFDRS indices	X	X	X	X	X
Increase one staffing class if KBDI > 400	X	X	X	X	X
Increase one staffing class when dry lightning is forecast or observed	X	X	X	X	X
Increase one staffing class when significant NPS or cooperator resources are committed to an uncontained fire	X	X	X	X	X
Increase one staffing class if special events significantly increase man-caused risk	X	X	X	X	X
Submit situation reports to NE Washington Interagency Coordination Center and NPS Shared Applications Computer System.			X	X	X
Notify Regional Fire Management Officer (RFMO) and open emergency presuppression account				X	X
Note: Outside resources will be needed to meet preparedness requirements in staffing classes					

Preparedness Activities

LRNRA preparedness will include:

Maintaining a cache of supplies, materials, and equipment sufficient to meet normal fire year requirements.

The NOCA FMO will maintain a fire cache (nomex, hand tools, personal protective equipment) at the Kettle Falls NPS Complex. Fire supplies will be inventoried and restocked as necessary prior to the advent of the fire season. Firefighter-qualified employees will be issued initial attack gear and personal protective equipment from the cache.

Maintaining fully-qualified personnel commensurate with the normal fire year workload.

Preparing a step-up plan based upon staffing classes derived from the National Fire Danger Rating System (see section ____).

Maintaining fire records, weather data, maps and other associated information. The NOCA FMO will maintain LRNRA data, including daily situation reports during fire events, with appropriate updates to the Pacific West Regional Office FMO. The NOCA

FMO will utilize other system options as appropriate to maintain data on employee qualifications, hazard fuels, etc.

Preparing a pre-season risk analysis.

Maintaining detection and initial attack capabilities. Fire detection will be accomplished primarily by field personnel, with additional input from visitors, cooperators and adjacent landowners.

Utilizing the NEWICC dispatch system for mobilizing wildland fire resources to local incidents. Out-of—area assignments are mobilized through Puget Sound Interagency Coordination Center (PSICC) initiated by contact with Fire Duty Officer. In order to facilitate rapid and efficient mobilization:

- The NOCA FMO will prepare a list of available firefighter-qualified personnel at the beginning of the fire season.
- Response to fire will take priority over routine, scheduled work projects. Meeting LRNRA fire suppression needs will take priority over out-of-area assignments.
- Personnel will receive specific travel, transportation and incident information at the time of mobilization.

Dispatch and mobilization guidelines and procedures are provided in the *National Interagency Mobilization Guide* and the *Pacific Northwest Coordination Center Interagency Mobilization Guide*.

The NOCA FMO will conduct an annual preseason fire readiness inspection, as outlined in the *Interagency Fire Readiness Review Guide*. The inspection will address detection, communication, dispatch, and response capabilities. It will also serve to determine whether or not LRNRA's current training levels, equipment, and organizational structure meet the standards described in this fire management plan.

Annual Training Needs of Fire Staff

NPS fire management training meets criteria specified within the training curriculum approved by the National Wildland Coordination Group (NWCG), which is tiered to positions described in the NWCG *Wildland Fire Qualifications*, *Prescribed Fire Job Qualifications*, and *Incident Command System Wildland Fire Job Performance* guides. The NOCA FMO will conduct annual training need analyses, and coordinate training courses as appropriate. Courses identified will be based upon employee needs (as reflected in individual employee development plans), LRNRA fire management needs, and regional priorities. Training will be conducted on an interagency basis to the greatest extent possible. Any firefighter-qualified LRNRA staff will receive at least eight hours of annual safety refresher training (see section 8.1).

The NOCA FMO will manage input of all pertinent employee data for entry into IQCS (or the appropriate reporting system).

Annual Equipment and Supply Readiness Procedures

LRNRA maintains one cache of supplies and equipment sufficient to meet normal fire year requirements. Table 9 lists activities that will be performed to ensure the fire readiness of LRNRA personnel, supplies and equipment, as well as the month(s) that each should be accomplished.

Table 9: Annual Fire Readiness Activities

Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maintain state of fire readiness as per step-up plan.	x	x	x	x	x	x	x	x	x	x	x	x
Review FMP and fire program.	x											x
Inventory fire cache; restock as necessary.				x	x						x	x
Equip firefighter-qualified staff with PPE as needed.	x	x	x	x	x							
Update LRNRA firefighter qualifications.	x			x	x	x						
Fitness test LRNRA staff.	x	x	x	x	x							
Complete LRNRA training analysis.		x	x	x	x							
Coordinate fire training.	x	x										
Provide annual refresher training.	x		x	x	x	x						
Review/update interagency agreements.	x	x	x	x								
Issue updated qualification cards.	x	x	x	x	x	x						

Appendix 7D.2: LRNRA Operations and Coordination Plan

Lake Roosevelt National Recreation Area

Wildland Fire Operating & Coordination Plan

2013

Purpose

This document defines the roles and responsibilities of parties who entered into the NPS task agreement # T9260 06 0014. The agreement identifies the Washington State Department of Natural Resources (DNR) as the responsible party for all fire suppression activities within the Lake Roosevelt National Recreation Area (LARO). As the responsible party, the DNR shall dispatch resources and assume operational control of all wildland fire suppression responses within LARO. The DNR firefighters will work jointly with LARO resource staff and law enforcement personnel to ensure a safe and efficient fire suppression response while mitigating suppression impacts to important natural and cultural values.

When a wildfire occurs:

LARO personnel will contact the NEWICC (Northeast Washington Interagency Communications Center) via radio or telephone:

(509)685-6900 and advise them of fire location and any additional fire information. Utilization of the 911 system is acceptable as well. The LARO party reporting the smoke will also contact the Ranger responsible for that district. The DNR will be responsible for the fire suppression effort. The District Ranger will contact natural and cultural resource personnel as soon as possible to facilitate protection of said resources.

When NEWICC receives a report of a wildfire they will contact the FDO and the Ranger responsible for the District in which the fire is located through the appropriate county dispatch centers:

Lincoln Co. (509) 725-3501, Steven's Co. (509) 684-2555

The District Rangers are:

North District Beth Lariviere (acting) **(W) 509 738 6266 ext.110**

South District Bill Archard **(W) 509 633 3830 ext. 36**

Appendix c: Contact info for fire personnel @ LARO

The District Ranger or designee will act as the Agency Representative and file a “case incident report”. This will act as the fire report required by North Cascades National Park (NOCA) fire staff. The District Ranger should also notify the FMO or Duty Officer and NOCA Fire Dispatch that a fire has occurred as soon as possible. The NOCA fire staff will be responsible for inputting all fire records into the national fire database system (WFMI) for LARO. Case incident reports will be faxed to NOCA within 3 working days of the fire being declared out. All fire records will be kept at NOCA. See appendix A for list of items necessary to complete this report.

NOCA FIRE FAX 360 873 4046

Wildland fire accounting codes (FIRECODE)

A fire code will be generated for each wildland fire. This includes natural outs and false alarms. This code is vital to enable payment of personnel time (wages) and to enable reporting of each fire through the WFMI system. The code will be generated by NOCA FPMA, (Lesha Hastings-Skaer @ lesha_hastings-skaer@nps.gov for LARO). NOCA FPMA will set up fire suppression accounts at LARO and will also send the fire code to NEWICC. The fire code will become the FBMS account number. This is the accounting code LARO personnel will charge their time to for each individual fire.

The Incident Commander or District Ranger will be responsible for signing Fire Time Reports (OF 288's) and crew time reports (CTR's). The IC or District Ranger will be accountable for accurate fire code numbers and will ensure recorded time is appropriate and justified according to the Interagency Incident Management Handbook. This reference can be found at:

<http://www.nwcg.gov/pms/pubs/IIBMH2/iibmh.pdf> . Copies of OF-288's need to be mailed to NOCA FPMA for the fire file.

Fire Operations

DNR will take primary responsibility for wildland fire suppression on LARO administered lands. DNR will dispatch a qualified Incident Commander (IC) to all wildfires. The IC is responsible for all matters of the incident until the fire is declared "out". LARO personnel will assist the suppression effort at the DNR Incident Commander's request. LARO personnel will then work within the command structure of the DNR until relieved by the Incident Commander.

LARO personnel will function within their training and red card qualifications. They at no time should consider engaging a wildland fire without a qualified IC on scene, and will not designate themselves as IC's. Instead, the first on scene will provide an accurate size up to the NEWICC dispatch and the incoming Incident Commander, secure the scene for investigative purposes, and ensure public safety. A list of size up considerations is in Appendix B.

PERSONAL AND PUBLIC SAFETY WILL BE TOP PRIORITY IN ANY WILDLAND FIRE SUPPRESSION EFFORT.

A Unified Command should be considered if a wildland fire escapes initial attack and the incident becomes multi-jurisdictional. At this time, the LARO Chief Ranger or their delegate will represent LARO's concerns at the Superintendent's request. LARO will

provide resource advisor's to assist in planning to mitigate unwanted impacts from suppression efforts to natural and cultural resources within the NRA.

Fire Reporting

What is a reportable fire?

Any fire burning outside of a campfire ring that requires a suppression response (of any kind) is a reportable fire. Even if the campfire that burns outside the has been put out by the campers, it still needs to be reported to the NOCA Duty Officer and most likely will need to be checked by qualified personnel.

Also is the need to report and may possibly have to be checked are; roadside fires in the NRA that have been put out by someone, private property burning that has extended on the NRA, accidental fires that have been started by maintenance or industrial operations and driftwood burning and beach fires burned outside of the approved lakebed areas or timeframes.

See Appendix C – Illegal campfire reporting form.

See Appendix B – Size Up Report for information to gather if someone is reporting a fire to park personnel.

Off-LARO NRA Dispatches:

If LARO personnel are available for fire assignments outside of the NRA, advise the NOCA Duty Officer (see list of Duty of Officers) of the dates (14 day minimum) employee is available. The Duty Officer will provide the information to PSICC and the personnel can be made available regionally or nationally.

Fire Severity Funding

The Fire Management Officer (FMO) at NOCA will determine when severity funding is needed at LARO. Severity funding will be requested through the regional office when fire indices suggest a need for staffing beyond normal operational periods. This is intended to provide prevention messages to visitors and to reduce human-caused fire ignitions by providing staffing hours for patrolling areas of high ignition potential. Fire severity dollars will be requested through the FMO at NOCA. District Rangers will be accountable for severity expenditures. The NPS Regional office sets up a severity account for overtime expenditures. NOCA FMO is Dee Townsend **(509) 996-5008 or (360) 391-2533-c.**

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Appendix A. Case Incident Report Items for Fire Reporting or complete Individual Wildland Fire Report Form, included below.

The following items will be included to the best of one's ability

Fire Name

Location--Lat/Lon and datum (WG84 etc) and jurisdiction

Cause

Start time

Initial Attack time

Control time and date

Declared out date

Slope

Aspect

Elevation

Resources used (engines and crews + misc. personnel)

Fuel type--grass, brush, timber, slash

Size

NOCA/LARO

INDIVIDUAL WILDLAND FIRE REPORT

1. Fire Name					2. Local Fire Number (Local use only)																																																				
3. Location			4. Township		Range		Section		Sub-section		Principal Meridian																																														
IDENTIFICATION																																																									
5. Region		6. Park	7. District	8. Fire Number	9. Protecting Agency at Origin		10. Ownership at Origin		11. State at Origin		12. County at Origin		13. Fire Mgmt Zone																																												
OCCURRENCE																																																									
14. Point of Origin				15. Time of Ignition				16. Time of Discovery																																																	
Latitude		Longitude		Mo.	Day	Year		HHMM		Mo.	Day	Year		HHMM																																											
17. Detection Method			18. Statistical Cause		19. General Cause			20. Specific Cause			21. Class of People																																														
ACTION																																																									
22. Initial Strategy: ☐ Suppression ☐ Wildland fire used for resource benefits.								23. Escaped Fire: ☐																																																	
24. Time of Initial Action				25. Time Final Suppression Strategy Attained				26. Time Fire Out																																																	
Mo.	Day	Year	HHMM	Mo.	Day	Year	HHMM	Mo.	Day	Year	HHMM																																														
<table border="0" style="width:100%;"> <tr> <td rowspan="5" style="vertical-align: top;">27. Forces Used: Up to Time of Attainment of Initial Strategy or Escape</td> <td>Resource Type</td> <td>Agency Group (F or C)</td> <td>Quantity</td> <td>Resource Type</td> <td>Agency Group (F or C)</td> <td>Quantity</td> <td>Resource Type</td> <td>Agency Group (F or C)</td> <td>Quantity</td> </tr> <tr><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> </table>												27. Forces Used: Up to Time of Attainment of Initial Strategy or Escape	Resource Type	Agency Group (F or C)	Quantity	Resource Type	Agency Group (F or C)	Quantity	Resource Type	Agency Group (F or C)	Quantity	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
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DESCRIPTION																																																									
28. Estimated Cost (whole dollars)		29. NPS Acres		30. Non-NPS Acres Protected by NPS		31. Non-NPS Acres Not Prot by NPS		Total Acres		32. Acres Managed for Resource Benefit																																															
33. FMZ NVC/ Acre (\$)		34. Fire Intensity Level	35. Rep Weather Station	36. NFDRS Fuel Model	37. Cover Class		38. Slope Pct	39. Aspect		40. Elevation (feet)																																															
OPTIONS																																																									
41. Special Codes _____																																																									
42. Remarks																																																									
43. Submitted by:				44. Date		45. Approved by:				46. Date																																															
SUPPLEMENT FOR LARGE FIRE ACRES BURNED																																																									
47. Prot Agency	48. NPS Unit	49. Land Ownership	50. Acres	47. Prot Agency	48. NPS Unit	49. Land Ownership	50. Acres																																																		
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Appendix B. Size up Report

Size up questions (most pertinent information):

Where is it? (Location by landmark, slope, aspect, how do people get there)
How big is it? (Estimate—people tend to overestimate so when in doubt go a little smaller)

What color is the smoke?

What is it burning in? (on the ground or in treetops--grass, brush, timber, slash?)

How fast is the fire moving? (smoldering, creeping, torching, spotting, running?)

How close are the nearest structures and are they directly threatened?
How is the fire behaving (how long are the flames)?

What is the wind speed and direction?

What is your best estimate of how many and what type of resources are needed?

Any immediate hazards or concerns? (Traffic, power lines, public, hazmat)

Size Up Report (from “Redbook”)

- ☐ **Incident Name** – All incidents
- ☐ **Incident Commander** – All incidents
- ☐ **Incident Type** – Wildland fire, vehicle accident, hazardous materials (HazMat), search and rescue, etc.
- ☐ **Incident Status** – Fire-creeping, running, spotting, crowning: Vehicle-blocking road, over side, etc.
- ☐ **Location** – Use landmarks, legal, or lat/long.

- ☐ **Jurisdiction** – Agency with jurisdiction
 - ☐ **Radio Frequencies** – All incidents
 - ☐ **Incident Size** – Fire and HazMat
 - ☐ **Fuel Type** – Fire incidents only
 - ☐ **Wind Speed and Direction** – All incidents
 - ☐ **Slope and Aspect** – Fire and HazMat
 - ☐ **Best Access** – All incidents
 - ☐ **Special Hazards or Concerns** – For air and ground units
 - ☐ **Additional Resource Needs** – Personnel and equipment
- Appendix C: Illegal/Escape campfire reporting**

Illegal/Escape Campfire Reports

Please report to the Fire Management office: approved campfire pit fires that have burned outside of their containment ring and also any campfires/ debris fires that have been made at random locations within the park that are not in a designated campfire pit. This includes warming fires, cooking fires, firework fires, accidental or roadside fires and lakeside stump or driftwood burning.

These fires may be dead and out, days or several weeks old, but still need to be recorded by Fire Management. We only need reports from fires that have been made in the current year . Some ways of determining if the fire was recent or not, include:

- If there is grass or moss growing within the ring or burned area, then likely not from this year.
- If the area contains unburned leaves or needles, then likely not from this year.

Information needed:

- Date of discovery _____.
- Location of fire (GPS if available or physical description i.e. trail system, closest campsite, intersection or nearby landmark, mark on a map works too)

- Cause if known (warming, cooking, fireworks, etc.)_____.
- Person reporting or finding fire

Comments:

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2013 Wildland Fire Resource and Duty Officer
Phone List
National Park Service Staff (Lake Roosevelt NRA)

Park Wide Resource Advisors	Work Phone	After Hours
Jon Edwards READ	509-754 - 7811	509-879-5981
Ray DePuydt Archaeologist	509-754 - 7854	
Dee Townsend FMO	360-854-7350 MMT	360-391-2533-c
	509-996-5008 Winthrop	509-996-3561-h
Park Headquarters		
Dan Foster	509-754 - 7812	509-631-0065-c
Superintendent		505-633-0201-h
Marty Huseman	509-754 - 7813	509-631-4755-c
Chief Ranger		
NOCA/LARO Fire Duty Officers		
Dee Townsend	360-854-7350 MMT	360-391-2533-c
	509-996-5008 Winthrop	509-996-3561-h
Scott Ebel	360-854-7352 MMT	360-391-1882-c
		509-998-3247-h
Tonya Neider	509-754-7816	360-485-5066-c

Appendix C. Contact information for fire personnel at LARO

South District (Fort Spokane to Spring Canyon)

Tonya Neider	ICT4	509-754-7816
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North District (Na-Bor-Lee to China Bend)

Beth Lariviere	FFT2	509-754 - 7861
Josh Wentz	FFT2, EMT B, SEC1	509-633 – 3860 X111
Matt Smith	FFT2	509-738-6266 ext 162
Alex Rutter	FFT2	509-738-6266 ext 162

Appendix 7D.3: Minimum Impact Suppression Tactics

(NPS Guidelines, Plus Additional Recommendations for OBG)

Due to proximity of high values at risk and the need for a full aggressive suppression initial response a bulldozer may be used around wildfire boundaries.

5.4.1.1 MINIMUM IMPACT TACTICS GUIDELINES

The change from FIRE CONTROL to FIRE MANAGEMENT has added a new perspective to the role of the fire manager and the firefighter. The objective of putting the fire "dead-out" by a certain time has been replaced by the need to make unique decisions with each fire start, to consider the land and resource objectives, and to decide the appropriate suppression response and tactics which results in minimum costs and resource damage.

