

FINDING OF NO SIGNIFICANT IMPACT

Mount Rainier National Park Fire Management Plan Environmental Assessment Ashford, Washington

PURPOSE AND NEED

The purpose of this federal action is to adopt a revised Fire Management Plan for Mount Rainier National Park that will increase the role of fire as a natural ecosystem process in the park while meeting new National Park Service directives and guidelines. There is an ongoing park need to ensure the perpetuation of park ecosystems and natural ecosystem processes, while employing a fire management program that provides for the protection of life, property and cultural and natural resources. This plan includes an array of fire management strategies designed to meet fire and resource objectives.

While Fire Management Plans are normally revised every five years, they typically do not undergo extensive changes. As a result, upon approval, this Fire Management Plan revision would guide park fire management through the foreseeable future. The proposed plan described in the Environmental Assessment responds to significant changes in National Park Service policy regarding Fire Management Plans.

Without a currently approved fire management plan, Director's Order 18: Wildland Fire Management (NPS 1998), states that "park areas must take an aggressive suppression action on all wildland fires, taking into account firefighter and public safety and resources to be protected within and outside the park." The 1988 Mount Rainier National Park Fire Management Plan was in the process of being revised when in 1995 it became obsolete. That year, new NPS policy declared that all park fire management plans must be revised to correspond with new guidelines. Director's Order 18 and its accompanying Reference Manual (NPS 2001) of the same number and title reiterated the need for Fire Management Plans to meet new guidelines. Absent revision to these directives, Fire Management Plans generally are revised every five years.

According to National Park Service Management Policies (NPS 2001:4:38), "all NPS Units with vegetation that can sustain fire must have a Fire Management Plan" to guide a fire program that responds to natural and cultural resources management objectives; provides for the safety of park visitors, employees, neighbors and developed facilities; and addresses potential impacts to adjacent public and private property. Fire Management Plans are also dictated by the Department of the Interior's *Departmental Manual* for all lands administered by the Department (USDI 1997).

SELECTED ALTERNATIVE

The Preferred Alternative, described in the environmental assessment (EA) as Alternative 5 is selected for implementation and is also identified as the Environmentally Preferred Alternative in the EA. The proposed action is the same as that described in the Environmental Assessment, except with respect to the actual number of acres of northern spotted owl, marbled murrelet and bull trout habitat to be affected by wildland fire suppression, wildland fire use and hazard fuel reduction over the first five years were not quantified. These have now been quantified by the Biological Assessment (BA) and Biological Opinion (BO) with respect to likely impacts on these threatened and endangered species as requested by the U.S. Fish and Wildlife Service (USFWS) (see Impact Mitigation Measures). Therefore, implementation of this alternative will be as described in the EA, however every five years, additional consultation with the USFWS will amend the BO. As noted in the Environmental Assessment, if specific actions are proposed to use prescribed fire, these will undergo separate environmental analysis (including additional consultation with the USFWS and National Marine Fisheries Service (NMFS) as needed).

The selected alternative includes the use of the following fire management strategies: Wildland Fire Suppression, Wildland Fire Use for Resource Benefits, Prescribed Fire and Hazard Fuel Reduction (Manual/Mechanical Fuel Reduction and Debris Burning). There are no current plans, however, for implementing the immediate use of prescribed fire.

Under the selected alternative, the park would be divided into two Fire Management Units as described below. In addition, the following Information, Interpretation and Education strategies would be used to increase the effectiveness of the park's enhanced fire management program (see FMP Public Safety Sections).

FIRE MANAGEMENT UNITS

Two fire management units have been established for Mount Rainier National Park: *suppression (FMU 1)* and *wildland fire use (FMU 2)*. In both units, all human-caused fires would be suppressed and prescribed fire or hazard fuel reduction may be used to reduce unnatural fuel accumulations or to maximize return to a natural fire regime (fire return interval). In the wildland fire use unit, naturally ignited wildfires may be permitted to burn, or they may be confined, contained or suppressed, depending on the results of fire analysis. Where suppression occurs, minimum impact suppression techniques (MIST) would be used to prevent or minimize the effects of suppression on park wilderness. The wildland fire use unit is further divided into twelve *operational areas*, within which varying fire management strategies would be employed, depending on variables present at the time of natural fire ignition. Upon a change in NPS/national wildland fire management policy, appropriate human-caused fires would possibly be considered for Wildland Fire Use.

These operational areas would be described in a future FMP operational guide and would include the specific information described below to assist fire managers in better managing park fires. Additional specific information would include: vegetation, fuel models, fuel types, fire history, values at risk/or to be protected, including historic structures, rare species habitat, aquatic resources, archeological resources, and other factors such as acceptable fire behavior and conditions. To the extent possible, the operational areas use roads, rivers, ridges, valleys, and other natural and man-made fuel breaks to form zone boundaries. Adjacent lands, park facilities and ease of access were taken into consideration when designating area boundaries.

INFORMATION, INTERPRETATION AND EDUCATION STRATEGIES

- The park information radio frequency (1610 AM) heard at entrance stations and Paradise would be used to inform park visitors of any significant fire activity or smoke that may impact their visit to the park.
- Information explaining fire management programs would continue to be incorporated into interpretive programs, exhibits, videos and nature walks as they are developed.
- During high fire danger, a web site would be developed which will include information about the role of fire in Mount Rainier's ecology. Web updates, including links, would be provided regularly with current information any time a fire is burning in the park.
- Articles for the summer edition of the park's visitor guide for Mount Rainier, the "Tahoma News" explaining fire management policies may be developed and made available for distribution.
- To facilitate information dissemination on a regional and national level, the park would coordinate with a number of national, regional and local agencies, including the National Interagency Fire Center.
- Maps, narrative statements and photographs of the current fire situation and fire danger ratings would be posted during high fire danger or fire operations in area ranger stations and visitor centers.
- As needed, fire information would be reported to surrounding public and private land

management agencies.

- On- site visitor interpretive assistance would be initiated on all large fires, which occur near populated or developed areas.
- Fire records, photographs, etc., important to the fire management, interpretive and research programs, would be collected and filed. Public reactions to fire management activities and interviews would be recorded and made part of the fire record.

FIRE MANAGEMENT STRATEGIES

Wildland Fire Suppression

Wildland fire suppression is an appropriate management response to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire. All wildland fire suppression activities provide for firefighter and public safety as the highest consideration, but minimize loss of resource values, economic expenditures, and/or the use of critical firefighting resources (NPS, et al., 1998).