Traditional thinking, "the only safe fire is a fire without a trace of smoke" is no longer valid. Fire management now means managing fire "with time" as opposed to "against time." This change in thinking and way of doing business involves not just the firefighter, but all levels of management as well.

NPS fire management requires the fire manager and firefighter to select management commensurate with the fire's potential or existing behavior, yet leaves minimal environmental impact.

The intent of this guide is to serve as a checklist for the Incident Commander and Planning Section Chief, Operations Section Chief, Logistics Section Chief, Division/Group Supervisors, Strike Team/Task Force Leaders, Single Resource Bosses, and firefighters. Accomplishment of minimum impact suppression techniques originates with instructions that are understandable, stated in measurable terms, and communicated both verbally and in writing. Evaluation of these tactics both during and after implementation will further the understanding and achievement of good land stewardship ethics during fire management activities.

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AGENCY ADMINISTRATOR/INCIDENT MANAGEMENT

TEAM/FIREFIGHTER CONSIDERATIONS FOR MINIMUM IMPACT MANAGEMENT

The following guidelines are for park superintendents, incident management teams, and firefighters to consider. Some or all of the items may apply, depending upon the situation.

Consider:

Command and General Staff.

1. Evaluate each and every suppression tactic during planning and strategy sessions to see that they meet superintendent's objectives and minimum impact management guidelines.
2. Include agency resource advisor and/or local representative in above session.
3. Discuss minimum impact management techniques with overhead during overhead briefings, to gain full understanding of tactics.
4. Ensure minimum impact management techniques are implemented during line construction as well as other resource disturbing activities.

Planning Section

1. Use resource advisor(s) to evaluate that management tactics are commensurate with land/resource objectives and incident objectives. A resource advisor should be involved in the development of the Wildland Fire Decision Support System analysis. The resource advisor should consult with fisheries biologists, wildlife biologists, cultural resource staff, wilderness staff, and other specialists as needed. The resource advisor should provide input to the Planning Section and Incident Commander, and will review shift plans to assess the potential effects of planned actions.
2. Use an assessment team to get a different perspective of the situation.
3. Seek concurrence with NMFS and USFWS.
4. Use additional consultation from "publics" or someone outside the agency, especially if the fire has been or is expected to be burning for an extended period of time.
5. Adjust line production rates to reflect the minimum impact management techniques.
6. Use brush blade for line building--when dozer line is determined necessary tactics.
7. Leave some trees randomly in fireline.
8. Ensure that instructions for minimum impact management techniques are listed in the incident action plan.
9. Detail objectives for extent of mop-up necessary--for instance: "_____ distance within perimeter boundary."
10. If helicopters are involved, use long line remote hook in lieu of helispots to deliver/retrieve gear.
11. Anticipate fire behavior and ensure all instructions can be implemented safely.

12. Consider coyote camps versus fixed campsite in sensitive areas.
13. In extremely sensitive area, consider use of portable facilities (heat/cook units, latrines).

Operations Section

1. Emphasize minimum impact management techniques during each operational period briefing.
2. Explain expectations for instructions listed in incident action plan.
3. Consider showing minimum impact management slide-tape program or video to the crews upon arrival at airport/incident.
4. Consider judicious use of helicopters--consider long lining instead of helispot construction.
5. Use natural openings so far as practical.
6. Minimize or avoid stream course disturbance, sedimentation, and actions that will result in increased water temperature.
7. Maintain minimum no-touch buffer within established area of fish-bearing streams. This could include up to 250-feet within the area of these streams and is dependent on site specific prescriptions currently being developed.
8. Consider use of helicopter bucket drops and water/foam before calling for air tanker/retardant.
9. Chemical Fire Retardant, Foam and Fuel.
 - Wherever possible, avoid using chemicals when there is a potential for contamination of waterways (based on proximity, wind direction, wind speed, size and frequency of loads, etc.) Avoid use of retardant or foam within 300 feet of streams or within designated critical habitat. Use of retardant should also be avoided in areas with oligotrophic lakes, bogs, or swamps as effects on aquatic biota may be prolonged. Consult with resource advisors.
 - Do not pump directly from streams if chemical products are going to be injected into the pump or pumping system. If chemicals are needed, use a fold-a-tank from which to pump water.
 - If possible, do not dip helicopter buckets from streams where juvenile or adult salmon may be present. ONP biologists could provide a list of these waterways. (Firefighter and public safety will always take precedence, and if helicopter drops are needed, they will be utilized.)
 - If possible, dipping of helicopter buckets will occur only after chemical injection systems (storage containers) have been removed from the bucket or helicopter.
 - Keep refueling, fuel storage, and fuel trucks outside designated critical habitat, or utilize spill pads and/or containment units.
 - Use spill pads under portable pumps and fuel cans/fuel lines connected to pumps.
 - The park should develop a contingency plan identifying procedures to be initiated should a chemical spill or contamination occur.
10. Monitor suppression tactics/conditions.
11. Distribute field guide to appropriate supervisory operations personnel.

Logistics Section.

Ensure actions performed around areas other than Incident Base, i.e. dumpsites, camps, staging areas, helibases, etc., results in minimum impact upon the environment.

Division/Group Supervisor and Strike Team/Task Force Leaders.

1. Ensure crew superintendents and single resource bosses understand what is expected.
2. Discuss minimum impact tactics with crew.
3. Ensure dozer and falling bosses understand what is expected.
4. If helicopters are involved, use natural openings as much as possible;
5. Minimize cutting in heli-spots only to allow safe operations.
6. Avoid construction of landing areas in high visitor use areas.
7. Monitor suppression tactics/conditions.

Crew Superintendents

1. Ensure/Monitor results expected.
2. Discuss minimum impact management techniques with crew.
3. Provide feedback on implementation of tactics
4. Look for opportunities to further minimize impact during fire operations

IMPLEMENTATION GUIDELINES

Minimum impact management is an increased emphasis to do the job of suppressing a wildland fire while maintaining a high standard of caring for the land. Actual fire conditions and your good judgment will dictate the actions you take. Consider what is necessary to halt fire spread and ensure it is contained within the fireline or designated perimeter boundary.

Safety

- Safety is of utmost importance.
- Constantly review and apply LCES, the 18 Situations That Shout Watch Out and 10 Standard Fire Orders.
- Be particularly cautious with:
 - a. Burning snags you allow to burn down.
 - b. Burning or partially burning live and dead trees.
 - c. Unburned fuel between you and the fire.
 - d. Identify hazard trees with either an observer, flagging and/or glow-sticks.
 - e. Any felled or burned trees located within designated buffers shall be retained onsite.
 - f. Be constantly aware of the surroundings, of expected fire behavior, and possible fire perimeter one or two days hence.

Fireline Construction Phase

1. Select procedures, tools, and equipment that least impact the environment.
- 2) Give serious consideration to use of water as a fireline tactic (fireline constructed with nozzle pressure, wetlining).
- 3) Avoid the use of tractors and heavy equipment in riparian areas.

4. In light fuels, consider:
 - a. Cold trail line.
 - b. Allow fire to burn to natural barrier.
 - c. Consider burn out and use of "gunny" sack or swatter.
 - d. Constantly re-check cold-trailed fireline.
 - e. If constructed fireline is necessary, use minimum width and depth to check fire spread.
5. In medium/heavy fuels, consider:
 - a. Use of natural barriers and cold-trailing.
 - b. Cooling with dirt and water, and cold trailing.
 - c. If constructed fireline is necessary, use minimum width and depth to check fire spread.
 - d. Minimize bucking to establish fireline; preferably build line around logs.
6. Aerial fuels--brush, trees, and snags:
 - a. Adjacent to fireline: limb only enough to prevent additional fire spread.
 - b. Inside fireline: remove or limb only those fuels which if ignited would have potential to spread fire outside the fireline.
 - c. Brush or small trees that are necessary to cut during fireline construction will be cut flush with the ground.
7. Trees, burned trees, and snags:
 - a. MINIMIZE cutting of trees, burned trees, and snags. If possible, do not fell trees within designated critical habitat.
 - b. Live trees will not be cut, unless determined they will cause fire spread across the fireline or seriously endangers workers. If tree cutting occurs, cut stumps flush with the ground.
 - c. Scrape around tree bases near fireline if hot and likely to cause fire spread.
 - d. Identify hazard trees with either an observer, flagging and/or glow-sticks.
8. When using indirect attack:
 - a. Do not fall snags on the intended unburned side of the constructed fireline, unless they are an obvious safety hazard to crews working in the vicinity.
 - b. On the intended burnout side of the line, fall only those snags that would reach the fireline should they burn and fall over. Consider alternative means to falling, i.e. fireline explosives, bucket drops.
9. Avoid increasing fire intensities within critical habitat during burnout or backfire operations.

Mop-up Phase

1. Consider using "hot-spot" detection devices along perimeter (aerial or hand-held).
2. Light fuels:
 - a. Cold-trail areas adjacent to unburned fuels.
 - b. Do minimal spading; restrict spading to hot areas near fireline only.
3. Medium and heavy fuels:
 - a. Cold-trail charred logs near fireline; do minimal scraping or tool scaring.
 - b. Minimize bucking of logs to check for hot spots or extinguish fire: preferably roll the logs.

- c. Return logs to original position after checking or ground is cool.
- d. Refrain from making bone-yards: Burned/partially burned fuels that were moved would be arranged in natural position as much as possible.
- e. Consider allowing larger logs near the fireline to burnout instead of bucking into manageable lengths. Use lever, etc. to move large logs.
- 4. Aerial fuels--brush, small trees and limbs: remove or limb only those fuels, which if ignited, have potential to spread fire outside the fireline.
- 5. Burning trees and snags:
 - a. First consideration is to allow burning tree/snag to burn themselves out or down (Ensure adequate safety measures are communicated).
 - b. Identify hazard trees with an observer, flagging, and/or glow-sticks.
 - c. If burning trees/snags pose serious threat of spreading firebrands, extinguish fire with water or dirt. FELLING by chainsaw will be last means.
 - d. Consider falling by blasting, if available.

Camp Sites and Personal Conduct

- 1. Use existing campsites if available.
- 2. If existing campsites are not available, select campsites that are unlikely to be observed by visitors/users.
- 3. Camps, staging areas, and base heliports will be located outside designated habitat, if at all possible, and will be identified on a map prior to implementation.
- 4. Select impact-resistant sites such as rocky or sandy soil, or openings within heavy timber. Avoid camping in meadows, along streams or lakeshores.
- 5. Change camp location if ground vegetation in and around the camp shows signs of excessive use.
- 6. Do minimal disturbance to land in preparing bedding and campfire sites. Do not clear vegetation or do trenching to create bedding sites.
- 7. Toilet sites should be located a minimum of 200 feet from water sources. Holes should be dug 6-8 inches deep. Consider the use of vault toilets in large spike camps.
- 8. Select alternate travel routes between camp and fire if trail becomes excessive.
- 9. Evaluate coyote camps versus fixed campsites in sensitive areas.

Restoration of Fire Suppression Activities

- 1. Firelines:
 - a. After fire spread is secured, fill in deep and wide firelines, and cut trenches.
 - b. If cultural and natural resource advisors recommend seeding, firelines may be fertilized and seeded with an approved seed mix.
 - c. Waterbar, as necessary, to prevent erosion, or use wood material to act as sediment dams.
 - d. Waterbars or drain dips should be constructed at a 30 to 45 degree angle to the fireline.
 - e. A berm height is not to exceed six inches in height.
 - f. Assure downslope end of waterbar is open and has adequate length to prevent runoff from reentering the line below.

- g. Ensure stumps from cut trees/large size brush are cut flush with ground.
 - h. Camouflage cut stumps, if possible.
 - i. Any trees or large size brush cut during fireline construction should be scattered to appear natural.
- 2. Camps (main and spike) and Helibases:
 - a. Restore campsite to natural conditions as much as possible.
 - b. Scatter fireplace rocks, charcoal from fire; cover fire ring with soil; blend area with natural cover.
 - c. Clean up trash, rake up wood chips, and remove any matting placed down to limit impacts.
 - d. Pack out all garbage and unburnables.
 - e. Block any new access routes and post closure signs.
 - f. If cultural and natural resource advisors recommend seeding, impacted areas may be fertilized and seeded with an approved seed mix. Heavily compacted soils may need to be ripped prior to application of seed and fertilizer.
- 3. Tractor lines/Safety Zones:

Tractors are not used in fire suppression in Olympic National Park. If an emergency circumstance required an exception, the following rehabilitation measures would be recommended:

 - a. Waterbars should be constructed at a 30 to 45 degree angle. Height of waterbars should not exceed 18 inches. Space 50 feet apart on slopes greater than 30 percent and 100 feet apart on slopes between 10 and 30 percent. The downslope side of the waterbar needs to be opened and of adequate length to allow free flow of water off the tractor line.
 - b. Breakup and pull all berms, tractor piles and windrows. Lop and scatter slash on disturbed areas to achieve 50 percent ground cover on disturbed sites.
- 4. General:
 - a. Remove all signs of human activity (plastic flagging, small pieces of aluminum foil, litter).
 - b. Restore helicopter landing sites.
 - c. Cover, fill in latrine site.
 - d. For any non-system roads: implement erosion control standards and restore the road to a pattern of use prior to its fire suppression usage.

Appendix 7D.4: Burned Area Emergency Response

1. A Burned Area Emergency Response (BAER) team will be assigned to fires over 100 acres in size, if deemed necessary by the cultural and natural resources management staff.
2. The BAER Team should include a fisheries biologist.
3. After a fire is declared out, a biologist should review the suppression and rehabilitation efforts to see if conservation measures were successfully implemented.
4. Where large fires affect more than about ten percent of a section 7 watershed, it is recommended that a scientific group of experts be convened to prepare a peer reviewed assessment or analysis of the short term and long term effects from the wildfire, suppression actions and rehabilitation. The assessment should also recommend actions (if there are any) that may be appropriate for the burned or unburned areas within the watershed.

US DOI Website: <http://www.fws.gov/fire/ifcc/esr/BAER.htm>

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Appendix 7D.5: Location of Fire Danger Rating Operating Plan

The location of the fire danger rating operating plan is located at the Colville NF fire management office.

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Appendix 7D.6: Job Hazard Analysis for Wildland Fire and Fire Aviation Operations

FS-6700-7 (2/98)			
U.S. Department of Interior National Park Service	1. WORK PROJECT/ACTIVITY Prescribe Fire	2. LOCATION Various	3. UNIT NCP/LRP
JOB HAZARD ANALYSIS (JHA)	4. NAME OF ANALYST Aaron Anderson	5. JOB TITLE Crew Foreman	6. DATE PREPARED 03/25/09
References-FSH 6709.11 and -12 (Instructions on Reverse)			
7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE	
*Travel to, from and on Project.	Motor vehicle accidents Slippery road surfaces, soft shoulders, unimproved and narrow roadways. Weather darkness, smoke.	Driving Defensively. Use seat belts. Identify road conditions during briefings. Post Road Guards. Mark hazards. Use Headlights. Perform preuse inspections on equipment. Scout roads and identify turnouts before ignition of project. Maintain communications. Provide road system map for project. Use Backers and chock vehicle tires. Have vehicles facing out.	
*Qualifications For assigned Position	Lack of Experience Injuries	Workers recruited for burn assignments shall meet age, health, and physical requirements established for regular firefighting duties. (FSH 5109.16) Also meet Prescribed Burn qualifications.	
*Briefing	Lack of communications	Provide project briefing before burning will clarify firing order, organization responsibilities, communications, hazards, weather, and expected fire behavior.	
*Protective Clothing and equipment	Injuries, burns and death	Wear Hard hat with chin strap, safety glasses, Nomex Fire resistant pants and shirts NFPA 1977 compliant. Keep sleeves rolled down. Wear leather, lace type, boots with skid resistant soles, and tops at least 8 inches high. Carry drinking water and fire shelter. Wear OSHA approved firefighting gloves. wear hearing protection when working around equipment where noise level exceeds 90 dba. Wear additional protective equipment as dictated by local conditions and exposure to special equipment.	
*Lighters	Injuries and death falls, snags, bees, snakes, smoke, burns, rolling material.	Always have an escape route. Maintain LCES. Follow the Standard Fire Orders and Watch Out Situations. Maintain communications with other Lighters and RX Fire Ignition specialist. Hand held	

		radios shall be provided to all lighters. Do not fill drip torches near ignition sources. Do not spill burn mix on clothing.	
*Fuel Mixing	Burns, spills, fuel saturated clothing and boots.	No smoking within 25 feet of mixing and filling area. Do not fill or mix in pick up beds with bed liners. Avoid the use of cellular telephones in and around fill or mixing area. Avoid fuel contact with bare hands, clothing and boots. Provide pour spouts. Use only approved fuel containers. Follow fuel mixture ratio in the Health and safety Code Handbook.	
*Holding/Mop Up/Patrol Crews	Smoke, burns, Falls, back injuries, bees, poison oak, snags, rolling material, eye injuries. Heat Stress. Dehydration CO Poisoning	Wear PPE's listed above. LCES, Follow Standard Fire Orders and Watch out Situations. Receive briefing from Holding and Mop Up Boss. Identify hazards in work area. Flag hazards for others. Use warning lights and provide traffic control on roadways during smoky and nights operations. Maintaining a high level of aerobic fitness is one of the best ways to protect yourself against heat stress. Drink lots of fluids before, during and after work. Periodically rotate crews from work sites with high smoke levels to areas of less smoke or smoke free areas. Protective clothing and equipment shall be the same as required for firefighting. Crews shall follow all guidelines in the NWCG Fireline Handbook Chapter 5 Firefighting Safety (Rev. 9/98). Maintain communications with the ECC.	
*			
*Emergency Evacuation Procedures (EEP)	Serious illness injuries	Notify ECC, request medical response from the responsible medical first responders. Provide type of injury, location, access, number of patients. Follow San Diego County EMS protocol. On site FS engines shall have BLS equipment to initiate basic life support until responsible medical first responders arrive. Identify EMT's and available medical equipment on project during briefing.	
*			
10. LINE OFFICER SIGNATURE		11. TITLE	12. DATE
Previous edition is obsolete		(over)	

FS-6700-7 (2/98)			
U.S. Department of Interior	1. WORK PROJECT/ACTIVITY		2. LOCATION
National Park Service	Brushing/Chain Saw Use		Various
JOB HAZARD ANALYSIS (JHA)	4. NAME OF ANALYST		5. JOB TITLE
	A.Anderson		FALC
References- FSH 6709.11 and -12 (Instructions on Reverse)			6. DATE PREPARED
			03/25/07
7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE	
Travel to from Project	Vehicle condition	Perform pre-trip inspection on vehicle. Conduct scheduled PM inspections.	
	Weather Road Conditions	Drive to avoid accident situations created by weather or road conditions. Always wear your seat belt. Reduce speed when driving on wet surfaces.	
	Other Drivers	To prevent accidents, make concessions to other drivers who are thoughtless, unskilled, or ignorant of the hazards they create	
	Animals	Be aware of animals on the side of the road	
	Backing vehicle	Always use a person to serve as a guide for backing when available. Use chock blocks when parked.	
* Carrying Chain saw.	Cuts Falls Burns	Stop saw before carrying. Point bar forward when going downhill and the saw is at the side. Point bar to the rear when going uphill and the saw at the side. Pack and guard bar and dogs when carrying saw on the shoulder. To avoid fatigue chain saw should be carried on shoulder. Maintain minimum 10 feet walking space between crewmember. Ensure fuel cap on saw is secure.	
*Personal Protection Equipment	Cuts Hearing Loss Eye Injuries Head injuries	Wear gloves ,chaps,hardhat,safety glasses,hearing protection,sturdy boots with slip resistant soles. Use shoulder pads. Keep shirt collar up while carrying saw on shoulder . The leg protection (chaps) shall cover the full length of the thigh to the top of the boots. First aid kits shall be available at the work site and on each transport vehicle. OSHA 1910.266 App A	
*Fueling Chain Saw	Burns Spillage Fire	Stop the saw when checking fuel or bar oil levels and when refueling. Fill tank on bare ground or other noncombustible surface. Wipe spilled fuel off saw. Never start saw within 10 feet of the fueling area. Refuel saw at least 50 feet from persons smoking or other potential sources of ignition.	

*Environmental Conditions	Lightning Rain Strong winds Darkness	All work shall terminate and each employee shall move to a place of safety when environmental conditions create a hazard for the employee.	
*Starting Saw	Kickback Cuts	There are two recognized methods for safely starting a saw. In both methods, the trigger lock should not be used. On Ground starting. Stand starting. Drop Starting is prohibited.	
*Brushing and limbing	Kickback Puller swamper uneven terrain Fatigue	Secure firm footing. Keep feet spread apart in a wide balanced stance. Feet should be placed so as to keep feet and legs away from saw chain. Keep a firm grip on saw with both hands. Fatigue is a major hazard . Do not operate chain saw when fatigue makes proper stance and handling difficult. Look up for widow makers and other loose debris. Don't cut under a hazard. Remove the hazard or relocate the cutting location. Flush cut limbs and stems. Never cut with engine higher than your chest. Clear debris from cutting location so that the guide bar tip is not accidentally stubbed.	
*Chain Saw Operator	Various Injuries Damage to equipment	Train new operators in chain saw use. Never let trainee sawyers operate without constant, direct supervision until they demonstrated the ability to handle the saw independently and proficiently. Ensure that personnel are in good physical condition before allowing them to operate a chain saw. A sawyer should not work alone. Daily safety tailgate sessions shall be conducted and documented.	
*Emergency Evacuation Plan	Illness or Injury	All operators shall receive First aid and CPR training. OSHA 1910.266 App B. For sites with chain saw operations, as a minimum, supply type IV (Belt) first aid kit. Serious illness or injury notify ECC by radio request EMS from local agency. Follow San Diego County EMS protocol. Notify your Supervisor as soon as possible of the incident. Use Blood Borne Pathogen precautions. Complete necessary paperwork.	
10. LINE OFFICER SIGNATURE		11. TITLE	12. DATE
Previous edition is obsolete	(over)		

U.S. Department of Agriculture Forest Service	1. WORK PROJECT/ACTIVITY Office Work/General Driving	2. LOCATION Various	3. UNIT NCP/LRP
JOB HAZARD ANALYSIS (JHA) References-FSH 6709.11 and -12 (Instructions on Reverse)	4. NAME OF ANALYST A.Vezis	5. JOB TITLE AFMO	6. DATE PREPARED 03/25/07
7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE	
*Ergonomics	Hands, Wrists	Maintain proper work station setup and alignment with adequate illumination. Use adjustable chair and wrist/foot rests if necessary. Take frequent breaks from the computer. Practice stretching exercises and relaxing techniques.	
*Walking Surfaces	Slips, Twists, Falls	Keep individual work areas and storage clean, orderly, and free of tripping hazards. Use hand rails when going up or down stairways. Do not store boxes or equipment in the hallway areas.	
*Lifting	Back Injury	Ask for help if load is heavy. Do not try to lift or otherwise move material beyond ability; reduce weight of object by packing smaller parcels. Ask for the professional movers when necessary.	
*Material Storage	Falling Objects and Fire Hazards	Use suitable step, stool or ladder to avoid lifting above shoulder height. Do not store papers, books, or other items on heat registers.	
*Office Equipment	Electrical Shock	Avoid using extension cords in place of permanent wiring. Locate cords away from heat sources and protect from abrasion, crushing or kinking. Disconnect cords only by pulling on the plug. Pull plug before working on any electrical machine. Do not touch appliances or machines while grounded or touching plumbing pipes or faucets.	
*Personal Security	Violence	If you plan to work after hours, let someone know your intentions. Park your vehicle where you can take advantage of the shortest route to and from the building. Sign in and out with the security officer.	
*Traveling on Official Business	Stress and Fatigue	Follow established work/rest guidelines. A 12 hour workday is the Maximum allowed for any activity of which only 10 hours may be spent driving. When driving, stop for a break at least every 2 hours.	

*Driving	Type of Vehicle, Training	Select appropriate vehicle for work needs and location. Familiarize yourself with the vehicle and know where the controls are. Make the "circle of safety" check of vehicle condition. Review maps and plan route prior to beginning your trip. Take a 4 hour Defensive Driving refresher at least every 3 years. Report any accident (gov, leased or pov), regardless of dollar amount.	
*Driving	Weather Conditions	Changes in climatic conditions require adjusting to different weather situations. Do not drive in adverse weather conditions if the trip can be delayed. Avoid being rushed; you will need more time to prepare the vehicle and get to your destination. Remove all frost and snow prior to starting your trip. Make sure vents are clear of snow to provide adequate airflow for defrosting.	
*Field Work Driving	Off Highway Driving	Check with local unit or District as necessary prior to driving on mountain roads regarding logging traffic, and other items such as construction, washouts, blowdowns and closures. Proceed slowly around corners and drive on the right side. Be able to stop within 1/2 of viewing distance.	
*Driving Qualifications	Skills	Drivers must have a valid state driver's license which meets the requirements for the equipment operated on Forest Service business. Supervisors shall review employees on a 4 year basis who drive light vehicles. Review shall be done on form R1-FS-7130-1. Any employees who are CDL certified shall have a review annually. Full time operators, operators of specialized equipment (examples-forklifts, trailer towing, ATVs, snowmobiles) and operators of vehicles over 10,000 GVWR shall have a government identification card with appropriate endorsements for equipment being operated.	
*Travel, Check-Out, Check-In	Personal Safety	When in travel status, leave an itinerary at the front desk or with your supervisor. Include destination, departure and return times and as appropriate a contact where your family or supervisor can reach you in case of an emergency. There are certain situations when no one is expecting the employee to arrive on a specific schedule. When appropriate the employee should call back into the office to let folks know that the trip was completed as planned.	
10. LINE OFFICER SIGNATURE		11. TITLE	12. DATE

U.S. Department of Agriculture Forest Service	1. WORK PROJECT/ACTIVITY Pile Burning	2. LOCATION Various	3. UNIT 02-54
JOB HAZARD ANALYSIS (JHA) References-FSH 6709.11 and -12 (Instructions on Reverse)	4. NAME OF ANALYST A.Anderson	5. JOB TITLE S.F.T.	6. DATE PREPARED 02/23/09
7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE	
*Travel to, from and on Project	Motor Vehicle accident. Slippery road surfaces. Soft Shoulders Narrow roadways Weather Smoke Darkness Other road Users Backing	Perform peruse inspections on equipment. Observe the "Circle of Safety" rule. All FS employees who operate Government vehicles shall hold a valid state driver's license with proper endorsements for the size and class being driven and a FS issued identification card indicating the type of vehicle or equipment the operator is authorized to operate. (FSM 7134.1). Use seat belts. Drivers must attend a FS or National Safety Council defensive driving course at least every 3 years. Identify road conditions during briefings. Post road guards if needed. Mark hazards. Use headlights. Scout roads and identify turnouts before ignition of project. Maintain radio communications. Provide road system map for project. Use backers and chock vehicle's tire. Have vehicles facing out. Know and observe all state and local traffic regulations.	
*Qualifications For assigned Position	Lack of Experience	Employees recruited for burn assignments shall meet age, health and physical requirements established for regular firefighting duties. (5109.16) Also meet Prescribed Burn qualifications.	
*Briefing / Tailgate Safety & Health Sessions	Lack of Communications	Provide Briefings and Tailgate Safety Sessions. Document briefings and sessions. Clarify firing order, organization responsibilities, communications, hazards, weather and expected fire behavior.	
Protective Clothing and Equipment	Injuries Falls Burns Death	Wear approved hard hat with chin strap, safety glasses, flame resistant fabric pants and shirts NPFA 1977 compliant. keep sleeves rolled down. Avoid undergarments and socks made of 100 percent, or a high percentage of, polyester, nylon or acrylic. Wear leather, lace type, boots with skid resistant soles, and tops at least 8" high. Carrying drinking water and fire shelter. Wear OSHA approved firefighting gloves. Wear hearing protection when working around equipment where noise level exceeds 85 dba. Wear additional protective equipment as dictated by local conditions and exposure to special equipment.	
*Lighters	Injuries Death Falls Snags Bees Snakes Smoke Rolling material	Always have an escape route. Maintain LCES. Follow the Standard Fire Orders and Watch Out Situations. Maintain communications with other lighters and RX Fire Ignition Specialist. Hand Held radios shall be provided to all lighters. Lighters shall be trained in the use of Drip Torches. Do not fill drip torches near ignition sources. Do not spill burn mix on clothing. Be alert to foreign objects dumped in burn pile.	
*Fuel Mixing	Burns Spills Fuel saturated clothing and boots Improper labeling Explosive	Transport fuel in approved, labeled containers secured in vehicle beds. Park and secure vehicles hauling flammables / combustibles in a separate, predetermined, safe area. No smoking within 25 feet of mixing and filling area. Do not fill or mix in pick ups bed with bed liners. Avoid use of cellular phones in and around fill or mixing area. Avoid fuel contact with bare hands,	

*Holding / Mop Up / Patrol Crew	Smoke Burns Falls Back Injuries Bees Snakes Posion Oak Snags Rolling Material Heat Stress Dehydration Eye Injuries CO Posioning	clothing and boots. Provide pour spouts. Follow fuel mixture ratio in the Health and Safety Code Handbook. Wear PPE's listed above. Protective clothing and equipment shall be the same as required for firefighting. LCES, Follow Standard Fire Orders and Watch Out Situations. Receive briefing from Holding and Mop Up Boss. Identify and mark hazards in work area. Use warning lights and provide traffic control on roadways during smoky and nights operations. Maintaining a high level of aerobic fitness is one of the best ways to protect yourself against heat stress. Drink lots of fluids before, during and after work. Periodically rotate crews from work sites with high levels of smoke to areas of less smoke or smoke free areas. Set a reasonable work pace and allow adequate rest breaks while on the project. Crews shall follow all guidelines in the NWCG Fireline Handbook Chapter 5 Firefighting Safety (Rev. 9/98). Maintain communications with the ECC. Monitor personnel for symptoms and behavior associated with CO exposure and take appropriate action when necessary.
Hand Tools Pitch Forks	Puncture Wounds	Ensure that tools remain in safe condition through periodic inspection and repair. Monitor employee performance periodically to ensure proper methods are used. Handles must be free of splinters, splits and cracks. Pitch forks not in use on the project should be stored standing with forks in ground.
Workplace	Injury or Threat of violence	Violence occurs at different levels of intensity, and usually increases overtime. In order to prevent violence from escalating, employees and supervisors need to pay attention to the work environment, recognize the signs of possible violence early, and take all necessary actions to reduce the risk to life and property. Violent people may come from inside or outside your organization. Call ECC for law enforcement if needed.
* Emergency Evacuation Procedures (EEP) * * * *	Illness/Injuries	On site FS engines shall have BLS equipment to initiate basic life support until responsible medical first responders arrive. Notify ECC request medical response from responsible medical first responders. Provide type of injury, location, access and number of patients. Follow San Diego County EMS protocol. Identify EMT's and available medical equipment on project during briefing / tailgate safety session. Notify supervisor of injury. Complete necessary paperwork.
10. LINE OFFICER SIGNATURE	11. TITLE	12. DATE

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Prior to operations pertinent JHAs will be reviewed.

Appendix 7D.7: Location of Agency Administers Guide to Critical Incident Management (PMS 926)

This guide is located on the National Wildfire Coordinating Group website at:

<http://www.nwcg.gov/pms/pubs/pubs.htm>, with a local park specific copy at the Winthrop office.

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Appendix 7D.8: List of Wildland Fire Qualifications for LRNRA Staff

The list of fire qualified personnel is in the fire management share-all file for the park, with a hard copy in the fire management office.

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Appendix 7D.9: Cooperative and Interagency Agreements

Copies of the cooperative and interagency agreements are found in the fire management file in the LRNRA share-all server.

The LRNRA (NOCA) fire management office maintains fire related agreements with a host of entities. Table 10 summarizes these agreements.

Table 10: Fire Related Agreements

Cooperator	Type of Agreement
Okanogan Wenatchee National Forest	Interagency Agreement
Mount Baker Snoqualmie National Forest	Interagency Agreement
WA DNR, Eastern Washington Wildfire Operating Plan	Interagency Agreement

The fire department having responsibility for fire suppression in the area of a reported fire will in all likelihood respond to incidents within their areas of jurisdiction (Fire District), as will the Washington DNR. The National Park Service will manage wildfires occurring on NPS lands.

LRNRA will request assistance for support from Washington DNR by contacting NE Washington Interagency Coordination Center(NEWICC). Assistance from the various fire departments can be requested by calling 911. Currently, LRNRA does not have adequate staffing to implement this plan and will rely on cooperators for initial response forces.

- LRNRA lacks resources &/or experienced personnel to implement a prescribed burn program. Burn Bosses and other experienced prescribed fire personnel must be requested to assist LRNRA.

Interagency meetings at the local level are held late Fall and early Spring to discuss topics of mutual concern and to coordinate prescribed fire and wildfire suppression activities during the upcoming fire season.

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Appendix 7D.10
Notification Procedure

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Appendix 7D.10.a: Serious Injury or Death Procedure

Wildland fire management programs routinely expose firefighters to risks. Risks are minimized through effective safety programs integrated into standard operating procedures for all wildland fire management operations. In spite of these efforts serious injuries and sometimes fatalities occur. At these times it is important that managers follow the procedures outlined in PMS 926 “Agencies Administrator’s Guide to Critical Incident Management”.

Agency administrators should review this guide with their fire management staff annually, insuring that pre-work is accomplished and standard operating procedures are known prior to the field season.

A copy of the guide and procedures is found at:

<http://www.nwcg.gov/pms/pubs/pubs.htm>

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Appendix 7D.10.b

CRITICAL INCIDENT STRESS MANAGEMENT

Introduction

Critical Incident Stress Management (CISM) provides an organized approach to the management of stress responses for personnel having been exposed to a traumatic event in the line of duty. The use of CISM may decrease post-traumatic stress disorder, acute stress disorder, workman's compensation claims, fatalities, injuries, and suicide. The use of CISM does not prevent an employee from seeking individual consultation through the Employee Assistance Program or a trained Peer Supporter.

Agency Administrator Responsibilities

- **Identification of Event**
The agency administrator of the unit where the incident occurred is responsible for identifying an event as a critical incident. The agency administrator is the highest ranking line officer, regardless of agency, with direct responsibility for the personnel involved in the incident.
- **Request CISM**
The agency administrator or designee is responsible for requesting CISM services from the CISM Coordinator as soon as possible after the event.

The general accepted method for contacting a CISM Coordinator is through the local dispatch office or appropriate Coordination Center.

- **Provide Information/Pay Codes**
The agency administrator or designee is responsible for providing the CISM Coordinator with information about the incident (See Supplement 2 in the Great Basin Mobilization Guide). The agency administrator is responsible for providing the CISM Coordinator with a budget code for expenses associated with CISM response.

Local Dispatch Responsibilities

- **Request CISM**
When the agency administrator has deemed an incident as a Critical Incident, attempt to fill CISM Response resources locally before placing the order at the appropriate Coordination Center.

In the event the local dispatch center does not have local resources available, an order for a CISM Coordinator (THSP) will be placed with the local GACC within one hour of receiving an order from the agency administrator.

- **Identify a Logistic Support for CISM**

The local dispatch center will identify a person to work with the CISM Coordinator to provide logistical support such as rooms, office space, etc.

Coordination Center Responsibilities

- **Request CISM**

Coordination Centers are responsible for contacting the CISM Coordinator and requesting CISM services within 1 hour of receiving the local Dispatch Center order. In the event the CISM Coordinator or qualified CISM Leader from that area is unavailable, the Coordination Center will pass the request on to another center or the National Interagency Coordination Center (NICC).

CISM Coordinator Responsibilities

- Decides on the size and makeup of the group.
- Sets time frames for CISM activities with the CISM Leader.
- Provides follow up to the CISM Leader throughout the CISM Group's activities.
- Does an AAR with the CISM Leader at the close of CISM activities.