A variety of fire suppression techniques are used to break the continuity of forest fuels, cool a fire, and to slow the advance of a flaming front. Actions may include constructing fire lines; cutting vegetation; applying water, foam or retardant; and using fire. Most park fires are small and can be suppressed using hand tools - sometimes supported with a chainsaw for cutting fuels, a fire engine or portable pump for delivering water; and/or a helicopter to transport water, supplies, and firefighters. Larger fires or fires with greater potential to spread may require the use of drip torches, fusees, fire line explosives, retardant- filled aircraft or extensive water drops.

All human- caused wildland fires would be suppressed using the appropriate suppression response. Appropriate suppression would occur regardless of ignition source or location. Depending on the location and projected fire behavior, ground and/or aerial fire fighting resources would be employed to contain the fire to its smallest possible size. Ground or aerial monitoring would be conducted until the fire was mopped up (completely extinguished).

Minimum Requirement

All fire suppression in park wilderness would employ minimum impact suppression tactics (MIST) see Appendix 1 and Appendix 23 in the FMP. As noted below there would be no hazard fuel reduction (mechanical treatment or debris burning) in wilderness, with the exception of minimal actions to trim overhanging limbs and vegetation when needed to protect historic structures. Most actions to protect historic structures however would consist of physical modifications such as setting up temporary sprinkler systems or wrapping structures to prevent burning during wildland fires.

As noted in the Impact Mitigation Matrix below, administrative use of aircraft would continue to follow existing park policies. Approval for helicopter use in non- emergency situations would be granted only if it has been determined to be the minimum tool to achieve the purposes of the area for protection of wilderness values (See Environmental Assessment Appendices 1 and 2 and Fire Management Plan Appendix 30). No landing zones would be constructed in wilderness. If determined essential, minimal clearing of vegetation would occur if other safe alternatives had been ruled out. While temporary camps could be established within existing trailside camps or other resilient zones, these would be removed as soon as practicable and the site restored. The use of Manual/Mechanical equipment is constrained by the Wilderness Act and NPS policy. In determining the appropriate minimum tool for use in wilderness, consideration is given to effects on visitor experience, public safety and wilderness values. Resource protection and safety concerns would take precedence over economic considerations. Alternative methods to power tools would be considered based on the project objectives and minimum tool concerns. These would be evaluated under the park's minimum tool/minimum requirement process as part of the wildland fire suppression or use decision- making process.

Hazard Fuel Reduction (Debris Burning And Manual/Mechanical Treatment)

Manual/Mechanical Treatment

Manual treatment is the use of hand tools or hand operated power tools. Mechanical treatment is the use of heavy equipment. Both are used to cut, clear or prune herbaceous and woody species to effectively reduce hazardous accumulations of wildland fuels and to create defensible space near structures. In the park, manual treatment could be used 1) to remove excess woody debris from the ground; 2) to remove “ladder” fuels, such as low limbs and brush (which could carry fire from the forest floor into the crowns of trees); and 3) to thin dense stands of trees, near developed areas, to reduce the horizontal continuity of fuels. Occasionally, larger mechanized equipment (a boom truck and front end loader) would be used to move large bores, with the restriction that the equipment would not be driven off road or used outside of developed areas. Material cut or gathered through manual/ mechanical treatment would either be cast back on site, be disposed of by piling and burning at an established burn pit, depending on the size, quantity and location of woody materials, and/or be chipped.

Manual/Mechanical Treatment would be implemented as it has been in the past in developed areas around structures and along park roads, using hand tools to periodically limb overhanging vegetation, selective removal of trees growing too close to structures, and roadside mowing/limbing and removal of fallen trees and limbs. Around structures, and along roads, the first priority would be to ensure administrative and visitor safety and protection of park resources. This includes maintaining the structural integrity of the buildings and the road prism and reducing fine fuels along roadsides to prevent fire spread, should a fire occur.

Manual/Mechanical treatment is also conducted in developed campgrounds to eliminate branches and other vegetation near fire pits. Non mechanical treatment to remove dead and downed materials in developed areas and along roadsides also occurs. Roadside mowing primarily focuses on increasing visibility along park roads, including sight distance, and on maintaining the parkway like character of some park roads, but also serves, as mentioned, to reduce fine fuels along roadsides.

The maximum number of acres wherein Manual/Mechanical treatment of hazardous fuels would occur would be less than 800 acres or approximately 20 percent of the non- wilderness areas of the park per year (over five years). Treatment of this area, while it could be spread over the whole area would not be uniform. Park visitor and administrative facilities, including buildings and structures necessarily occupy a large percentage of this space and therefore the treatment area is somewhat overstated. Excluded from this estimate would be the non- wilderness area that would not be treated, including:

- the area south of the Nisqually to Paradise Road below Longmire (not adjacent to the road);
- Camp Muir;
- a small area north of the Carbon River Road (not adjacent to the road);
- and the Paradise and Sunrise meadows.

Under any projects or circumstances that would result in excess natural forest residue (defined as limbs, slash, plants and logs), the usual option is to leave these in place. Where the material cannot be left on the forest floor to undergo natural decomposition, it would be used in a variety of ways for park projects (compost, chipping, revegetation, historic structures rehabilitation, trails maintenance, campfire programs, heating public buildings). Utilization of alternative technologies for disposal, including chipping of forest residue in place, using it for revegetation or native plant nursery, or hauling it to a composting facility is also considered. Trees and limbs that fall across roads and trails would be placed back in the forest whenever this can be accomplished in a way that makes them appear natural (as discussed in Office Order 88- 1 Roadside Vegetation Management and subsequent updates). No wood or debris would be placed in surface waters.

All limbs and brush cleared for health and safety reasons would be placed into the surrounding forest (away from surface waters) without further compromising safety or resource protection.

Debris Burning

Debris disposal is burning of wildland fuels generated from maintenance activities (such as grass or brush mowing or clippings), hazard tree removal, or during construction activities. These materials must be deemed infeasible or impractical to mechanically remove and must be in a non-wildland fuel environment (parking lot, boneyard, gravel pit, etc.) Any material being burned for debris disposal must be classified as permissible to burn under applicable federal, state, tribal and local regulations.

Debris burning (in small piles) is used to dispose of vegetative material that has been concentrated by manual or mechanical methods. There would continue to be very limited use of debris burning of forest residue to prevent accumulations of hazard fuels near historic and administrative structures. This debris is generated as a result of Hazard Fuel Reduction or road and other maintenance activities. Such debris burning would continue under certain circumstances and only when the procedures outlined in the park's Office Order 83- 2 (Disposal of Natural Forest Residue and Manufactured Lumber) or its subsequent updates are followed. Under Office Order 83- 2, the park has designed some very specific procedures to limit the disposal of wood debris by burning. These guidelines were developed to comply with current regulations from the Puget Sound Clean Air Agency (for Pierce County), the Southwest Clean Air Agency (for Lewis County), and the Washington Department of Natural Resources, to meet Clean Air Act mandates and to ensure the highest degree of protection of park air quality (as required for class I areas under the Clean Air Act).