Definitions

Critical Incident: Any event which has a stressful impact sufficient enough to overwhelm the usually effective coping skills of either an individual or group. Critical incidents are typically sudden, powerful events which are outside the range of ordinary human experiences.

Critical Incident Stress Debriefing (CISD): A structured group meeting that emphasizes venting or show of emotions and other reactions to a critical incident. It also emphasizes educational and informational elements which are of assistance to employees in understanding and dealing with the stress generated by the event. Debriefings generally occur within 24 – 72 hours of the critical incident.

Critical Incident Stress Management (CISM): A wide range of programs and services designed to prevent and mitigate the effects of traumatic stress.

Initial Incident Stress Defusing: This is a shorter and less structured version of a Critical Incident Stress Debriefing (CISD) that usually occurs within a few hours of a critical incident. The main purpose of a Defusing is to stabilize the affected personnel so that they can return to work if necessary or go home without unusual stress. Defusing's allow for initial venting of reactions to the incident and provides stress related information to affected personnel. A Defusing may eliminate the need for a formal CISD or enhance a subsequent CISD.

Individual Crisis Debriefing: One-on-one confidential assistance with any issue by trained peer supporter or mental health professional.

Peer Support: Personnel trained to assist their fellow employees by listening without judgment and maintaining confidentiality. They are also trained in positive coping strategies for stress, and to help others validate their thoughts and emotions about an overwhelming trauma or loss.

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Appendix 7D.11

Smoke Management Plan

The National Park Service considers visibility and clean air to be primary natural resource values. All NPS units are directed to comply with the requirements of the Clean Air Act and meet National Ambient Air Quality Standards (NAAQS). LRNRA is designated as Air Quality Classification II (National Park Service 1979).

Smoke management concerns have been successfully mitigated during past prescribed burns within LRNRA. This is due to management of the burn program in accordance with WA SIP guidelines as administered by WA DNR.

Planning will become more complex as prescribed burns are written for units adjacent to wildland-urban interface areas and/or major highways, and will require active smoke management techniques. Other future obstacles will have to be overcome as well.

The State has delegated to the WA DNR responsibility for the management of wildland smoke management regulation and permitting. WA DNR has issued guidelines for prescribed burning. LRNRA will obtain necessary permits and adhere to their guidelines. The guidelines will be incorporated into each burn plan.

Smoke management concerns requiring mitigation in fire management operations include:

- Visibility impairment on highways and roads - particularly major roads with no option for detouring.
- The effect of smoke on the health of visitors, local residents, and firefighters.
- National Ambient Air Quality Standards (NAAQS) within park and adjacent airsheds.

LRNRA will utilize the following tactics to manage smoke impacts as needed:

Planning

- Detailed smoke management actions will be made part of each prescribed burn plan.
- Smoke trajectory maps will be developed and sensitive targets identified.
- Mitigation measures will be defined in the plan and a contingency plan developed. Arrangements will be made prior to ignition to insure designated resources are available if needed to implement the mitigation measures.
- A spot weather forecast will be requested the day of the burn from the National Weather Service (NWS) prior to ignition of any prescribed fire
- Advanced notice will be provided to the WA DNR District Office, and permission to burn requested based upon the following information:
 - location
 - fuel loading estimate
 - proposed ignition time
 - forecast Burn Category Day (BCD)

Air quality issues

LRNRA is designated as Air Quality Classification II (National Park Service 1979).

Smoke Management Program

Avoidance

- Prescribed burns will not be initiated unless burn category days (ventilation), available fuel loading, and distance to nearest downwind smoke sensitive area are within the limitations set in WA DNR smoke management guidelines.
- Prescribed burns, which includes pile burning, may be conducted in the winter, spring, or fall instead of the preferred summer season to mitigate potential smoke impacts.

Reduction:

If the smoke emissions are predicted to be within the guidelines prescribed for the BCD, the burn can be initiated. If the prescriptive criteria for smoke emissions are exceeded, the burn boss can mitigate the problem by breaking the burn into smaller parcels or waiting until better smoke dispersal conditions are present. Initiate aggressive mop-up, as needed. Fuel breaks may be established to limit the spread of a prescribed burn. Mechanical fuel reduction may be utilized to reduce fuel loading as needed and where practical

Dilution

- All prescribed burning in the parks will be conducted under adequate smoke dispersion conditions as determined by WA DNR burn category day criteria.

Traffic Management and Public Safety

Prescribed burn plans will contain specific monitoring requirements for nighttime monitoring of smoke on roads.

In the event that smoke from a fire obscures visibility below the state defined limit or creates a safety hazard, the following actions will be initiated:

- NPS rangers will be requested to respond to the scene to provide for public safety.
- The Washington State Highway Patrol, appropriate county sheriff department and/or the Washington Department of Transportation will be notified of the smoke incident and requested to dispatch personnel to the scene to provide for public safety. NPS Rangers will assist as needed.

If a park road is involved, the Ranger(s) on scene will determine what type of traffic control is needed and take immediate action. Additional rangers and/or fire management staff will assist as needed.

Smoke management in Washington State is managed by the Washington State Department of Natural Resources. Smoke management guidelines are located at:

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http://www.dnr.wa.gov/RecreationEducation/Topics/FireBurningRegulations/Pages/rp_burn_silvicultural_burning.aspx

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Appendix 7D.12
Wildland Fire Decision Support System (WFDSS)

Lake Roosevelt National Recreation Area (LRNRA) WFDSS Objectives and Requirements

Objectives

The following bullets contain general WFDSS objectives for the LRNRA FMUs.

- Ensure firefighter and public safety receives the highest priority during all fire management activities.
- Reduce heavy concentrations of hazard fuel within wildland urban interface areas
- Utilize the management determined response to wildfire during wildland fire suppression operations to protect the public, limit fire spread onto private property, and protect the natural, cultural, and historic resources of the Unit.
- Place emphasis on facilitating reciprocal fire management activities through the development and maintenance of cooperative agreements and working relationships with pertinent fire management entities.
- Use natural or existing man-made barriers to the greatest extent possible for control lines. (Minimum Impact Suppression Tactics [MIST] concept).
- Place emphasis on educating adjacent landowners regarding the risk of fire to property and effective strategies for reducing risks.
- Monitor and document results of fire management activities.
- Use fire when appropriate as a tool to manage and enhance natural resources and to reduce hazard fuel accumulations that may affect suppression efforts.
- Use fire when appropriate as a tool to manage cultural landscapes.
- All wildland fire will be suppressed in a cost-effective manner, consistent with firefighter and public safety and the values to be protected.
- Suppression strategies are designed to lessen the possibility of adverse impact to the environment, including air quality.
- Wildland fire will be restored as an ecological process.

WFDSS Management Requirements

The following bullets contain general WFDSS requirements for the LRNRA.

- Smoke management required, utilizing Washington State DNR Implementation Procedures.
- Restrictions on impacts allowed on state highways through operation protocols.
- Protective measures required for protection of known historical and cultural resources prior to operations.
- No off-road heavy equipment or vehicle use allowed unless human life, private or public property is threatened.
- The suppression response selected to manage a wildland fire will consider air quality standards.

General WFDSS Discussion

The Wildland Fire Decision Support System (WFDSS) is a web based decision support system, which replaces the Wildland Fire Situation Analysis (WFSA), Wildland Fire Implementation plan (WFIP), Long Term Implementation Plan (LTIP) and Strategic Implementation Plan (SIP). These documents have been combined into a single dynamic process within the WFDSS. WFDSS utilizes GIS information that incorporates modeling, documentation of a decision process, and multiple databases. These features are combined into a system that gives the decision maker maximum flexibility in defining their course of action and subsequent strategic and tactical actions based on planning documents, incident specific analysis and risk assessment. As an internet based system with multiple database links; WFDSS can give decision support in a timely and efficient manner.

Use of WFDSS for all unplanned fires has been implemented differently throughout the agencies. It is the decision of the local unit to determine who shall be responsible for initial entry and updating fires in the system. Mandatory use of WFDSS is required for all agencies.

WFDSS Support

A National Fire Decision Support Center (NFDSC) has been established to support analysis used in wildland fire decision making and WFDSS. The support provided by NFDSC consists of developing, improving, and increasing production and operational use of decision support products. As part of that support NFDSC will provide not only direct decision support but also mentoring and training to develop and strengthen regional and unit level decision support capacity. Information for requesting assistance from the NFDSC can be found at the WFDSS website: <http://WFDSS.usgs.gov>. An over view of the WFDSS Elements can be found in appendix S.

WFDSS User Roles

Privileges within WFDSS are controlled by several user roles which have varying levels of capability in relation to creation and editing of incidents, analyses, reports, and decisions. More information can be found on the WFDSS homepage under the Related Resources link.

Fire Modeling

Fire modeling has been incorporated into WFDSS, in the form of the FIRE Spread Probability model (FSPro) and FlamMap. Single purpose models from FlamMap; the “Basic” and “Short Term”, have been incorporated in to the system. Comparison of WFDSS short and basic models to stand alone FlamMap and other fire behavior information can be found on the WFDSS homepage under the Related Resources link, fire behavior section. Information for requesting assistance in running these models for your incident can be found at the WFDSS homepage through the National Fire Decision Support Center (NFDSC).

Response Levels

WFDSS can be used to assess the entire spectrum of incident complexity and risk within three Response Levels (RL), RL1, RL2, and RL3. These response levels are used in a manner similar to that of the stages of a WFIP in that your incident can escalate and de-escalate through these levels as the incident progresses. WFDSS differs from the WFIP process in that there is no nationally prescribed time requirement in which a RL must be completed. The movement through Response Levels does not necessarily need to be linear and should be determined by incident complexity, objectives, and expected duration of the incident.

RL1 - Most fires will not progress beyond this point. Response Level 1 is characterized by basic analysis and preplanned actions and decisions. This RL will be similar to the WFIP stage 1.

RL2 - Response Level 2 is characterized by a more detailed analysis and planning process. It is at this point your initial course of action is developed and a decision is approved by an agency administrator. This RL is comparable to WFIP stage 2.

FIRE MANAGEMENT PLANNING

RL3 - Response Level 3 is characterized by a very detailed analysis and course of action that may include long-term planning considerations. This RL is comparable to WFIP stage 3 or the Long Term Implementation Plan (LTIP). Fires in this category will typically be large, highly complex, or long-term fire management events. This RL decision document must also be approved by an agency administrator.

WFDSS Decision Approval and Publication

Decisions in WFDSS are approved and published by the appropriate line officer as defined in the table 11 below. Incident privileges must be assigned within WFDSS to designate the approver. During the approval process, prior to publishing a decision, the timeframe for periodic assessment can be set (1-14days).

It is imperative that a decision be reviewed carefully as once approved and published, a decision becomes a system of record and all WFDSS users can view the information. Additionally, the action CANNOT be undone. If there is an error in the information, or new information is added for documentation or update (i.e. fire behavior, Management Action Points) a new decision must be made to permanently update the record.

Table 11: WFDSS Approval Requirements

WFDSS Approval Requirements	Cost Estimate NPS Authorities	NPS Director.
Park Superintendent \$0-\$2M	Regional Director. \$2M-5M	>\$5M

Periodic Assessment

The Periodic Assessment must be completed by the designated approver at the time frame set during the publication process. This timeframe can be set 1-14 days depending upon the complexity and status of the incident and the Line Officer can request a reminder email for the morning the next assessment is due. It is beneficial to document clear, concise information about the incident when completing the periodic assessment as this information will be part of the decision record. It is a way for someone to gather situational awareness of the incident and should be useful information not only during the incident but for years to come when looking back at the incident. It is especially pertinent because it will outline your thought process and reasons for either continuing a current decision or requiring a new decision.

Wildland Fire Decision Support System (WFDSS) Tools

Modeling tools are available to assist fire managers and agency administrators in decisions regarding strategies and tactics.

Rapid Assessment Values-at-Risk (RAVAR) is the primary fire economics tool within the Wildland Fire Decision Support System (WFDSS). It utilizes Fire Spread Probability Model (FSPro) outputs and county assessor cadastral data for structural property values as well as other Tier 1 (national) and Tier 2 (regional) values at risk. RAVAR is typically integrated with the FSPro model to identify the likelihood of a resources being impacted in the potential fire path but can be linked to any expected fire spread polygon. This quantifiable data can be used to inform managers while developing the best course of action. USFS - Congressional mandate required the Forest Service to develop a performance measure for wildland fire suppression expenditures which resulted in the development of the Stratified Cost Index (SCI). The SCI estimates expenditures on individual large wildland fires (>300 acres) by geographic area considering characteristics of the fire, the fire environment and values within proximity of the fire. The use of SCI for Forest Service fires is not mandated however it is recommended that SCI be used for large FS fires exceeding 5 million dollars or that will likely be audited. Check with your Forest or Region for local protocol on the use of SCI. DOI - There are unique SCI models which have been developed for each DOI agency. Agency-specific direction will be given in the future related to when the models will be available in WFDSS, and how field units will use them in cost estimation

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Appendix 7D.13

Wildland Fire Risk Analysis

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Lake Roosevelt Fire Risk Model

Introduction

Fire managers need a quantifiable way to justify suppression and fuel treatment funding. A fire risk analysis using ArcGIS 10 (ESRI 2011) and FlamMap 3.0 (Finney 2006) software was conducted by combining and weighting expected fire locations, potential fire behavior, and values at risk to loss. This information may be useful to fire managers as they make decisions about where and what type of fuel treatments should be applied to the landscape and where suppression resources should be distributed. In addition this study may act as an educational and interpretive tool for discussions on fire management issues between the NPS and other government agencies and the community surrounding Lake Roosevelt.

Fire can have beneficial outcomes (i.e. ecological benefits) as well as detrimental consequences (i.e. loss of life and property). For the purposes of this analysis, only negative consequences of fire were considered due to the difficulty in quantifying beneficial outcomes. This study does not attempt to quantify values that could be lost; however it does identify where higher risk of ignition (historical fire locations), potential fire behavior (modeled from fuel and terrain data), and values (developed areas) coincide.

Methods

Study Area

The study area encompasses approximately a 1.5 mile buffer around Lake Roosevelt National Recreation Area (Fig. 1). The buffered area corresponds to the extent of vegetation survey data recently acquired by the park (Erixson, Cogan, and Von Loh 2011). All spatial data used in the analysis were clipped to the vegetation survey extent. The study area encompasses all of Lake Roosevelt NRA, portions of Colville and Spokane Indian Reservations (BIA), a small portion of the Colville National Forest, WA state and local public lands, and private lands (Fig. 2). NPS administered lands of the Recreation Area are comprised of a narrow bands of shoreline surrounding Lake Roosevelt. (NPS 2000). To isolate and analyze only NPS lands would not reveal potential fire risk to neighboring communities and would take fire risk out of context to the surrounding landscape. In addition, site specific analysis anywhere within the study area would be difficult due the generalized nature of available data; therefore a more regional approach was taken to understand fire risk.



Figure 1: Lake Roosevelt NRA location

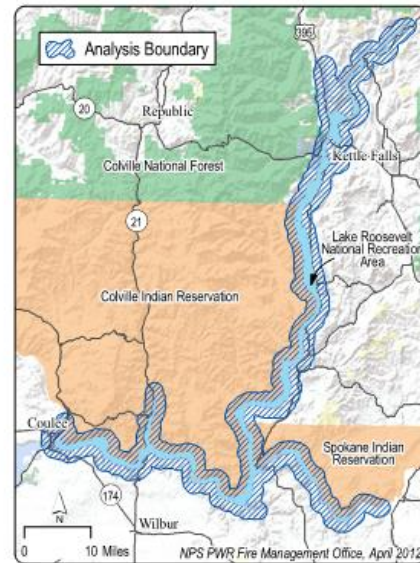


Figure 2: Analysis area

Analysis Workflow

The basic workflow of the analysis was to calculate risk of ignition from historical records, potential fire behavior parameters of fireline intensity and crown fire activity using FlamMap 3.0, and values at risk to loss using mapped NPS structures and vegetation data. The four variables were reclassified and normalized to a common scale of 0-100 representing lowest to highest areas of risk, hazard, and values (Fig. 3). Next, a weighted sum technique was used to combine and weight the variables to create fire risk rankings for the entire study area (Fig. 4).

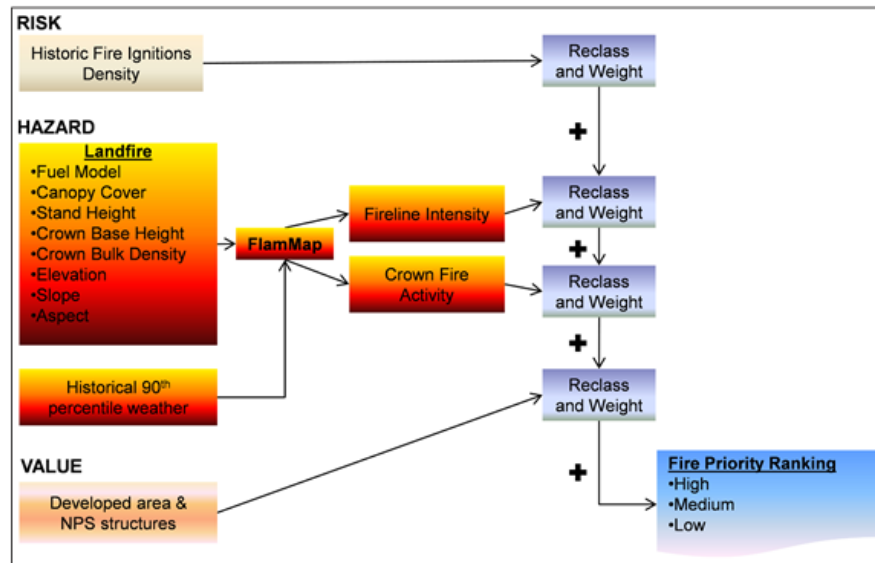


Figure 3: Basic workflow

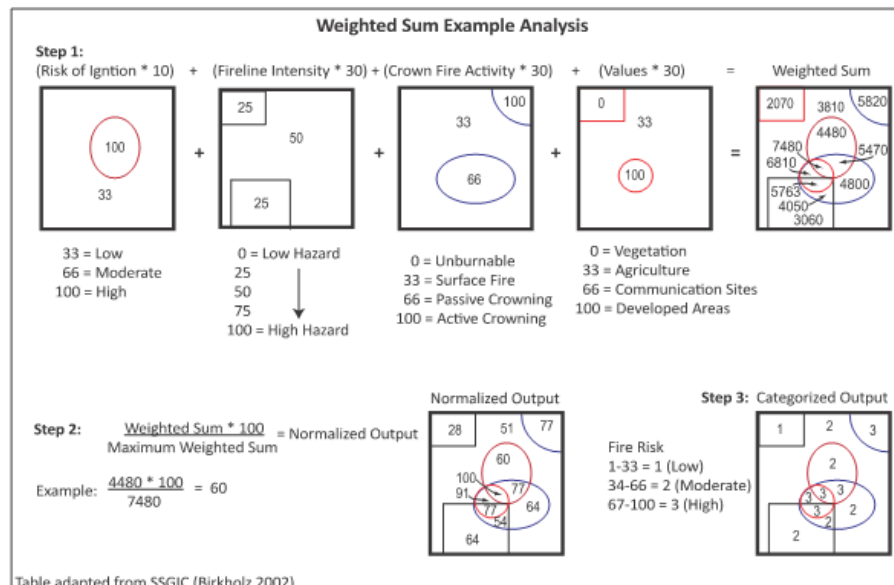


Table adapted from SSGIC (Birkholz 2002)

Figure 4: Weighted sum example

Data Sources

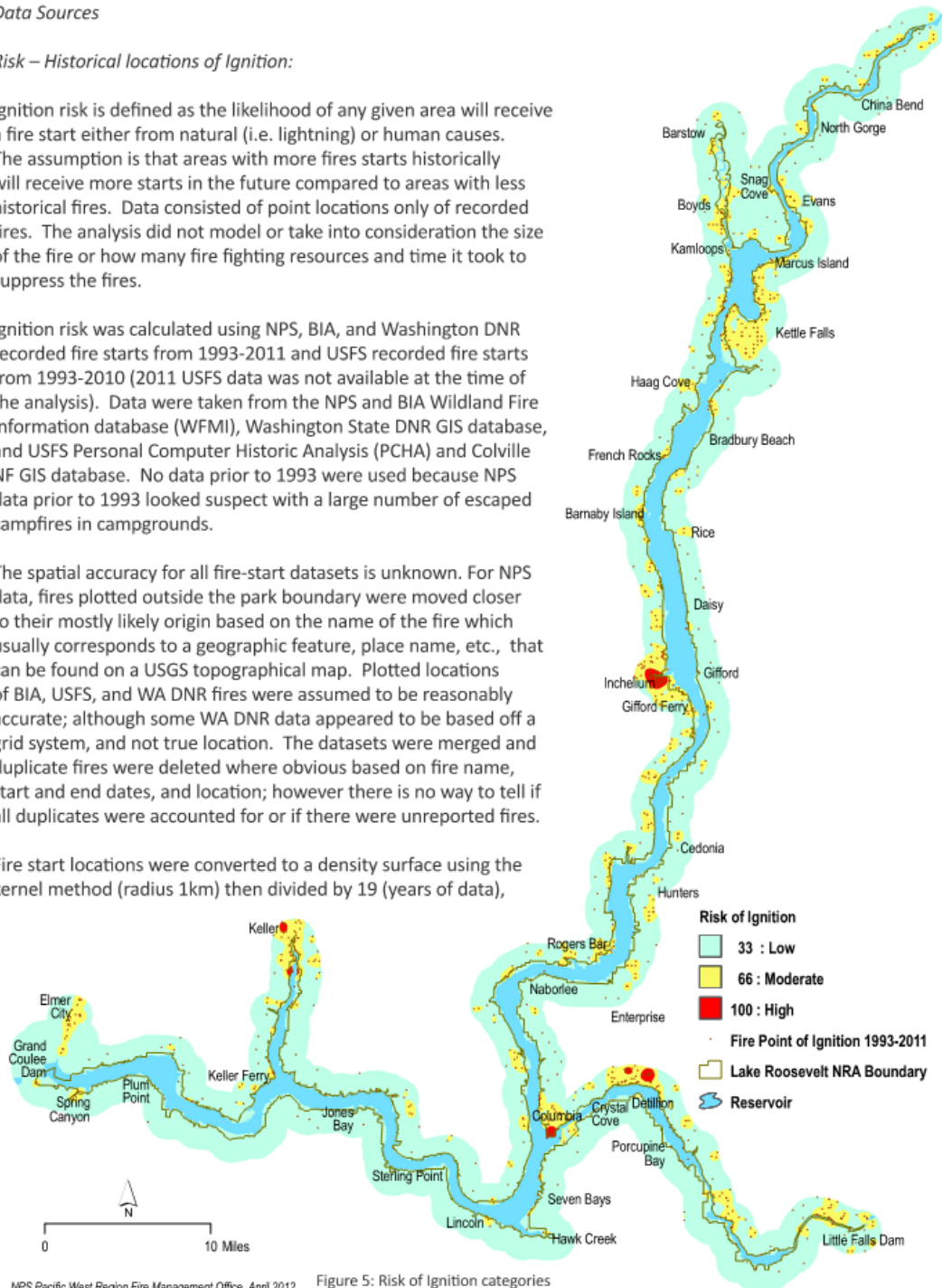
Risk – Historical locations of Ignition:

Ignition risk is defined as the likelihood of any given area will receive a fire start either from natural (i.e. lightning) or human causes. The assumption is that areas with more fires starts historically will receive more starts in the future compared to areas with less historical fires. Data consisted of point locations only of recorded fires. The analysis did not model or take into consideration the size of the fire or how many fire fighting resources and time it took to suppress the fires.

Ignition risk was calculated using NPS, BIA, and Washington DNR recorded fire starts from 1993-2011 and USFS recorded fire starts from 1993-2010 (2011 USFS data was not available at the time of the analysis). Data were taken from the NPS and BIA Wildland Fire Information database (WFMI), Washington State DNR GIS database, and USFS Personal Computer Historic Analysis (PCHA) and Colville NF GIS database. No data prior to 1993 were used because NPS data prior to 1993 looked suspect with a large number of escaped campfires in campgrounds.

The spatial accuracy for all fire-start datasets is unknown. For NPS data, fires plotted outside the park boundary were moved closer to their mostly likely origin based on the name of the fire which usually corresponds to a geographic feature, place name, etc., that can be found on a USGS topographical map. Plotted locations of BIA, USFS, and WA DNR fires were assumed to be reasonably accurate; although some WA DNR data appeared to be based off a grid system, and not true location. The datasets were merged and duplicate fires were deleted where obvious based on fire name, start and end dates, and location; however there is no way to tell if all duplicates were accounted for or if there were unreported fires.

Fire start locations were converted to a density surface using the kernel method (radius 1km) then divided by 19 (years of data),



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Figure 5: Risk of Ignition categories

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resulting in a raster dataset whose values indicate fire starts/kilometer/year. The densities were reclassified into 3 categories: low, moderate, high using the Jenks natural breaks method. Densities ranged from 0.07 to 1.25 fire starts/km/year (Fig. 5). Based on historical data, the study area does not receive many fire starts with the exception of the town of Inchelium which receives over one start each year; however, this may be due to BIA reporting protocols and/or location reporting errors.

Fire Hazard - Potential Fire Behavior

The variables that contribute to fire behavior include topography (elevation, aspect, slope), wind (speed, direction), fuel moistures, and fuel type and arrangement (surface fuels and tree canopy characteristics).

Potential fire behavior characteristics of fireline intensity (Byram 1959) and crown fire activity were modeled for the study area using FlamMap. Fireline Intensity is used as an indication of fire severity and is linked to difficulty in fire suppression efforts (Rothermel 1983). Compared to surface fire, crown fire can be more difficult to control, structures harder to protect, fire fighter safety may be compromised and greater tree mortality may occur (Scott and Reinhardt 2001) (Butler and Cohen 1998).

FlamMap Input variables

A LANDFIRE Refresh 2008 FARSITE landscape file containing the 40 standard fire behavior fuel models (Scott and Burgan 2005), canopy layers, and topography was downloaded and used as the spatial inputs to FlamMap (Table 1). A report generated by the FlamMap LCP Critique utility detailing the fuel models and other variables in the study area can be found in Appendix A.

LANDFIRE FARSITE variables		
	Description	Format
Fuel Model	Mathematical description of fuels available to a fire based on the amount, distribution, continuity, physical and chemical makeup of burnable surface fuels (Rothermel 1972)	40 standard fire behavior models (Scott and Burgan 2005)
Canopy Cover	Percent cover of the tree canopy in a stand for determining surface fuel shading, for calculating dead fuel moisture, and for calculating wind reductions (LANDFIRE website)	Percent
Canopy Height	Average height of the top of the vegetated canopy for determining the probability of crown fire ignition and calculating wind reductions (LANDFIRE website)	Meters
Canopy Base Height	Average height from the ground to a forest stand's canopy bottom for determining areas in which a surface fire is likely to transition to a crown fire. (LANDFIRE website)	Meters
Canopy Bulk Density	Density of available canopy fuel in a stand for determining the initiation and spread characteristics of crown fires across landscapes (LANDFIRE website)	Kg/m ³
Elevation	Necessary for adiabatic adjustment of temperature and humidity and for conversion of fire spread between horizontal and slope distances (LANDFIRE website)	Meters
Slope	Used for computing direct effects on fire spread, and along with Aspect, for determining the angle of incident solar radiation (Finney 2004)	Percent
Aspect	Used for computing direct effects on fire spread, and along with Slope, for determining the angle of incident solar radiation (Finney 2004)	degrees

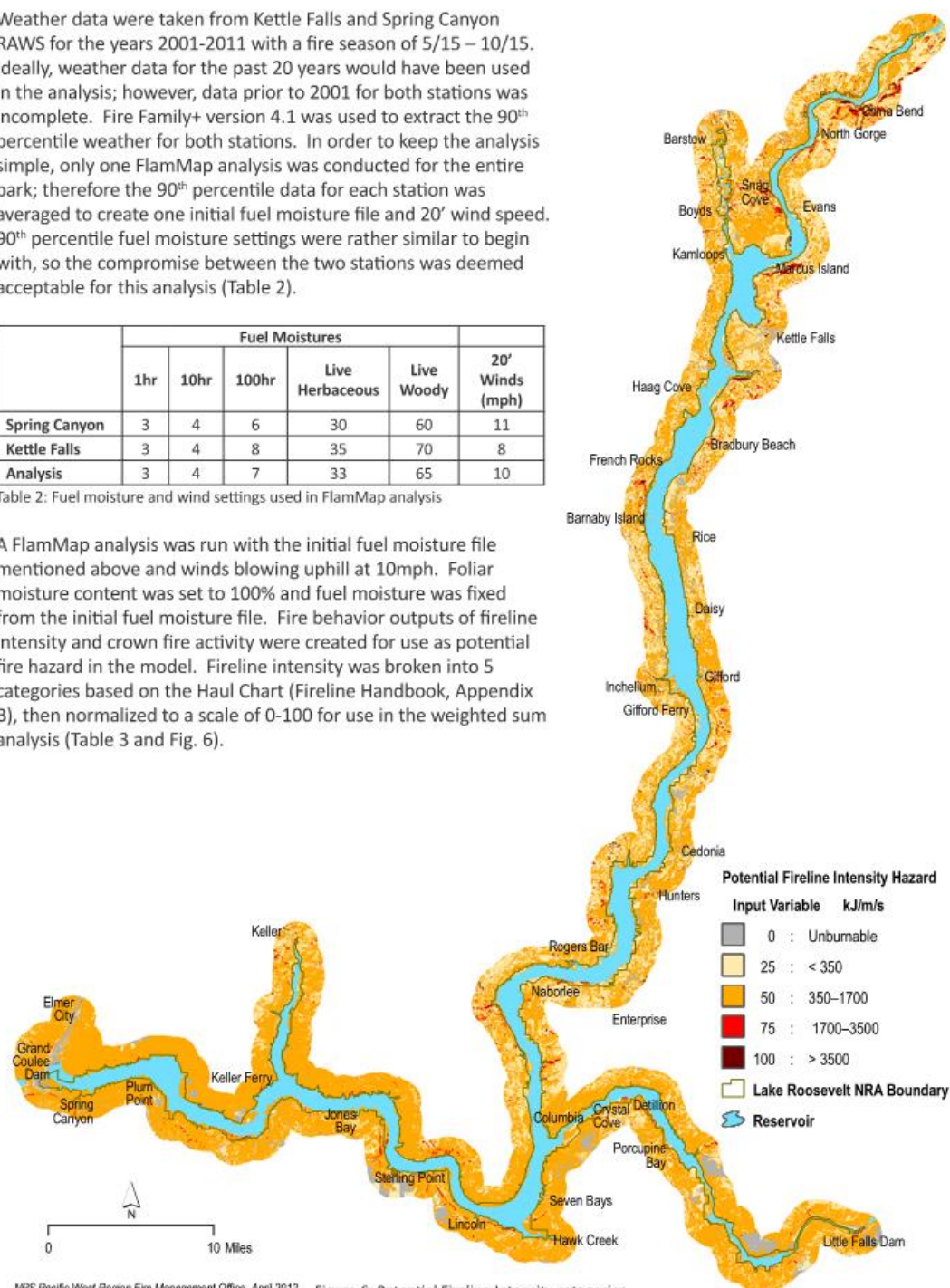
Table 1: LANDFIRE FARSITE variables used in FlamMap analysis

Weather data were taken from Kettle Falls and Spring Canyon RAWS for the years 2001-2011 with a fire season of 5/15 – 10/15. Ideally, weather data for the past 20 years would have been used in the analysis; however, data prior to 2001 for both stations was incomplete. Fire Family+ version 4.1 was used to extract the 90th percentile weather for both stations. In order to keep the analysis simple, only one FlamMap analysis was conducted for the entire park; therefore the 90th percentile data for each station was averaged to create one initial fuel moisture file and 20' wind speed. 90th percentile fuel moisture settings were rather similar to begin with, so the compromise between the two stations was deemed acceptable for this analysis (Table 2).

	Fuel Moistures					20' Winds (mph)
	1hr	10hr	100hr	Live Herbaceous	Live Woody	
Spring Canyon	3	4	6	30	60	11
Kettle Falls	3	4	8	35	70	8
Analysis	3	4	7	33	65	10

Table 2: Fuel moisture and wind settings used in FlamMap analysis

A FlamMap analysis was run with the initial fuel moisture file mentioned above and winds blowing uphill at 10mph. Foliar moisture content was set to 100% and fuel moisture was fixed from the initial fuel moisture file. Fire behavior outputs of fireline intensity and crown fire activity were created for use as potential fire hazard in the model. Fireline intensity was broken into 5 categories based on the Haul Chart (Fireline Handbook, Appendix B), then normalized to a scale of 0-100 for use in the weighted sum analysis (Table 3 and Fig. 6).



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Figure 6: Potential Fireline Intensity categories

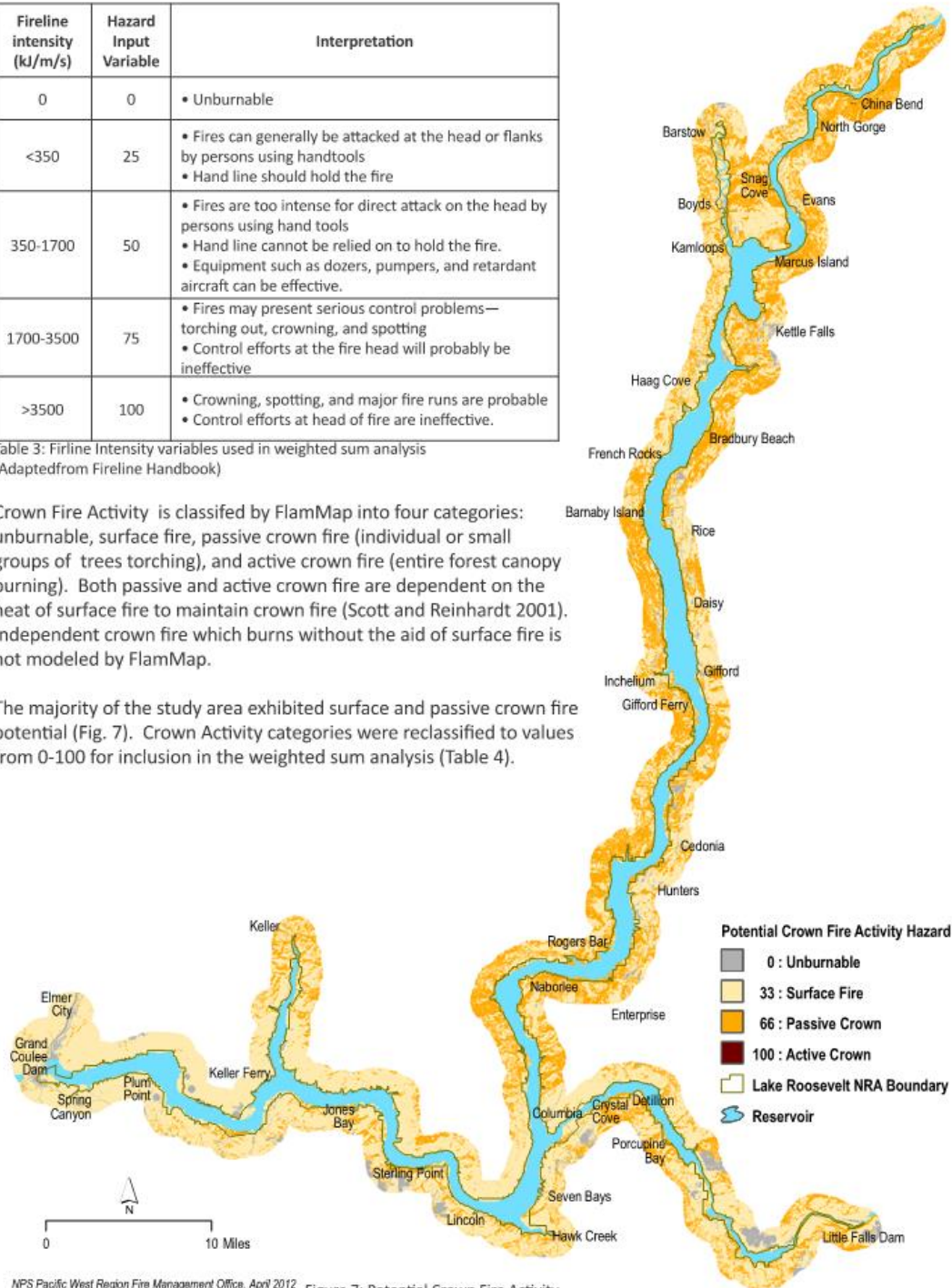
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Fireline intensity (kJ/m/s)	Hazard Input Variable	Interpretation
0	0	• Unburnable
<350	25	• Fires can generally be attacked at the head or flanks by persons using handtools • Hand line should hold the fire
350-1700	50	• Fires are too intense for direct attack on the head by persons using hand tools • Hand line cannot be relied on to hold the fire. • Equipment such as dozers, pumpers, and retardant aircraft can be effective.
1700-3500	75	• Fires may present serious control problems—torching out, crowning, and spotting • Control efforts at the fire head will probably be ineffective
>3500	100	• Crowning, spotting, and major fire runs are probable • Control efforts at head of fire are ineffective.