If any of the above- described alternatives for disposal of materials from manual/mechanical treatment are not feasible, the burning of forest debris is conducted following established conditions. The maximum number of burn days that would occur under this alternative would be determined by air quality regulations, including the Washington State Visibility State Implementation Plan (SIP), staffing and weather conditions.

Prescribed Fire

Prescribed Fire is any fire ignited by management actions to meet specific objectives. The fuels to be burned may be in either their natural or modified state. The prescribed burn would take place under specified environmental conditions (e.g. weather and fuel moisture); would be confined to a predetermined area with a pre- determined range of fire intensity and rate of spread. These would enable attainment of planned management objectives, including conformance with an approved prescribed fire plan that meets NEPA and NHPA requirements prior to ignition.

The "prescription" for a prescribed fire contains key weather and fire behavior parameters necessary to achieve desired fire behavior and results. For example, a prescription might specify that the air temperature must be between 50 and 75 degrees Fahrenheit; the relative humidity between 45 and 70 percent; the 20- foot wind speed between 5 and 25 miles per hour; wind direction from the west to southwest; and the flame length less than 4 feet. The actual prescription for a project would depend on site conditions and the objectives that are to be met.

An approved prescribed fire plan is required for all prescribed fires prior to ignition. Because no such plans are included with the FMP, the use of prescribed fire is considered a tool that would be used later, upon development of specific prescribed fire plans. Upon development, these plans would undergo separate environmental analysis.

Wildland Fire Use For Resource Benefits

Wildland fire use is the management of naturally ignited wildland fires to accomplish specific pre-stated [defined] resource management objectives in predefined geographic areas (NPS, et al., 1998).

Naturally ignited (lightning or volcanic) wildland fires would receive management actions appropriate to conditions of the fire, fuels, weather, and topography to accomplish specific objectives for the individual fire. These management actions, defined as the “appropriate management response,” may vary from fire to fire and even along the perimeter of an individual fire. Management options range from monitoring with minimal on- the- ground actions to intense fire suppression actions on all or portions of the fire perimeter. The appropriate management response is developed from analysis of the local situation, values- to- be- protected, management objectives, external concerns, and land use. To use this strategy, the fire manager, in consultation with an interdisciplinary team, would determine that a natural wildland fire would provide resource benefits if managed under specific conditions within a maximum manageable area (MMA). This strategy would then be used to incorporate suppression- “holding”- actions on sections of the fire perimeter to keep the fire within the predetermined MMA, while allowing other natural features to check the spread of the fire on other perimeters within the MMA. Depending on fire location, size, spread, resource values at risk and other factors, management of Wildland Fire Use requires a variety of actions that could include keeping the fire out of heavy fuels if the fuels produce too much smoke; keeping the fire away from sensitive resources; and keeping the fire from burning buildings, etc.

Naturally ignited (lightning/volcanic) wildland fires would either be allowed to burn under certain conditions or would be extinguished in FMU 2. The ability to use naturally ignited wildland fire in FMU 2 would depend on individual Wildland Fire Situation Analysis (WFSA) to determine whether the wildland fire met certain pre- determined parameters for fulfilling resource objectives (benefits). To use this strategy, the fire manager, in consultation with an interdisciplinary team, would determine that a natural wildland fire start would provide resource benefits if managed under specific conditions within a maximum manageable area (MMA). This strategy would then be used to incorporate suppression “holding” actions on sections of the fire perimeter to keep the fire within the predetermined MMA, while allowing other natural features to check the spread of the fire on other perimeters within the MMA. Dependent on fire location, size, spread, resource values at risk and other factors, management of wildland fire use requires a variety of actions that could include keeping the fire out of heavy fuels if they produce too much smoke, keeping it away from sensitive resources, keeping it from burning buildings, etc.

Potential Wildland Fire Use for Resource Benefits, as defined in the Natural Resources Management Guideline (NPS 1992, 2:212- 213), includes Wildland Fire Use to:

- restore or maintain natural ecosystems;
- influence natural successional patterns;
- restore or maintain an historic scene (including cultural and traditional cultural landscapes);
- restore or maintain vistas;
- reduce fuels which contribute to a wildfire hazard;
- create fuel breaks near developments or the park boundary;
- enhance the habitat of sensitive species;
- control exotic species.

Determining the potential for Wildland Fire Use is complex and based on Wildland Fire Situation Analysis (WFSA) (Appendix 20) and the Wildland Fire Implementation Plan (WFIP) (Appendix 17). Under these analyses, specific resource benefits would be defined prior to the Wildland Fire Use.

A lightning caused fire in FMU 2 would be suppressed if:

- it did not meet every element of the Decision Criteria Checklist;
- long or short- term drought conditions were evident;
- it would exceed management capability to implement the WFIP;
- the fire is projected to burn toward the park boundary, when the adjacent landowner will not/cannot accept management of the fire;
- No resources are available for management of Wildland Fire Use;
- The superintendent or designated acting superintendent will not approve the WFIP for Wildland Fire Use; or
- The regional fire management officer, with concurrence from the superintendent, determines that regional and/or national conditions outweigh the potential benefits of the fire, and therefore appropriate fire suppression action is warranted.

Wildland Fire Use would be limited to stand replacing fires in suitable habitat for northern spotted owls or marbled murrelets according to the conditions established in the BO associated with the Fire Management Plan. Fires with the potential to exceed these acreage limitations would be considered candidates for Wildland Fire Use only with additional environmental analysis and consultation with the USFWS.

A complete description of the action, mitigation, and environmental consequences is included in the Mount Rainier National Park Fire Management Plan Environmental Assessment dated December 12, 2003, the Fire Management Plan Errata, the Biological Assessment (BA) on the Fire Management Plan and the Biological Opinion (BO) on the Fire Management Plan.

DECISION RATIONALE

The selected alternative (to employ the full range of fire management strategies available) would best meet the purpose and need. This alternative maximizes flexibility in meeting ecosystem management goals, while adopting the best management practices to manage the effects of fire on endangered species, ecosystem functions and air quality (smoke management).

Under the Selected Alternative, Mount Rainier National Park's Fire Management Plan will:

- meet the requirements of NPS Management Policies (2001);
- fulfill the ecosystem management goals in the park General Management Plan (2002) and Natural and Cultural Resources Management Plan (1999);
- meet the requirements of the National Environmental Policy Act and other laws related to natural and cultural resources; and
- implement a strong fire management policy and operational procedures for the park that will enable natural fires to approximate natural fire rotation in the park ecosystem.

The Fire Management Plan will guide park fire management activities and decisions, including:

- how the park would respond to wildland and human- caused fires;
- what actions the park would take to protect human life and property from wildland fire;
- what measures the park would take to protect special resources and wilderness character from the impacts of wildland fire or fire suppression;
- the types of hazard fuel reduction that would occur; and how prescribed fire might be used to accomplish resource management and research objectives as well as fire management protection objectives.

Over time, the Selected Alternative would result in a restoration of a natural fire regime to the park, resulting in park resources, including wilderness that continues to exemplify natural processes. Under this fire management strategy, there would be beneficial impacts on the natural, ecological, scenic, scientific, cultural and recreational values of wilderness. The management of

naturally occurring wildland fire is considered critical to maintaining park ecosystems. Depending on the location, extent, severity and timing of the fire, minor to major beneficial impacts and minor to moderate temporary impacts related to fire fighting. Beneficial impacts would include:

- restoration of the natural ecological role of fire to park wilderness;
- the ability to study the natural role of disturbances, including fire on park ecosystems;
- increased ability to enhance the preservation of cultural resources by mitigating the potential for catastrophic fire in wilderness surrounding developed areas;
- better preservation of park vegetation and wildlife, which have evolved in the presence of periodic natural disturbance by fire;
- increased scenic diversity in park vegetation communities; and
- increased opportunities to see wildlife due to increased diversity in vegetation communities.

OTHER ALTERNATIVES CONSIDERED

Other alternatives considered in detail in the Environmental Assessment included:

- 1: No Action: Suppress All Wildland Fires, Conduct Limited Debris Burning And Manual/Mechanical Treatment Hazard Fuel Reduction
- 2: Wildland Fire Suppression And Wildland Fire Use For Resource Benefits
- 3: Wildland Fire Suppression, Wildland Fire Use For Resource Benefits, And Prescribed Fire (Management Ignited Wildland Fire)
- 4: Wildland Fire Suppression, Wildland Fire Use For Resource Benefits, And Hazard Fuel Reduction (Debris Burning and Manual/Mechanical Treatment)

The NPS also considered other alternatives early in the planning process but these options were dismissed from detailed analysis. Details of the dismissed alternatives and the rationale for their dismissal are presented below:

1) No Management

Under this alternative, all fires would be permitted to burn freely. No wildland fire suppression, wildland fire use for resource benefits, hazard fuel reduction or prescribed fire would be employed. This alternative was rejected because it contradicts NPS mandates and policy regarding human safety and resource protection. This alternative would not meet the goals of ensuring public safety as the highest priority, protecting cultural resources, or reducing hazard fuel accumulation. This would not protect sensitive resources that could not withstand the effects of wildland fires, such as endangered species. Additionally, it would result in the alteration of natural fire regimes near roads, structures, utilities and camps where there is an unnatural concentration of human- caused ignitions.

2) All alternatives which did not include wildland fire suppression, including:

- only prescribed fire
- only hazard fuel reduction
- only wildland fire use

and any combinations of these without wildland fire suppression were rejected. Losing the ability to appropriately suppress wildland fires would jeopardize health and safety, facilities, and natural and cultural resources not able to withstand wildland fire.

3) Wildland Fire Suppression and Hazard Fuel Reduction

This alternative was rejected for the same reason as described above. Suppressing all wildfires and using only hazard fuel reduction without the use of wildland fire for resource benefits or prescribed fire would not meet NPS resources preservation mandates or the purposes of the fire management program, since there would be no way to return fire as a natural ecosystem process. This alternative, therefore, would not meet one of the primary goals of the park fire management program.

4) All alternatives, which did not include wildland fire use for resource benefits, were also rejected, including:

- Wildland Fire Suppression Response, Prescribed Fire And Hazard Fuel Reduction, and
- Wildland Fire Suppression Response and Prescribed Fire

This alternative would consist of using prescribed fire to replicate the effects of naturally ignited wildland fire. Although an aggressive prescribed fire program could take the place of naturally ignited wildland fire use for resource benefits, it would have to be based on the historical and future occurrence of natural wildland fire starts. Since prescribed fire involves the use of management ignited fire under very specific (usually cooler) conditions, prescribed fire would result in different fire effects than the use of naturally ignited wildland fire. There would also still be some conditions under which prescribed fire would not be initiated, but wildland fire use could still be considered, therefore this would only partially restore fire as a natural process. The process of completely replacing the natural role of fire would result in substantial human interference in wilderness. This interference would manifest itself in two ways: 1) intrusion to suppress natural fires and 2) intrusion to ignite prescribed fires. Fire behavior and effects are known to vary with terrain, vegetation, fuels, cumulative weather conditions, and season. With site specific information about how these variables interact, the probabilities of fire ignition, fire spread and fire behavior can be projected. It is not possible to determine, however, how a given fire would have unfolded, nor is it possible to duplicate the original conditions. As a result, prescribed fires would only approximate the effects of natural fires. Replacing all fires with prescribed fire would alter natural ecosystem processes and contradicts one of the primary objectives of the park's fire management program.

5) Fuel Break Construction along boundary without adjacent wilderness or late successional reserves

This alternative was rejected because of the unreasonably high cost, environmental impacts, and intrusions into the wilderness that would result from constructing fuel breaks along the park boundary. It would be cost prohibitive to implement this alternative due to the length of the boundary, difficult access to many boundary areas, and heavy fuels. Construction of fuel breaks would affect threatened species habit by altering vegetation within the fuel breaks. Of equal concern would be the noise impacts from helicopters, chainsaws, and other equipment necessary to accomplish this project. The resulting fuel breaks could be expected to slow, but not stop the spread of low to moderate intensity fires across the boundary. Fuel breaks would be less effective in stopping high intensity fires that reach the tree crowns because sparks from crown fires are commonly thrown long distances. Recent research indicates that fire losses are more closely tied to the ignitability of structures and their immediate surroundings - within tens of meters of structures - rather than to the ignitability of the extended landscape. Construction of miles of fuel breaks along the boundary would be prohibitively expensive, and would result in unacceptable environmental impacts.

6) Fire Suppression Zone along West Boundary and other similar boundary areas

This alternative was rejected based on the desire to enable natural ecosystem processes to function parkwide. A suppression zone along the west boundary would be difficult to maintain and would have questionable effectiveness in preventing fire occurrence for some of the same reasons as described above in fuel break construction.

CUMULATIVE EFFECTS SUMMARY

Fire affects a wide range of ecological processes, from population dynamics to nutrient cycling and hydrologic regimes. It may completely change plant community composition over broad areas for decades or it may invigorate existing plant communities, resulting in only a change in age structure, such as when seeding or root- crown sprouting predominates in a vegetation type. The most apparent effect of fire is the removal of some or all of the vegetation cover, depending on fire severity. Vegetation recovery, in turn, is dependent on the timing, frequency and severity of fire.