Table 3: Fireline Intensity variables used in weighted sum analysis
(Adapted from Fireline Handbook)

Crown Fire Activity is classified by FlamMap into four categories: unburnable, surface fire, passive crown fire (individual or small groups of trees torching), and active crown fire (entire forest canopy burning). Both passive and active crown fire are dependent on the heat of surface fire to maintain crown fire (Scott and Reinhardt 2001). Independent crown fire which burns without the aid of surface fire is not modeled by FlamMap.

The majority of the study area exhibited surface and passive crown fire potential (Fig. 7). Crown Activity categories were reclassified to values from 0-100 for inclusion in the weighted sum analysis (Table 4).



NPS Pacific West Region Fire Management Office, April 2012 Figure 7: Potential Crown Fire Activity

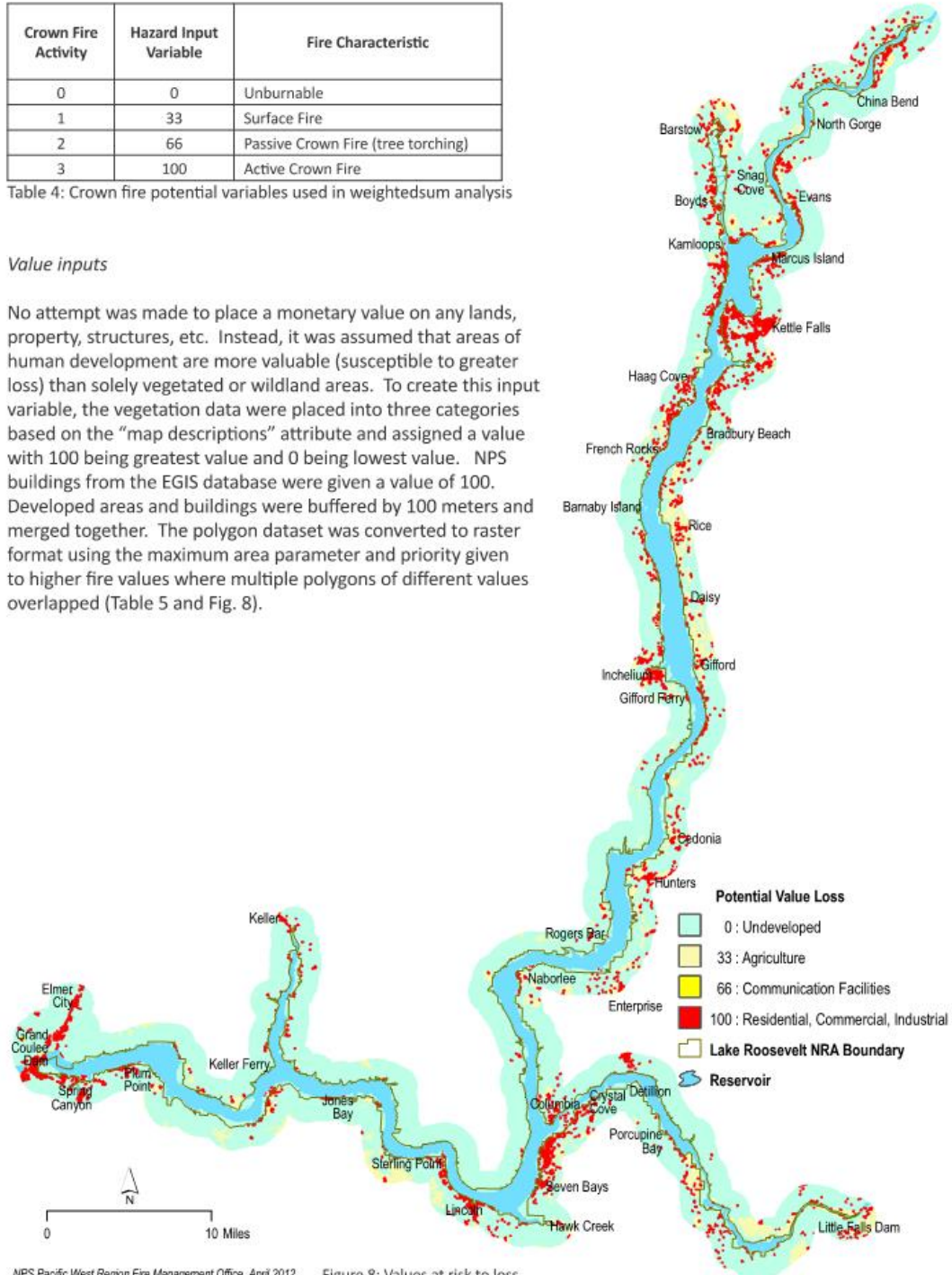
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Crown Fire Activity	Hazard Input Variable	Fire Characteristic
0	0	Unburnable
1	33	Surface Fire
2	66	Passive Crown Fire (tree torching)
3	100	Active Crown Fire

Table 4: Crown fire potential variables used in weightedsum analysis

Value inputs

No attempt was made to place a monetary value on any lands, property, structures, etc. Instead, it was assumed that areas of human development are more valuable (susceptible to greater loss) than solely vegetated or wildland areas. To create this input variable, the vegetation data were placed into three categories based on the "map descriptions" attribute and assigned a value with 100 being greatest value and 0 being lowest value. NPS buildings from the EGIS database were given a value of 100. Developed areas and buildings were buffered by 100 meters and merged together. The polygon dataset was converted to raster format using the maximum area parameter and priority given to higher fire values where multiple polygons of different values overlapped (Table 5 and Fig. 8).



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Figure 8: Values at risk to loss

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Vegetation Map Description (MAP_DESC)	Value Input Variable
Agricultural Business	100
Commercial / Light Industry	100
Entertainment / Recreation	100
Heavy Industry	100
Mixed Urban	100
NPS Facilities	100
Residential	100
Communications and Utilities	66
Orchards, Groves, Vineyards, Nurseries, Horticultural Areas	33
Planted / Cultivated	33
All other Map Descriptions (i.e. vegetation only)	0

Table 5: Values at risk variables used in weighted sum analysis

Analysis Methods:

ArcGIS Weighted Sum tool was used to multiply each input variable by a given weight (percentage of influence or importance) and summed together (ESRI 2011). Four iterations of weighted sum analyses were conducted using the following weights in order to gain an understanding of how each variable influenced the model (Table 6).

		Risk of Ignition	Fireline Intensity	Crown Fire Activity	Values	
Analysis #	Analysis Emphasis	Percent weight				
1	Equal Weight	25	25	25	25	100%
2	Crown fire and values	15	15	35	35	100%
3	Fireline intensity and values	15	35	15	35	100%
4	Equal fire behavior and values	10	30	30	30	100%

Table 6: Weighted sum analyses conducted

Results of the weighted sum analysis were normalized from 0-100 then placed into three broad fire risk categories of low, moderate, and high.

Weighted Sum	Fire Risk
3-33	Low
33-66	Moderate
66-100	High

Table 7: Fire risk categories

Results and Discussion

There was not a tremendous difference between the four analyses; however when one input variable was weighted more than 35% it appeared to influence the model too much; that is it overpowered the other variables. NPS fire staff indicated that crown fire activity, proximity to development, and fire behavior in general are important factors when managing wildfires at Lake Roosevelt NRA; therefore analysis #4 was chosen as most representative of these factors. In the final analysis, risk of ignition was weighted at only 10% due in part because of low confidence in the spatial accuracy of the data and the fact that the entire study area receives few fire starts every year. It comes as no surprise that high priority areas are located near developed areas as these areas were given a ranking of 100 in the values input variable and weighted at 35% (Fig. 9). Compared to values at risk there were few areas of high crown fire activity and fireline intensity. In other words, potential fire behavior is rather uniform throughout the study area with moderate fireline intensity and low active crown fire potential.

The analysis provides a good generalized perspective of fire risk throughout the Lake Roosevelt area. Fire managers may use this information to help focus fuel treatments, suppression resources, and lead discussions with the public and neighboring land managers; however there are factors in this analysis limiting the ability to understand fire risk at a finer scale. Firstly, LANDFIRE data are best used for regional-level analysis and not appropriate for understanding site specific potential fire behavior (LANDFIRE). Interpreting the recently acquired vegetation data to fuel data may lead to more realistic fire behavior outputs from FlamMap. Secondly, it is difficult to verify the completeness and spatial accuracy of historical fire ignitions. Lastly, this analysis does not incorporate natural and cultural resources that could be affected negatively or positively by fire. The benefit of a weighted sum analysis is that future analyses may be run with different weights should certain input variables become more important or if better data becomes available.

Additional maps of the final analysis at larger scale can be found in Appendix B.



NPS PWR Fire Management, April 2012 Figure 9: Final Fire Risk categories

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LRNRA Fuels Discussion

1) Grass (NFFL MODEL #1, NFDRS MODEL L)

Open grasslands characterize these areas, which allow surface fires to move rapidly through the cured grass and associated materials. LRNRA sites with grasses representing the predominant fuel, are those areas that have experienced past wildland fire or are maintained through management actions.

The fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured govern fire spread in NFFL FM 1. Fires are surface fires that move rapidly through the cured grass and associated material. Generally, fires are of low to moderate intensity with rapid rates of spread of 159 chains/hour (10,494 feet/hr.) and flame lengths approximately 6 feet. Spotting distances can be up to 0.3 miles. The “BEHAVE” run was calculated using the following inputs: 1 Hr Fuel Moisture = 5%, 6 mph midflame winds on a 30% slope. A general picture of this fuel model is shown in Figure 1.

Figure 1. LRNRA NFFL Fuel Model 1



2) Sagebrush (NFFL MODEL #2, NFDRS MODEL T)

Big Sage is the dominant shrub of the vegetative community existing in the southern third of LRNRA. Native and non-native grasses are also found throughout this community. Vegetation in this area remains green during the first half of the fire season. Later on, as vegetation cures, this community becomes more flammable.

Fire spread in NFFL 2 is primarily through fine herbaceous fuels, either curing or dead. These are surface fires where the herbaceous material, in addition to litter and dead and down stemwood from open shrub growth contributes to fire intensity. Rates of spread in this fuel type can range from 56-60 ch/hr (3,700-3,960 ft/hr) with associated flame lengths of 8 feet. Spotting distances can be up to 0.3 miles. The “BEHAVE” run was calculated using the following inputs: 1 Hr Fuel Moisture = 5%, 6 mph midflame winds on a 30% slope. An example of this fuel model is found in Figure 2.

Figure 2. LRNRA Fuel Model 2



3) Sage Without the Presence of Grasses and Forbs (NFFL Model #6, NFDRS MODEL F)

Sage stands that do not have a large component of grasses and forbs fit into this fuel model. As the shrubs occupy more of a site the grasses and forbs are displaced. With the loss of the fine surface fuels a sage fire must now carry through the shrub layer foliage and dead and down shrubby fuels. Winds and/or slope effects are needed for a fire to move quickly through this fuel medium. Generally the fire is a crown fire event which will drop to the ground when openings in the stand occurs, or the fire moves into a flat area and the wind dies.

Rate of spread for this fuel model is 51 chains per hour (3,366 feet per hour). Flame lengths can reach 8 feet. The “BEHAVE” run was calculated using the following inputs: 1 Hr Fuel Moisture = 5%, 6 mph midflame winds on a 30% slope.. An example of this fuel model is found in Figure 3.

Figure 3. LRNRA Fuel Model 6



4) Dense Conifer Stands (NFFL Model #10, NFDRS Model G)

Conifer stands in LRNRA that are overstocked and are now starting to build unnatural fuel loadings as stems die and fall to the ground are included in this fuel model. In LRNRA this fuel model occurs in ponderosa pine stands and in mixed conifer stands. In each case fire historically served as a natural thinning agent, favoring those species/stems, which are most fire resistant.

The predicted rate of spread for this fuel model is approximately 14 chains per hour (924 feet/hr) with flame lengths reaching 6.5 feet. The “BEHAVE” run was calculated using the following inputs: 1 Hr Fuel Moisture = 5%, 6 mph midflame winds on a 30% slope. An example of this fuel model is shown in Figure 4.

Figure 4. LRNRA Fuel Model 10



5) Thinned Conifer Stands (NFFL Model #11, NFDRS Model K)

Stands that have had mechanical reduction of stem density with no post thinning fuel reduction treatment are in this category. This fuel model generates the least intense fire behavior of the three slash fuel models.

The predicted rate of spread for this fuel model is 9 chains per hour (594 feet) with flame lengths of 4 feet. The “BEHAVE” run was calculated using the following inputs: 1 Hr Fuel Moisture = 5%, 6 mph midflame winds on a 30% slope. An example of this fuel model is shown in Figure 5.

Figure 5. LRNRA Fuel Model 11



Appendix 7D.14

LRNRA Mobilization Plan

The LRNRA Mobilization Plan is managed through the Colville NF Fire Office.

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Appendix 7D.15
Wildfire and Prescribed Fire/Fuels Treatment Monitoring Plan

The current digital Fire Effects Monitoring Plan is kept in the park share drive in the fire management folder and a hard copy is in the fire office at the park.

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Appendix 7D.16

Historic Structures Inventory

Fort Spokane: Guardhouse, magazine and stables

Saint Paul's Mission

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Appendix 7D.17

Fire Cache Location

The fire cache is located at Kettle Falls Ranger Station.

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Appendix 7D.18

Fire History for LRNRA

A Summary of Fire History for LRNRA since 1980 is shown in Table 12. During this time period there were over 200 fires within the boundaries of LRNRA.

Table 12: LRNRA Fire History (1980 to 2014)

Calendar Year	Fire Name	Size Class	Cause Category	Control Acres
1980	MARCUS ISL	A	Human	0.1
1981	KILGORE	C	Human	19
1981	STURGEON	B	Human	1
1981	BIG SPRING	E	Natural	300
1982	RICKEY PT	C	Human	30
1982	MARKER 48	A	Natural	0.1
1982	ISLAND	A	Human	0.1
1983	BARNASY CR	C	Natural	17
1983	K FERRY	A	Human	0.1
1983	BRIEF BURN	A	Human	0.1
1983	LITTLE	A	Human	0.1
1983	JUMP CANYO	C	Natural	31
1984	CAMEL	A	Human	0.1
1984	QUARRY	A	Human	0.1
1984	SLASH	A	Human	0.1
1984	ELECTRIC	B	Human	1
1984	PINE NEEDL	A	Human	0.1
1985	HOT LINE	B	Human	0.6
1985	POWERLINE	A	Human	0.1
1985	LAUGHBON	A	Human	0.1
1985	LINCOLN	B	Human	3.1
1985	MILES FIRE	A	Human	0.1
1985	BOISECASC.	B	Human	4
1985	LYNN ROCK	A	Natural	0.1
1985	PINGSTONCK	B	Human	8.7
1986	JONES BAY	B	Human	1
1986	HAWK CREEK	B	Human	0.5
1986	ROTTER BAY	B	Human	0.3
1986	LOCUST	B	Human	0.3
1986	MARCUS	A	Human	0.1
1986	SHERMAN	A	Human	0.2
1986	WILBURHILL	C	Human	10

1987	EARLY FOOL	B	Human	0.3
1987	DEADWOOD	A	Natural	0.1
1987	SCHOOLMARM	B	Natural	0.4
1987	BAILLEIS	A	Natural	0.1
1988	KUNZ FIRE	A	Human	0.2
1988	NPS2	A	Human	0.1
1988	DEADMAN	C	Human	20
1988	BOISE LOG	B	Human	5
1989	CODAAB	A	Natural	0.1
1989	VEHNO1	B	Human	0.3
1989	FRENCHROCK	B	Human	0.7
1989	VEHNO2	A	Human	0.1
1989	EVANSTRA	A	Human	0.1
1989	BOYDSRIVER	B	Human	2.5
1989	BOSSBURG	A	Human	0.1
1989	SCOUT	A	Natural	0.1
1989	JEROME	A	Natural	0.1
1989	COBERT	B	Natural	0.3
1990	EARLY	B	Human	0.5
1990	FIREWORKS	B	Human	0.5
1990	GIFFORD	A	Human	0.1
1990	DAISY	C	Human	22.6
1990	HUNTERS	D	Human	100
1991	PEACH	A	Natural	0.1
1991	EVANS	A	Human	0.1
1991	WILBUR	C	Human	18
1992	CAMPFIRE1	A	Human	0.1
1992	HUNTERS	B	Human	2.1
1992	SEVENBAYS1	B	Natural	1
1992	MILES	A	Human	0.1
1992	MARCUSCAMP	A	Human	0.2
1992	CAMPFIRE2	A	Human	0.1
1992	JONESBAY2	A	Natural	0.1
1992	CAMPFIRE3	A	Human	0.1
1992	CAMPFIRE4	A	Human	0.1
1992	CAMPFIRE5	A	Human	0.1
1992	CAMPFIRE6	A	Human	0.1
1992	CAMPFIRE7	A	Human	0.1
1992	CAMPFIRE8	A	Human	0.1
1992	CAMPFIRE9	A	Human	0.1
1992	CAMPFIRE10	A	Human	0.1
1992	CAMPFIRE11	A	Human	0.1
1992	CAMPFIRE12	A	Human	0.1
1992	CAMPFIRE13	A	Human	0.1

1992	CAMPFIRE14	A	Human	0.1
1992	CAMPFIRE15	A	Human	0.1
1992	CAMPFIRE16	A	Human	0.1
1992	CAMPFIRE17	A	Human	0.1
1992	CAMPFIRE18	A	Human	0.1
1992	CAMPFIRE19	A	Human	0.1
1992	CAMPFIRE20	A	Human	0.1
1992	CAMPFIRE21	A	Human	0.1
1992	CAMPFIRE22	A	Human	0.1
1992	CAMPFIRE23	A	Human	0.1
1992	CAMPFIRE24	A	Human	0.1
1992	CAMPFIRE25	A	Human	0.1
1992	MISSION	A	Human	0.1
1992	HUNTERSPOT	A	Human	0.1
1992	CAMPFIRE26	A	Human	0.1
1992	CAMPFIRE27	A	Human	0.1
1992	CAMPFIRE28	A	Human	0.1
1992	CAMPFIRE29	A	Human	0.1
1992	CAMPFIRE30	A	Human	0.1
1992	CAMPFIRE31	A	Human	0.1
1992	DUMP	A	Human	0.1
1992	CAMPFIRE32	A	Human	0.1
1992	CAMPFIRE33	A	Human	0.1
1992	CAMPFIRE34	A	Human	0.1
1992	CAMPFIRE35	A	Human	0.1
1992	CAMPFIRE36	A	Human	0.1
1992	CAMPFIRE37	A	Human	0.1
1992	CAMPFIRE38	A	Human	0.1
1992	CAMPFIRE39	A	Human	0.1
1992	CAMPFIRE40	A	Human	0.1
1992	CAMPFIRE41	A	Human	0.1
1992	CAMPFIRE42	A	Human	0.1
1992	CAMPFIRE43	A	Human	0.1
1992	HUNTER0519	A	Human	0.1
1992	CEMETERY04	B	Human	0.5
1993	SWIMBEACH	A	Natural	0.1
1993	BEACH1	A	Human	0.1
1993	BEACH2	A	Human	0.2
1993	CAN FIRE	A	Human	0.1
1993	SILO	A	Human	0.1
1994	RICKEY PT	A	Human	0.2
1994	SNAG COVE	B	Human	3.5
1994	TINY	A	Human	0.1
1994	MOCCASINBA	B	Natural	0.8

1994	EDENHARBOR	A	Natural	0.1
1994	PORCUPINE	A	Human	0.1
1994	HAWK CREEK	A	Human	0.1
1994	LOCUST0816	A	Human	0.1
1994	MARCUS0813	A		0.1
1995	RANTZ	A	Human	0.1
1995	CLEAR FIRE	B	Human	1.5
1995	HUNTER0402	NR	Human	
1996	CRESCENT	B	Human	0.3
1996	96DAISY	B	Human	4.5
1996	STPAYL0712	NR	Human	
1996	MARCUS0811	A	Human	0.1
1997	SPARKLER1	B	Human	2
1997	HAPPYCAMP	B	Human	0.5
1997	EVANS0822	A	Human	0.1
1998	GIFFORD	B	Human	0.3
1998	CAMPER #1	A	Human	0.1
1998	SAWDUST	C	Human	15
1998	MARCUS0426	A	Human	0.1
1998	CRYSTAL730	A	Natural	0.1
1999	BADBOY	B	Human	2
1999	SMOKER	C	Human	16
1999	HOLLY	A	Human	0.1
1999	BEE NEST	A	Human	0.1
2000	NABORLEE	B	Human	0.5
2000	7 BAYS	C	Human	10
2000	EVANSROAST	B	Human	1.1
2001	SUMMER ISL	B	Human	1
2001	SLIDE FIRE	A	Human	0.1
2001	PORCUPINE	F	Natural	1000
2001	ARRUDA	B	Natural	0.4
2001	FORTYFORTY	A	Human	0.1
2001	FREE FERRY	A	Human	0.1
2001	QUADFIRE	B	Human	0.5
2001	DAISY0616	A	Human	0.1
2001	WELTYB0706	A	Human	0.1
2002	PORCUPINE	B	Human	2
2002	SUNDAY BAY	B	Human	6.5
2002	HANSON	A	Human	0.1
2002	CEMETERY	B	Human	1
2002	GOLDSMITH	A	Natural	0.2
2002	EVANSPILES	C	Human	16
2003	Evans Mach Pile Burn	C	Human	30
2003	Jones Bay BRDC	C		37

2003	ROCK	A	Human	0.1
2003	SPARKLER	A	Human	0.1
2003	ROCK ILAND	A	Human	0.1
2003	POWER POLE	B	Human	0.4
2003	MARTIN RD	B	Human	3
2004	Porc/Laugh HP Burn	C	Human	23
2004	EVANS BRDC	C	Human	30
2004	NABORLE	B	Human	1
2004	INC 73	NR		
2004	LUCKY STOP	A	Human	0.1
2005	Marcus	B	Human	0.3
2005	Mission Pt	A	Human	0.1
2005	Harker Can	B	Human	7
2005	Gifford Rx	B	Human	3
2005	Gifford BRDC	C	Human	58
2006	Bissel Flat	A	Human	0.1
2006	Barney's Blast	B	Human	0.5
2006	singer's bay	A	Human	0.1
2006	Napolean	A	Human	0.1
2006	Harter landing	A	Human	0.1
2006	sloppy singer's	B	Human	0.3
2006	Porc/Laugh HP Burn	B	Human	2
2006	Marcus Bluff HP Burn	C	Human	29
2006	Porc/Laugh2HPBurn	C	Human	16
2006	Gifford BRDC	B	Human	6
2006	Whispering Pines BRDC	C	Human	30
2007	NABORLEE	B	Human	0.3
2007	China Marbles	B	Human	0.8
2007	Kettle River CG	A	Human	0.1
2007	Kamloops	B	Human	0.5
2007	Spring Canyon	B	Human	1.5
2007	Rickey Point pile Rx	C	Human	60
2007	Marcus BRDC	C	Human	40
2007	Kettle River CG BRDC	C	Human	27
2008	Bisbee Bird	A	Natural	0.1
2008	Rice Krispy	A	Natural	0.1
2008	Kettle river rocket	A	Human	0.1
2008	Spring Canyon sage	B	Human	7
2008	Rosenberg pump	C	Human	40
2008	Doyle Complex	E	Human	858
2008	French Rocks	A	Human	0.1
2008	FSMilesTri HP Burn	C	Human	12
2008	FS Swim Beach HP Brn	C	Human	12
2008	Napolean MP Burn	C	Human	30

2008	Rickey Pt 3 HP Burn	C	Human	30
2008	Thompson HP Burn	B	Human	5
2009	Whispering Pines RX	C	Human	30
2009	Enterprise HP Burn	C	Human	10
2009	ND Evans HP Burn	C	Human	30
2009	PW Def Sp HP Burn	C	Human	15
2009	Na Bor Le BRDC	C	Human	36
2009	Kettle Falls Admin.&	B	Human	4
2009	Kettle River Arm RX	C	Human	20
2009	Rickey Point	A	Natural	0.1
2010	Evans Opening Act	B	Human	0.7
2010	Evans Layover	A	Human	0.1
2010	Singers Bay	A	Human	0.1
2010	River Pepper	B	Human	0.3
2010	North Gorge	A	Human	0.1
2010	Eagle Way	B	Human	0.3
2010	Napoleon	C	Human	35
2011	Barstow Slough	B	Human	4
2011	North Evans	C	Human	37
2011	Go Martin	A	Natural	0.1
2011	Clark Lake piles	C	Human	83
2011	Detillion	A	Human	0.1
2011	Mission Point	B	Human	0.3
2011	Haag Cove	C	Human	13
2011	Bradury Beach	C	Human	20
2011	Rickey Point	C	Human	10
2011	Doyle	C	Human	13
2011	Kettle Falls Admin	B	Human	4
2011	Defensible Space PB	C	Human	10
2011	Swim Beach	C	Human	12
2011	Fort Spokane Piles	C	Human	21
2012	Barstow Again	B	Human	4
2012	Deer Meadows	B	Natural	0.3
2012	Crystal Cove	B	Natural	1
2012	Railroad	B	Human	0.3
2012	Kamloops Campground	A	Human	0.1
2012	China Bend Climber	A	Human	0.1
2012	ND Enterprise Underb	C	Human	20
2012	Clark Lake 1 HP	C	Human	27
2012	Clark Lake 3 HP	C	Human	21
2012	Bradbury Beach 2 HP	C	Human	13
2012	Gifford Ferry HP	C	Human	15
2012	Sterling Valley HP	C	Human	24
2012	12 FY13 Def Sp Piles	C	Human	47

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2013	Crescent Bay	A	Human	0.1
2013	Enterprise Campground	A	Human	0.1
2013	Park Def Space Piles	C	Human	47
2013	Colville Confluence	A	Human	0.1
2013	NaBorLee Island	A	Human	0.1
2013	Mile 59	A	Human	0.1
2013	Mile 59.5	A	Human	0.1
2013	Kettle Falls Admin	C	Human	17
2013	ND North Gorge RX	C	Human	50
2014	Rickey Point RX	C	Human	22

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Appendix 7D.19

Fire Communications Plan

INTERNAL AND EXTERNAL INVOLVEMENT:

Identify and list people who are notified and involved in the fuels management process for this plan. Include a list for public contact information (news releases, radio spots, outreach pamphlets). Document internal and external coordination for development of plan.

LRNRA Personnel: NOCA FMO, Natural Resources, Chief Ranger, Visitor Services, Park Superintendent, and others requested by the NOCA FMO.

NPS Regional Office: Regional Prescribed Fire Specialist, RO FPA (for account information), RO PIO if requested

Press releases will be provided to local and regional news organizations, posted on park public web site at a minimum of 2 weeks prior to implementation of burn operations.

Public information meetings will be held on an annual basis

NOTIFICATIONS: Day of Burn (DOB)

Who	When*	Phone Number and/or e-mail
Park Superintendent:	DOB	509 – 754 - 7812
Park FMO	DOB	360-391-2533
Park Resource Specialist	DOB	509 – 754 - 7814
Park LE	DOB	509 – 754 - 7847
WA DNR Colville	DOB	509 – 684 - 7474
Spokane Tribe – Fire Management	DOB	509 – 258 - 4566
Colville Tribe	DOB	
NEWICC	DOB	509-685-6900
OTHERS		

ON SITE:

- All notifications and necessary permits must be made and obtained prior to burn implementation.
- WA DNR must be notified and permit obtained for burn period.
- WADOT must be notified and advised of fire operations along public rights of way.
- LRNRA visitor services, ranger activities and maintenance programs must be notified and included in burn operations.

OFF SITE:

- Adjacent landowners must be notified no less than 2 weeks prior to burn implementation. Press releases in local papers will be a minimum source of notification.
- LRNRA visitor services will provide prescribed fire notification information at public visitor centers, interpretive kiosks and other public contact stations throughout the year.
- If potential public right of way detours may be required for the burn, notifications will be released to the public 2 weeks prior to burn. Proper signage will be posted and trained NPS personnel will manage road closures with appropriate local, state and federal Law Enforcement and DOT authorities.
- Local full time and volunteer Fire Departments will be notified prior to burn implementation.

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Appendix 7D.20

Radio Frequencies

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Radio Frequencies for LRNRA

Kettle Falls (Group 3)									
Channel	Label	RX-Freq	RX-Mode	RX-NAC	TX - Freq	TX - CG	TX - Mode	TX - NAC	BW
1	Colville	159.4350	A	0659	151.1600	156.7	A	0659	N
2	Chewelah	159.4500	M	0659	151.4600	156.7	A	0659	N
3	Monutl_P	172.8125	M	3966	165.1750	114.8	A	0659	N
4	LARO DIR	172.8125	M	3966	172.8125	0	A	0659	N
5	NOCA DIR	166.7500	A	3966	166.7500	0	A	0659	N
6	FS TAC	168.2000	A	0659	168.2000	146.2	A	0659	N
7	Calspl-E	171.4750	A	0659	164.6250	103.5	A	0659	N
8	Monutl - W	170.5500	A	0659	169.5750	151.4	A	0659	N
9	Leona - W	170.5500	A	0659	169.5750	123.0	A	0659	N
10	DNR COM	151.4150	A	0659	151.4150	103.5	A	0659	N
11	RFD Stgr	154.4150	A	0659	153.7850	118.8	A	0659	N
12	RFD N	154.4000	A	0659	154.4000	127.3	A	0659	N
13	RFD S	154.2350	A	0659	154.2350	0	A	0659	N
14	A/G DNR	159.2700	A	0659	159.2700	110.9	A	0659	N
15	A/G 51	168.3125	A	0659	168.3125	0	A	0659	N
16	Airguard	168.6250	A	0659	168.6250	110.9	A	0659	N

Kettle Falls (Group 3) brief. Should be used Hunters North.

Channel	Label	Description
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1	Colville	DNR Repeater used to reach NEWICC in Northern portions of LARO (Generally Kettle Falls north)
2	Chewelah	DNR Repeater used to reach NEWICC in Southern portions of Stevens County (at LARO Kettle to Naborlee)
3	Monutl_P	LARO's Monumental repeater for in park traffic, will reach rangers, will not reach NEWICC
4	LARO DIR	LARO's direct (tac) frequency, be aware this will not pick up the Johnny George or Wellpinit Repeaters!!
5	NOCA DIR	NOCA's direct (tac) frequency, used as a crew net at LARO
6	FS TAC	USFS tac frequency, used to communicate with FS resources
7	Calspl-E	USFS Calispell Mountain Repeater, the main repeater used by Three Rivers Ranger District to reach NEWICC
8	Monutl - W	USFS Monumental Repeater, can generally be used to reach NEWICC in the Northern area when Colville won't work
9	Leona - W	USFS repeater, generally used by Republic RD and the Highlands Zone of the DNR, but can be used to reach NEWICC
10	DNR COM	DNR Common- DNR's tac frequency, pretty much every fire resource in Washington carries this frequency.
11	RFD Stgr	Rural Fire District Stensgar Repeater can be used to reach Stevens County Dispatch for Fire and EMS. Rice South
12	RFD N	Rural Fire District's in Stevens County North Tac frequency
13	RFD S	Rural Fire District Steven County's South Tac freq
14	A/G DNR	DNR air to ground frequency
15	A/G 51	Federal designated primary air to ground for Northeast Washington
16	Airguard	Emergency contact channel for aviation

Fort Spokane (Group 4)

Channel	Label	RX-Freq	RX-Mode	RX-NAC	TX - Freq	TX - CG	TX - Mode	TX - NAC	BW
1	Chewelah	159.4500	A	0659	121.4600	156.7	A	0659	N
2	Lincoln	159.2400	A	0659	151.2650	156.7	A	0659	N
3	Jonygrge	169.9875	M	3966	165.7500	110.9	A	0659	N
4	LARO Dir	172.8125	M	3966	172.8125	0	A	0659	N
5	NOCA Dir	166.7500	M	3966	166.7500	0	A	0659	N
6	Plum	172.8125	M	3966	165.1750	107.2	A	0659	N
7	Wellpnt	173.6750	M	3966	165.1750	118.8	A	0659	N
8	Calspl-E	171.4750	A	0659	164.6250	103.5	A	0659	N
9	Stnsgr-E	171.4750	A	0659	164.6250	162.2	A	0659	N
10	DNR Com	151.4150	A	0659	151.4150	103.5	A	0659	N
11	Deerpark	159.4050	A	0659	151.2500	156.7	A	0659	N
12	RFD Stgr	154.4150	A	0659	153.7850	118.8	A	0659	N
13	RFD S	154.2350	A	0659	154.2350	0	A	0659	N
14	A/G DNR	159.2700	A	0659	159.2700	103.5	A	0659	N
15	A/G 51	168.3125	A	0659	168.3125	0	A	0659	N
16	Airguard	168.6250	A	0659	168.6250	110.9	A	0659	N

Fort Spokane (Group 4) brief. Should be used Hunters South.