Depending on the fire, vegetation changes may be short or long- term. Extensive burns in old growth forests, such as those at Mount Rainier that provide refuges for late- successional dependent species (e.g. northern spotted owls and marbled murrelets) could result in relatively localized impacts to these species in the park that when contrasted with regional population decline would appear large. To the degree possible, avoiding or minimizing these impacts would be part of the decision to use wildland or prescribed fires (where possible given the selected alternative). Taken together, human impacts to northwest ecosystems have resulted in widespread landscape level changes to the Pacific Northwest and thus fewer refugia for these species.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

As described in the National Environmental Policy Act, the Environmentally Preferred Alternative is the alternative that would:

- fulfill the responsibilities of each generation as trustee of the environment for succeeding generations
- ensure for all Americans, safe, healthful, productive and esthetically and culturally pleasing surroundings
- attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences
- preserve important historic, cultural and natural aspects of our natural heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice,
- achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities
- enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The Selected Alternative was designated as the environmentally preferred alternative. The Selected Alternative contains the widest range of options to manage fire in Mount Rainier National Park. As a result, it would allow the National Park Service to select the strategy with the best outcome for the preservation of park resources. Like the other Alternatives, the Selected Alternative would also result in enhanced cooperation and collaboration with surrounding land managers. Like the other Alternatives considered, the Selected Alternative places the highest priority on safety and resource preservation. Because other alternatives would have focused on only one or a few fire management strategies, instead of allowing park managers to choose from among the widest range of strategies, they were not designated “environmentally preferred.” The selected alternative would best fulfill the ability of the park to preserve natural and cultural resources and to provide for public safety.

Why the Selected Alternative will Not Have a Significant Effect

As documented in the EA, the NPS has determined that the selected alternative can be implemented with no significant adverse effects on air quality, water quality, geological hazards, soils and vegetation, wildlife, special status species, prehistoric and historical archeology,

ethnographic resources, historic structures and cultural landscapes, visitor experience, wilderness, park operations and the socioeconomic environment.

NEPA requires that decision- making regarding the analysis of significance be based on analysis of the proposed action with respect to the following factors:

Beneficial and Adverse Effects

The selected alternative has a wide range of beneficial and adverse effects (see Impact Mitigation Matrix below). As shown below in the impact mitigation matrix, these short- and long- term effects would not result in impairment.

Degree of effect on public health or safety

The selected alternative will not adversely affect public health or safety. Rather, the selected alternative contains a wide array of actions and mitigation strategies designed to minimize the degree of risk associated with implementing a fire management program in the park.

Unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, wetlands, wild and scenic rivers, or ecologically critical areas

The selected alternative will not impact unique characteristics of the area, including prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas. These characteristics are either not present or not specifically affected by the selected alternative.

Degree to which effects on the quality of the human environment are likely to be highly controversial

The effects on the human environment are known and have been described in the EA.

Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration

The preferred alternative neither establishes an NPS precedent for future actions with significant effects nor represents a decision in principle about a future consideration. The current analysis replaces analysis done for a formerly approved fire management program.

Degree to which the action may adversely affect districts, sites, highways, structures or objects listed on the National Register of Historic Places or may cause the loss or destruction of significant scientific, cultural or historic resources

The selected alternative will have no adverse effect on cultural resources. It will not result in the loss or destruction of significant scientific, cultural or historic resources.

Degree to which the action may adversely affect an endangered or threatened species or its critical habitat

While there are actions that would be associated with the implementation of the selected alternative that have the potential to affect rare species, these actions would primarily be a continuation of current management. Regardless, to minimize the effects of ongoing park operations associated with guided activities, a series of mitigation strategies (from the USFWS Biological Opinion) have been included in the selected alternative to limit the potential for these effects to occur.

- Whether the action is related to other actions with individually insignificant but cumulatively significant effects;

- Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks; and
- Whether the action threatens a violation of federal, state or local environmental protection law.

No significant cumulative effects and no highly uncertain, unique or unknown risks were identified during preparation of the EA or during the public comment period. The selected alternative will not violate any federal, state or local environmental protection laws.

IMPACT MITIGATION MATRIX

The following summary identifies the impacts and mitigation documented and discussed in the Environmental Assessment. This summary assigns responsibility for ensuring that the measures, which minimize these impacts, are implemented as part of the preferred alternative. There were no highly controversial effects or highly uncertain, unique or unknown risks identified during either preparation of the environmental assessment/assessment of effect or the public review period. The preferred alternative does not violate federal, state, or local environmental protection laws.

All mitigation measures described in this section will be implemented. Further mitigation measures may be developed in response to ongoing informal consultation on this project and may also augment the measures described below. The measures identified below are designed to ensure that impacts to park natural and cultural resources, visitor use/experience and park operations are avoided, minimized or mitigated.

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
Air Quality	<p><u>Wildland Fire Suppression</u></p> <ul style="list-style-type: none"> • Increased particulate emissions • Reduced localized or widespread visibility. • Temporary overall degradation of air quality. • Potential for weather patterns to increase effect of air quality impacts. <p><u>Wildland Fire Use</u></p> <ul style="list-style-type: none"> • Smoke and particulate emissions from fire(s). • One or more fires burning at the same time could result in widespread regional haze or smoke columns with haze spreading dependent on wind direction. • Actual size and number of fires would depend on prevailing weather patterns, location of lightning strikes and extent of fire spread before naturally extinguished (via weather conditions, fuel breaks, or vegetation discontinuities) or suppressed. <p><u>Prescribed Fire</u> Particulate emissions and diminished visibility similar to wildland fire use, but generally on a much smaller scale.</p> <p><u>Hazard Fuel Reduction (Debris Burning)</u> Periodic implementation of debris burning over one or several days (no overnight fires)</p>	<p><u>Actions Common to All Wildland Fire Use Strategies</u> The FMP would comply with all federal and state regulations governing air pollution and smoke management standards and all applicable NPS policy and guidelines related to wildland fire management and ecosystem health.</p> <p>The following specific conditions would be implemented associated with the named aspects of Fire Management.</p> <p><u>Wildland Fire Suppression</u></p> <ul style="list-style-type: none"> • Smoke impacts would be minimized by keeping most fires relatively small with immediate suppression actions. • <p><u>Wildland Fire Use</u></p> <ul style="list-style-type: none"> • Extinguished if exceeded weather or fuel conditions • Appropriate suppression actions to modify fire location, size, spread, and to minimize effects on resource values at risk • Wildland fire situation use analysis would take into account regional and national conditions related to air quality management, including other nearby fires, either in the park or in the state. • Unacceptable smoke impacts could result in discontinuation of a Wildland Fire Use strategy. 	<p>Fire Management Officer Chief, Natural and Cultural Resources Resource Advisor Biologist</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p><u>Hazard Fuel Reduction (Manual/Mechanical)</u></p> <ul style="list-style-type: none"> Dust and exhaust from chain saw and other equipment operation, primarily in developed areas, such as along roads. <p><u>Cumulative Impacts</u></p> <ul style="list-style-type: none"> Nature of impacts would depend on the fire size, duration, intensity, location and other factors. Potential decrease in the use of prescribed fire to control fuels near developed areas with use of debris collection/burning at other times of year. 	<p><u>Prescribed Fire</u></p> <ul style="list-style-type: none"> Fires not meeting prescriptions either would not be ignited or would be suppressed upon falling out of prescription. Limiting the number of acres and amount of fuel burned, Assessing timing and method of ignition, Determining the moisture content of fuel, and Coordinating with other agencies and land owners to limit the number of fires occurring simultaneously Burning would be in compliance with the State of Washington Smoke Management Plan and/or by authorization following prescribed fire environmental analysis. <p><u>Hazard Fuel Reduction: Debris Burning</u></p> <ul style="list-style-type: none"> Burn piles would be small (up to six feet in diameter) and would consume less than 100 tons of material in a 24- hour period. <p>The following conditions would minimize air quality impacts, the potential for fire escape and safety hazards:</p> <ul style="list-style-type: none"> Only natural forest residue burned Burning would be done in accordance with Puget Sound and Southwest Clean Air Agency as well as Washington State Departments of Natural Resources and Ecology regulations and in compliance with the State Smoke Management Plan. 	

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
		<ul style="list-style-type: none"> • No burning would be conducted when air regulatory agencies declare air pollution episodes and impaired air conditions for Pierce or Lewis County. • Park personnel would obtain updated burning information (1- 800- 323- BURN) on the day of the burn and follow the instructions that apply for the day and location of the proposed burning. • To limit impacts to visitor use, no burning is permitted during weekends. • All materials earmarked for burning would be placed in clearly marked piles at designated burn areas, such as the Kautz Creek maintenance area or Ohanapecosh Wastewater Treatment Plant. Proper signage to identify and describe what materials are placed there for burning is necessary. • Burn piles would be located at least 50 feet from structures. • As appropriate, flammable debris would be cleared from the area. • Burning would only be conducted during periods when adjacent fuel moisture was high (with an ignition component of less than 50 percent) and winds were calm or light. • Adequate suppression equipment and personnel would be on hand (a connected water hose, or at least five gallons of water and a shovel available nearby). 	

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
Soils	<p><u>General Impacts of Fire on Soils</u></p> <p><u>Adverse</u></p> <ul style="list-style-type: none"> • Increased potential for erosion with removal of plant cover which could increase downstream flooding and soil/nutrient loss. • Changes in soil composition, texture and water infiltration capability. • Increased nutrient availability for plants. <p><u>Beneficial</u></p> <ul style="list-style-type: none"> • Increased natural fertilization with attendant increase in ability to foster plant growth. • Increased organic material allowing soil to retain moisture and improving other factors. <p><u>Wildland Fire Suppression</u> Soil mixing, compaction and loss from fire suppression activities, including fire line construction, use of heavy equipment, establishment and removal of fire camps, and mop- up work in previously vegetated areas.</p> <p><u>Hazard Fuel Reduction (Debris Burning)</u> Negligible long- term adverse impacts from repeated burning in a pre- defined area.</p>	<p>The impact of fire use and suppression activities on soils would be mitigated by the following BMPs and MIST techniques in developed areas and wilderness:</p> <ul style="list-style-type: none"> • Selecting procedures, tools and equipment with the least possible impact to the environment; • Implementing the use of water (bucket drops or wet- lining) as a fire suppression technique/ Allowing the fire to burn to a natural barrier (minimizing line construction); • Ensuring that firefighting equipment is well maintained to prevent spills of lubricants, fuels or other materials (as well as using ground cloths beneath such equipment to prevent accidental releases); • Using the minimum necessary depth and width on fire line construction; • Covering fire lines with organic material as part of the rehabilitation process; • Installing water bars or other silt protection measures in sensitive areas; • Minimizing the felling of trees and bucking of downed logs along the fire line and within the perimeter of the fire; • Minimizing the limbing of vegetation adjacent to the fire line; • Removing or cutting vegetation only as necessary to prevent fire spread; • Limiting the locations of fire camps, 	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Plant Ecologist</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p><u>Hazard Fuel Reduction (Manual/Mechanical)</u></p> <ul style="list-style-type: none"> • Use of heavy equipment in developed areas and along roads resulting in additional compaction. • Trampling during use of hand tools, including chain saws in wilderness and backcountry areas. <p><u>Prescribed Fire</u> Adverse and beneficial impacts from slight increase in the scope and degree of impacts (similar to those for Wildland Fire Use and Suppression).</p> <p><u>Cumulative Impacts</u> Adverse and beneficial impacts from restoration of fire to park landscape under Wildland Fire Suppression, Wildland Fire Use and Prescribed Fire depending on timing, location, extent and severity of the fire.</p> <p><u>Hazard Fuel Reduction (Debris Burning)</u> Impacts from repeated burning in designated areas.</p> <p><u>Hazard Fuel Reduction (Manual/Mechanical)</u> Impacts from compaction related to manual and mechanical methods of fuel removal (including limbing, brush removal, etc.)</p>	<p>helispots, hand lines, intensive mop-up and other concentrated fire activities to non-sensitive sites;</p> <ul style="list-style-type: none"> • Leaving standing dead trees (snags); • Using native materials for sediment traps; • Using existing spike camps or camping in resilient areas (rocky or sandy soils) showing signs of recent human disturbance (while avoiding wet meadows, water shorelines and other sensitive areas); • Avoiding the use of rehabilitated fire line as a travel corridor to minimize soil compaction; • Lessening soil disturbance by ensuring that hot spots and smoldering fires are out; • Refraining from creating piles of debris to burn or excessively spreading burning fuels, letting fuels burn out naturally; • Using mulch or soil netting or other means as appropriate, to minimize or prevent erosion. 	
Water Resources: Water Quality	<p><u>Wildland Fire Suppression</u></p> <ul style="list-style-type: none"> • Sedimentation from localized soil erosion from fire line construction and use of park water sources for 	<ul style="list-style-type: none"> • Prevention of cross contamination of water from fire retardant chemicals with separate use of bucket and fire retardant use • Minimal use of fire retardants, foams, etc. 	Fire Management Officer Chief Natural and Cultural Resources