Channel	Label	Description
1	Chewelah	DNR Repeater used to reach NEWICC in Southern portions of Stevens County (at LARO Kettle to Naborlee)
2	Lincoln	DNR Repeater used to reach NEWICC in Naborlee south

|

portions of LARO

- | | | |
|-----------|----------|--|
| 3 | Jonygrge | LARO's Johnny George Repeater, used for Fort Spokane area operations, will NOT reach NEWICC |
| 4 | LARO Dir | LARO's direct (tac) frequency, be aware this will NOT pick up the Johnny George or Wellpinit Repeaters!! |
| 5 | NOCA Dir | NOCA's direct (tac) frequency, used as a crew net at LARO |
| 6 | Plum | LARO's plum repeater used in the Coulee Dam/HQ area of LARO, will NOT reach NEWICC |
| 7 | Wellpnt | LARO's Wellpinit repeater, used for park operations up the Spokane Arm, will NOT reach NEWICC |
| 8 | Calspl-E | USFS Calispell Mountain Repeater, the main repeater used by Three Rivers Ranger District to reach NEWICC |
| 9 | Stnsgr-E | USFS Stensgar repeater, on same mountain as DNR Chewelah, will reach NEWICC |
| 10 | DNR Com | DNR Common- DNR's tac frequency, pretty much every fire resource in Washington carries this frequency |
| 11 | Deerpark | DNR repeater for the Arcadia Zone in the Deer Park area, reaches NEWICC |
| 12 | RFD STGR | Rural Fire District Stensgar Repeater, can be used to reach Stevens County Dispatch for Fire and EMS. Rice South |
| 13 | RFD S | Rural Fire District Steven County's South Tac freq |
| 14 | A/G DNR | DNR air to ground frequency |
| 15 | A/G 51 | Federal designated primary air to ground for Northeast Washington |
| 16 | Airguard | Emergency contact channel for aviation |

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Appendix 7D. 21
Annual FMP Update Checklist

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Annual FMP Review Checklist

Fire Management Plan Review and Update for Lake Roosevelt National Recreation Area (LRNRA)

This annual review of the Fire Management Plan (FMP) is a requirement of NPS *Reference Manual 18, Wildland Fire Management*, as specified in the Fire Management Plan chapter, stating that “an annual review is essential to ensure that the FMP continues to conform to current laws, objectives, procedures, and strategies.” In addition, the 2007 Interagency Standards for Fire and Fire Aviation Operations states that the park superintendent will “identify resource management objectives to maintain a current FMP that identifies an accurate and defensible normal year readiness of funding and personnel”. The activities defined in the FMP will be implemented in accordance with agency and departmental policy, including recent procedural updates contained in the following documents *[update the effective date of the following references annually as appropriate]*:

- Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide (September 2006)
- Interagency Standards for Fire and Fire Aviation Operations (January 2007)
- Federal Fire and Aviation Operations – 2007 Action Plan (Spring 2007)

The review and update process is intended to keep the FMP as current as possible. Changes in the step-up plan, terminology, cooperative agreements, and adjustments to the multi-year fuels treatment plan are examples of appropriate revisions to a FMP using this review and update format. The updates identified in this document will become effective upon signature by the park superintendent.

Directions. Please review the following items from the FMP. If no updates are required, please check “no update”; if updates are required, please check “update included here”, and identify the specific update(s) in the space provided. Some items may require discussions with park resources management personnel. The updated information should be incorporated into the FMP and records kept in the park files. Send an e-copy of the document, as well as a fax copy of the signature page only, to: *Regional FMO or regionally identified contact, and National FMO at the Fire Management Program Center in Boise.*

Step-up Plan

The Step-up Plan should include:

- Accurate break-points between preparedness (staffing) levels
- Description of actions to be taken at each preparedness (staffing) levels

|

_____ No update

_____ Update included here:

Multi-year Fuels Treatment Plan

_____ Updates identified and included in Appendix E:

Organizational Responsibilities

_____ No update

_____ Update included here:

Pre-attack Plan (Appendix)

The park should ensure the following documents are in place for 201X:

- Fire Call-up list
- Agreements, Annual Operating Plans, and related local interagency co-ordination documents
- Delegation of Authority (as specified on page 03-2 in Interagency Standards for Fire and Fire Aviation Operations) from the Park Superintendent to Appropriate Individual(s) for wildland fire activities and Operations

_____ No update

_____ Documents have been reviewed, updated, and are on file at the park.

Compliance

Confirm that the following three (3) environmental compliance documents are still valid:

- NEPA
- CE, EA, or EIS
- Decision Document (CE, FONSI, or ROD)
- NHPA
- Section 106
- Concurrence letter from SHPO
- ESA
- Section 7

- Concurrence letter from USFWS for informal consultation or signed Biological Opinion from USFWS for formal consultation
- Communications and Education Plan

The park should ensure that the contacts and protocol procedures are updated annually. NOTE: If major changes in the wildland fire and/or fuels management program have occurred that do not conform to the existing environmental compliance documents, then these projects, or changes, should be suspended and a new compliance process completed for them.

_____ No update

_____ Update included here:

201X

Fire Management Plan Review and Update

Prepared by: _____

Fire Management Officer

Date

Approved by: _____

Appendix 7D.22

Weather Information

Fire weather for LRNRA is obtained from the Kettle Falls RAWS and the Spring Canyon RAWS. Information for these stations is found in Table 13

Table 13: LRNRA RAWS Information

KETTLE FALLS RAWS Located at Kettle Falls WA					
LAT.	LONG	ELEVATION	NESS ID	NWS ID	AGENCY
48° 36' 30	118° 07' 10"	1310 ft.	FA501530	452916	NPS

SPRING CANYON RAWS Located at Spring Canyon WA					
LAT.	LONG	ELEVATION	NESS ID	NWS ID	AGENCY
47° 56' 05	118° 56' 05"	1340 ft	FA500646	453002	NPS

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Appendix 7E Fire Management Units

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North Fire Management Unit

North FMU Approved Strategic Direction

Safety is the number one priority.

All wildland fires in this unit regardless of origin will be suppressed; using the response to wildland fire appropriate for the values at risk, which in many cases may be direct attack utilizing engines or hand crews. Prescribed fire will be used primarily to manage hazard fuel loadings.

Use of wildland fire for resource objectives is limited to prescribed fire.

North FMU Fire Management Actions

Safety: The fire management program will implement an integrated safety program. Safety briefings will be conducted prior to implementation of projects and debriefings will be utilized post project. Personnel will be qualified for positions as stipulated in PM 310-1.

Preparedness: Fire management program managers will schedule preparedness procedures designed to ready park fire management resources prior to the onset of fire season.

Management of Unplanned Ignitions: A full suppression strategy will be initiated for all wildfires in the North FMU.

Management of Planned Fuels Treatments: Prescribed fire and mechanical fuels reduction strategies will be utilized to reduce hazard fuels concentrations in wildland urban interface zones.

Prescribed fire will be used to restore natural ecosystems where appropriate within the FMU.

Communications, education and prevention: An active fire prevention program will be implemented by park staff. Duties of park personnel will include fire prevention and with the assistance of fire management staff notices concerning fire management activities will be delivered to the public when appropriate.

Adaptive management: Adaptive management is the cornerstone of the fire management program.

North FMU Goals and Objectives

- Ensure firefighter and public safety receives the highest priority during all fire management activities.
- Reduce heavy concentrations of hazard fuel
- Utilize the management determined response to wildland fire during wildland fire suppression operations to protect the public, limit fire spread onto private property, and protect the natural, cultural, and historic resources of the Unit.

- Place emphasis on facilitating reciprocal fire management activities through the development and maintenance of cooperative agreements and working relationships with pertinent fire management entities.
- Use natural or existing man-made barriers to the greatest extent possible for control lines. (Minimum Impact Suppression Tactics [MIST] concept).
- Place emphasis on educating adjacent landowners regarding the risk of fire to property and effective strategies for reducing risks.
- Monitor and document results of fire management activities.

Relationship of FMU Management to FMP Objectives

Fire management activities initiated in North FMU are designed to meet the following Fire Management Plan objectives.

- Firefighter and public safety will be the highest priority on all fire management activities.
- Use wildland fire when appropriate as a tool to manage and enhance natural resources and to reduce hazard fuel accumulations that may affect suppression efforts.
- Use fire when appropriate as a tool to manage cultural landscapes.
- All wildland fire will be suppressed in a cost-effective manner, consistent with firefighter and public safety and the values to be protected.
- Suppression strategies are designed to lessen the possibility of adverse impact to the environment, including air quality.
- Wildland fire will be restored as an ecological process.

Management Objectives that are Tactical in Nature

- No fire management operation will be initiated until all personnel involved receive a safety briefing describing known hazards and mitigating actions (LCES), current fire season conditions, and current and predicted fire weather and behavior.
- Park neighbors, visitors and local residents will be notified of all fire management activities that may affect them.
- Response time will be appropriate to the values to be protected.
- Minimum impact suppression tactics will be used, as appropriate.
- Fire behavior and fire effects will be monitored and documented in accordance with NPS guidelines.
- Interested publics will be informed of fire management activities and the role of fire in the natural process.
- Temporary area closures resulting from fire management operations will be implemented at the discretion of the Superintendent or his representative.

NORTH FMU Description

The North FMU contains all LRNRA lands north of the Spokane River. The area is influenced by the Okanogan Highlands. The highlands contain steep hillsides and dense stands of mixed conifers.

There are numerous developed recreation sites as well as important cultural sites. The LRNRA risk analysis indicates areas that need to be protected from wildfire.

Annual fire weather cycles are prevalent from May to October. These months can have high temperatures, low humidities and dry lightning events.

In the century just concluded, periods of drought lasting several years have been recorded that increased fire frequency and intensity, and contributed many additional acres to the national fire statistics. During periods of drought, wildland fires exhibiting extreme fire behavior can occur during the summer. Under normal conditions, the fire season for LRNRA extends from May through October.

Table 14: NORTH FMU Summary Table

<i>NORTH FMU</i>	
Defining Characteristics	North FMU contains Kettle Falls facilities, Wildland urban interface zones, North Gorge, Evans, Snag Cove, Kettle River, Marcus Island, Kamloops Island, Hag Cove, Barnaby Creek, Barnaby Island, Cloverleaf, Gifford, AA Encampment, Roger's Bar, Wilmont Creek and Columbia campgrounds, St Paul's Mission site and numerous day-use sites.
Approved Fire Management Strategies	North FMU also borders major state highways and is adjacent to many small communities. No use of wildfire for resource benefits. Use of prescribed fire and mechanical fuels reduction techniques to reduce hazard fuels is allowed.
Constraints	Smoke management required, utilizing WA DNR Implementation Procedures Restrictions on impacts allowed on state highways through operation protocols Protective measures required for protection of known historical and cultural resources prior to operations
Associated Weather Stations Interagency FMU Collaboration Dominant Vegetation or Fuels	No off-road heavy equipment or vehicle use allowed unless human life, private or public property is threatened Kettle Falls RAWS WA DNR, Colville Confederated Tribes, Spokane Tribe, Colville NF, Bureau of Reclamation Mixed conifers and Ponderosa Pine

Description of North FMU

The North FMU contains all LRNRA lands that are north of the Spokane River and its confluence with the Columbia River

North FMU Management Constraints and Guidance

- Smoke management reporting procedures for burning in Washington State will be followed for all prescribed fire operations. The suppression response selected to manage a wildland fire will consider air quality standards.
- The safety of highway users will be a primary consideration in the development of prescribed burning plans, and will be addressed in the smoke management section.
- Protective measures for known historic and cultural resource must be assured and mitigated, if necessary before a prescribed burn project is initiated.
- No off road heavy equipment or vehicle use in closed areas unless human life or private or public property are threatened.

North FMU Safety Considerations

- Snags and dead trees with weak root systems
- Dehydration, heat exhaustion and heat stroke
- Heavy concentrations of fuel that can block escape routes
- Stinging insects and poisonous snakes and plants
- Traffic on Roadways

North FMU Operational Information

Repeater Information	Permanent repeater see appendix 7D.20
Radio Frequencies	See Appendix 7D.20
Radio Dead spots	None known
Communication Plan	See Appendix 7D.19
Evacuation Plan	Evacuation routes utilize state highways away from fire spread
Water dip spots	Lake Roosevelt
Helispots	To be determined during incident
Potential fire camp locations	The following campgrounds: North Gorge, Snag Cove, Kettle River, Evans., Kettle Falls, Barnaby Creek, Clover Leaf, Gifford, and

Hunter's

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South Fire Management Unit

South FMU Approved Strategic Direction

All wildland fires in this unit regardless of origin will be suppressed; using the appropriate management response, which in some cases may be direct attack utilizing engines or hand crews. Prescribed fire and mechanical fuels reductions projects will be used primarily to manage hazard fuel and may be used to maintain drainage ditches and the historic scene, when practical.

SOUTH FMU Fire Management Actions

Safety: The fire management program will implement an integrated safety program. Safety briefings will be conducted prior to implementation of projects and debriefings will be utilized post project. Personnel will be qualified for positions as stipulated in PM 310-1.

Preparedness: Fire management program managers will schedule preparedness procedures designed to ready park fire management resources prior to the onset of fire season.

Management of Unplanned Ignitions: A full suppression strategy will be initiated for all wildfires in SOUTH FMU.

Management of Planned Fuels Treatments: Prescribed fire and mechanical fuels reduction strategies will be utilized to reduce hazard fuels concentrations in wildland urban interface zones.

Prescribed fire will be used to restore natural ecosystems where appropriate within the SOUTH FMU.

Communications, education and prevention: An active fire prevention program will be implemented by park staff. Duties of park personnel will include fire prevention and with the assistance of fire management staff notices concerning fire management activities will be delivered to the public when appropriate.

Adaptive management: Adaptive management is the cornerstone of the fire management program.

SOUTH FMU Goals and Objectives

- Ensure firefighter and public safety receives the highest priority during all fire management activities.
- Reduce heavy concentrations of hazard fuel, especially along Unit boundaries.
- Utilize the response to wildland fire during wildland fire suppression operations to protect the public, limit fire spread onto private property, and protect the natural, cultural, and historic resources of the Unit.
- Place emphasis on facilitating reciprocal fire management activities through the development and maintenance of cooperative agreements and working relationships with pertinent fire management entities.
- Use natural or existing man-made barriers to the greatest extent possible for control lines. (Minimum Impact Suppression Tactics [MIST] concept).
- Place emphasis on educating adjacent landowners regarding the risk of fire to property and effective strategies for reducing risks.

- Monitor and document results of fire management activities.

Relationship of FMU Management to FMP Objectives

A special concern for this FMU is the reduction of hazardous fuel, particularly along boundaries and adjacent to structures within or adjacent to the boundaries. Fire management activities initiated in SOUTH FMU are designed to meet the following Fire Management Plan Objectives.

- Firefighter and public safety will be the highest priority on all fire management activities.
- Fuel complexes along boundaries and adjacent to values at risk will be modified to reduce fire behavior to a more manageable level using one or more, or a combination the following methods:
- Fuel breaks and/or fire roads may be cut along critical sections of the boundary to allow access for fire suppression equipment needed to prevent wildland fires from crossing the Unit boundaries.
- Vegetation may be mechanically removed to reduce fuel loading to manageable levels to safely initiate prescribed burning.
- Periodic prescribed burning may be use to restore and maintain acceptable fuel levels.
- Prescribed fire may also be used to achieve resource management objectives documented in other park management plans.

Management Objectives that are Tactical in Nature

- No fire management operation will be initiated until all personnel involved receive a safety briefing describing known hazards and mitigating actions (LCES), current fire season conditions, and current and predicted fire weather and behavior.
- Park neighbors, visitors and *local* residents *will* be notified of all fire management activities that may affect them.
- Response time will be appropriate to the values to be protected.
- Minimum impact suppression tactics will be used, as appropriate.
- Fire behavior and fire effects will be monitored and documented in accordance with NPS guidelines.
- Interested publics will be informed of fire management activities and the role of fire in the natural process.
- Temporary area closures resulting from fire management operations will be implemented at the discretion of the Superintendent or his representative

SOUTH FMU Description

The South FMU contains all LRNRA lands starting at the southern boundary of the Spokane River and ends near Grand Coulee Dam. This area is influenced by the Columbia Plateau. Vegetation is comprised of Ponderosa Pine stands in the north and on north facing slopes and sage and grass lands as you move further south. The topography Is steep and in many places difficult to access.

Fire History brief

Fire season again starts generally in May and ends in October. Dry lightning events occur during this time period as well as human caused ignitions.

There are wildland urban interface areas distributed throughout this FMU, especially up the south bank of the Spokane River and the Seven Bays area.

A general listing of significant property, developments, improvements, and resources that must be protected from wildland fire include:

- Cultural and historic sites.

- Private property and other development adjacent to the Unit.
- Threatened and endangered species etc

Annual fire weather cycles described

In the century just concluded, periods of drought lasting several years have been recorded that increased fire frequency and intensity, and contributed many additional acres to the national fire statistics. During periods of drought, wildland fires exhibiting extreme fire behavior can occur during the summer. Under normal conditions, the fire season for LRNRA extends from May through October.

Table 15: SOUTH FMU Summary Table

SOUTH FMU

Defining Characteristics

South FMU contains various recreation sites along the lake as well as historic Fort Spokane and campgrounds: Fort Spokane, Crystal Cove, Ponderosa, Detillion, Porcupine Bay, Seven Bays, Hawk Creek, Sterling Point, Jones Bay, Penix Canyon, Goldsmith, Keller Ferry, Plum Point and Spring Canyon. Wildland Interface areas exist throughout this FMU.

Approved Fire Management Strategies

No use of wildfire for resource benefits. Use of prescribed fire and mechanical fuels reduction techniques to reduce hazard fuels is allowed.

Constraints

Smoke management required, utilizing WA DNR Implementation Procedures

Restrictions on impacts allowed on state highways through operation protocols

Protective measures required for protection of known historical and cultural resources prior to operations

No off-road heavy equipment or vehicle use allowed unless human life, private or public property is threatened

Associated Weather Stations

Spring Creek RAWS

Interagency FMU

WA DNR, Spokane Tribe, Colville Confederated Tribes, Bureau of Reclamation

Collaboration

Dominant Vegetation or Fuels

Ponderosa Pine and shrub steppe (sage brush and grasses)

SOUTH FMU Management Constraints and Guidance

- Smoke management reporting procedures for burning in Washington State will be followed for all prescribed fire operations.
- The suppression response selected to manage a wildland fire will consider air quality standards.
- The safety of highway users will be a primary consideration in the development of prescribed burning plans, and will be addressed in the smoke management section.
- Protective measures for known historic and cultural resource must be assured and mitigated, if necessary, before a prescribed burn project is initiated.
- No off-road heavy equipment or vehicle use in closed areas unless human life or private or public property are threatened

SOUTH FMU Safety Considerations

- Snags and dead trees with weak root systems
- Dehydration, heat exhaustion and heat stroke
- Heavy concentrations of fuel that can block escape routes
- Stinging insects and poisonous snakes and plants

SOUTH FMU Operational Information

Repeater Information	Permanent Repeater See Appendix 7D.20
Radio Frequencies	See Appendix 7D.20
Radio Dead spots	None known
Communication Plan	Appendix 7D.19
Evacuation Plan	Routes to nearest state or county highway away from the direction of fire spread
Water dip spots	Lake Roosevelt
Helispots	To be determined during the incident
Potential fire camp locations	The following campgrounds: Fort Spokane, Porcupine Bay, Seven Bays, Hawk Creek, Jones Bay and Keller Ferry?