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p>firefighting</p> <ul style="list-style-type: none"> • Slight potential for contamination from chemical fire retardants, foams and petroleum product spills • Changes in water temperature • Changes in water chemistry • Short flushes of higher nutrient levels in water (resulting from fertilization effect of fire retardant chemicals, if used) <p><u>Wildland Fire Use</u> Effect would depend on the amount of vegetation consumed and steepness of area burned</p> <p><u>Prescribed Fire</u> Potential impacts if streams or rivers were used as natural barriers to fire movement.</p> <p><u>Hazard Fuel Reduction (Debris Burning and Manual/Mechanical Treatment)</u> No work would be done near water and there would be a very limited possibility that manual or mechanical removal of vegetation would increase soil erosion in developed areas.</p> <p><u>Cumulative Impacts</u> There would continue to be negligible to minor impacts associated with fire suppression activities, including from chemicals used in fire suppression near developed areas and structures. With the increase in burned area that would likely result under wildland fire use</p>	<ul style="list-style-type: none"> • Avoidance of chemical fire retardant, foam and gasoline use near water and prohibiting such use without secondary containment • Hazardous Materials Spill Response program implementation • Establishment of spike camps at least 200 feet from water sources • Human waste disposal by removal or burial • Capture and transport of fire camp gray water • Use of biodegradable soap and containment of wastewater associated with its use • Removal of garbage, including food scraps • Rehabilitation of fire lines, including implementation of erosion control measures that would decrease sedimentation • Use of mulch or check dams, as appropriate, to minimize sedimentation • Not altering water courses during fire fighting • Dipping firefighting water only from approved water sources under established conditions (regarding water depth, sensitive resources and method) • Avoiding fireline construction on steep hillsides above park waters 	<p>Resource Advisor Biologist</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p>or prescribed fire, there would be an increase in the speed of runoff and therefore a potential for minor to moderate water quality impacts from erosion as well as from impacts similar to those associated with fire suppression activities. These impacts would not result in impairment to water quality or the reasons it has been protected in Mount Rainier National Park.</p>		
<p>Water Resources: Water Quantity</p>	<p><u>Wildland Fire Suppression</u></p> <ul style="list-style-type: none"> • Changes in uptake of water by vegetation depending on area burned and degree of vegetation removal. • Runoff from varying degrees of vegetation loss. • Bucket loads of water taken from approved water sources for firefighting. <p><u>Wildland Fire Use</u></p> <ul style="list-style-type: none"> • Short- term hydrologic changes • Reducing vegetation would have a subsequent reduction in uptake of water by plants and its subsequent loss through evapotranspiration, and could therefore increase the potential for downstream flooding effects. Effects would depend on the degree of vegetation and removal and the portion of watershed burned. <p><u>Prescribed Fire</u> Localized effects similar to wildland fire use.</p>	<ul style="list-style-type: none"> • Dipping firefighting water only from approved water sources under established conditions (regarding water depth, sensitive resources and method) • Bucket dips/water use from lakes, rivers and ponds would not be approved if such use would result in measurable differences in lake surface elevations or downstream water quantity. • Minimal hazard fuel reduction adjacent to water bodies. • Water use would be from a greater number of water sources when fires are widespread. 	<p>Fire Management Officer Chief Natural and Cultural Resources Biologist</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p><u>Hazard Fuel Reduction (Debris Burning,</u></p> <p><u>Cumulative Impacts</u></p> <p>Wildland Fire Suppression (Alternatives 1- 5) would result in negligible to moderate effects on water quantity, primarily as a result of the removal of water for firefighting and the removal of vegetation following fire. There would be no effect on water quantity from Hazard Fuel Reduction, either from debris burning or manual/mechanical treatment. Impacts associated with Wildland Fire Use and Prescribed Fire would be similar to those associated with Wildland Fire Suppression, including the use of water for firefighting and the slight or widespread effects associated with the removal of vegetative cover. There would be no long- term cumulative impacts on water quantity. The potential impacts would not result in impairment to water quantity or the reasons it has been protected in Mount Rainier National Park.</p>		
<p>Water Resources: Wetlands</p>	<ul style="list-style-type: none"> • Slight effects related to inability of wetlands to carry fire • likelihood of full suppression during long- term drought conditions when wetlands would be the most susceptible to fire effects. • Possible delayed succession and increasing nearby nutrient cycling. 	<ul style="list-style-type: none"> • No fire line construction would be permitted in wetlands. 	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Biologist Plant Ecologist</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p><u>Cumulative Impacts</u> Use of a wide variety of appropriate fire management techniques would maintain or increase the persistence of wetlands and reduce the effects of fire suppression, where it has decreased wetlands by minimizing historic disturbance by fire. These impacts would not result in impairment of wetlands or the reasons they have been protected in Mount Rainier National Park.</p>		
<p>Water Resources: Floodplains</p>	<p>No effect on floodplains as defined by Executive Order, however there would be some potential to increase downstream flooding following fires. Depending on fire size and other factors, this may have short- term negligible to moderate effects which may or may not be distinguishable from naturally occurring background flooding.</p>	<p>None identified.</p>	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Biologist Plant Ecologist</p>
<p>Vegetation</p>	<p><u>Wildland Fire Suppression</u></p> <ul style="list-style-type: none"> • Loss of vegetation • Increased potential for non- native species invasion • Release of dormant native pioneer species from seedbank. • Increased potential for wind and water erosion • Changes in vegetation cover and species dominance • Potential loss of long- lived species • Potential loss of some vegetative diversity over time • Increase in importance of other 	<p><u>Wildland Fire Suppression and Rehabilitation Techniques</u></p> <p>Mount Rainier Restoration Handbook (1990) Fire Line Restoration Guidelines</p> <ul style="list-style-type: none"> • Constructed fire lines would be rehabilitated when the fire is out and the fireline is no longer needed for control actions. • Rehabilitation plans would be discussed with park resource staff prior to implementation. • If necessary, fire lines would be filled to grade to prevent channeling of water and 	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Plant Ecologist</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p>disturbance agents, such as avalanches, blow-downs, etc. in creating forest openings.</p> <ul style="list-style-type: none"> Additional restoration needs in subalpine communities <p><u>Wildland Fire Use</u></p> <ul style="list-style-type: none"> Changes in the ability of soil to serve as a medium for plant growth Changes in wetland/riparian communities used as buffers. Increased potential for exotic species invasion Potential increase in the number or hazard trees treated in roadside or other developed areas Potential increase in blow downs Increased potential to control spread of boundary fires where adjacent landowners were unwilling or unable to accept fire management. Removal of some or all vegetation within a fire perimeter <p><u>Prescribed Fire</u> Similar to Wildland Fire Use – primarily negligible to moderate – but could become major depending on fire location, timing, extent and severity.</p> <p><u>Hazard Fuel Reduction (Debris Burning)</u> Burning a small portion of the overhanging limbs trimmed around park facilities and</p>	<p>attendant erosion.</p> <ul style="list-style-type: none"> Upon filling to grade, restoration would include replanting with salvaged vegetation or covering with duff and excelsior, as needed. Scattering brush, dead limbs or rocks randomly along the trail could also help to impede water erosion and to camouflage the lines. <p>Wildland Fire Resource Advisor’s Task Book (NPS 1992) fire line restoration guidelines: <u>Flat or Gentle Sloping Terrain (0- 14 degree slopes) and Moderately Sloping Terrain (15- 29 degree slopes)</u></p> <ul style="list-style-type: none"> Recontour line to match surrounding terrain by pulling soil, litter, duff and rocks back over line Remove/recontour trenches Scatter piles of slash near and over line Flush cut stumps (aesthetic) <p><u>Steeply Sloping Terrain (>29 degree slopes)</u></p> <ul style="list-style-type: none"> Rake along contour to create small, shallow trenches across fall line Recontour line as above to match surrounding terrain by pulling 2- 4 inches of litter and duff back over line Remove/recontour trenches Place rock (with previously exposed lichen side up) and logs randomly on fall line to intercept adjacent runoff Scatter piles of adjacent slash near and over 	

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p>structures and other dead and downed materials collected in developed areas.</p> <p><u>Hazard Fuel Reduction (Manual/Mechanical)</u> Trimming of dead and overhanging limbs and collection of dead/downed material near developed areas.</p> <p><u>Cumulative Impacts</u> Because park ecosystems evolved in response to periodic fire, while Wildland Fire Use and Prescribed Fire would result in minor to moderate short- term adverse impacts, causing the loss of some individuals and portions of plant communities, these alternatives would also result in long- term cumulative beneficial impacts by beginning to restore the natural role of fire to the park landscape. The use of these fire management tools would also contribute to a more natural array of vegetation types distributed throughout the park landscape. The range of potential impacts would not impair park vegetation or the values for which this resource has been protected in Mount Rainier National Park.</p>	<p>line</p> <ul style="list-style-type: none"> • Flush cut stumps (aesthetic) <p>In addition, the following Minimum Impact Suppression Techniques (MIST) and best management practices (BMPs) would be employed:</p> <ul style="list-style-type: none"> • Trees to be felled and left on site would not be bucked or limbed, except in developed areas or along designated trails. • Reseeding, which has largely proven unsuccessful, unless native species are used, would not be undertaken. • When possible, construction of fire lines would not be undertaken in sensitive subalpine areas. • Fire camps and other operations assemblages would take place in developed areas or areas where clear indications of recent human disturbance (bare ground) are present. • Fire lines of the minimum possible depth and width would be used. • Care would be taken to select suppression tactics, procedures, tools and equipment with the least possible impact to the environment. • Equipment used in firefighting would be cleaned or inspected as appropriate prior to use in park firefighting efforts to minimize contamination with noxious weed seeds. • Mulches or other rehabilitation treatments, including straw bales would 	

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
		<p>come only from sources approved by the park plant ecologist.</p> <p><u>Wildland Fire Use/Prescribed Fire</u></p> <ul style="list-style-type: none"> • Suppression of all human- caused fires, some naturally ignited fires that would not result in resource benefits or those that occurred in sensitive or endangered species habitats that could not withstand additional disturbance by fire. • Actual impacts of prescribed fire would be analyzed upon development of a prescribed burn plan in separate environmental document upon identification of burn area and objectives. 	
<p>Terrestrial Wildlife</p>	<p><u>Wildland Fire Suppression</u></p> <ul style="list-style-type: none"> • Noise and activity associated with fire suppression • Disturbance during normally quiet periods or in normally quiet areas • Moderate term, localized habitat changes <p><u>Wildland Fire Use/Prescribed Fire</u></p> <ul style="list-style-type: none"> • Direct and indirect effects from increased soil and air temperatures, smoke, and erosion • Loss or displacement of individuals, as well as physiological effects from fire escape from fire by burrowing, fleeing to refugia, such as wetlands or riparian corridors, or flying. 	<p>Factors that would minimize or avoid long- term effects on wildlife as a result of fire suppression activities would include:</p> <ul style="list-style-type: none"> • use of developed areas or areas extensively disturbed by human impacts for staging fire suppression activities • limiting the types of activities, such as helicopter operations (See Appendix 1) that would be performed at dawn, dusk or night as appropriate to minimize impacts to threatened and endangered species; • relying on existing trails to the extent possible to access fires • relying to the extent possible on water sources outside the park for firefighting efforts • minimizing the use of fire retardant or 	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Wildlife Ecologist Biologist</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<ul style="list-style-type: none"> • Changes in vegetation cover would change the habitat types available to wildlife, favoring some species and not others. • Increase in insect feeding birds and foraging by small mammals • Increase in scavenger/predator species such as ravens • Increase in browse with the post fire flush of vegetation which may lead to population increases among some species • Increased nutritive capacity of vegetation • Increases in edge areas • Direct and indirect loss of individuals of some wildlife species from fire, smoke inhalation or stress • Diminished abundance of some species not able to withstand habitat changes from severe burns. <p><u>Hazard Fuel Reduction (Debris Burning)</u> Localized effects where a high degree of administrative activity already limits wildlife presence</p> <p><u>Hazard Fuel Reduction (Manual/Mechanical)</u></p> <ul style="list-style-type: none"> • Increase in prevalence of human noise and activity • Slight modifications to wildlife habitat by the collection of downed material and the localized removal of ladder 	<p>foams in suppression efforts</p> <ul style="list-style-type: none"> • ensuring that firefighting equipment was in good condition and using best management practices to ensure that spills of lubricants, fuels or other chemicals does not occur • using other minimum impact suppression and mop- up techniques (as described in Appendix 1); etc. 	

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p>fuels.</p> <ul style="list-style-type: none"> Slight reduction in songbird foraging and cover near developed areas/historic structures. <p><u>Cumulative Impacts</u> Wildland Fire Suppression would result in short- term minor to moderate noise and activity that would decrease the presence of wildlife in the vicinity of the firefighting effort. Other short- term impacts would potentially include effects on breeding, gestation, or other processes associated with bearing young or finding food. Wildland fire use or prescribed fire would restore the role of fire. Despite some short- term loss of individuals and habitat, over the long- term most species would benefit from fire. Short- and long- term effects would depend on the species, the season, timing, intensity and rate of fire spread. Cumulative effects from the action alternatives would result in better forage for ungulate species, and an increase array of mosaic type habitats with a consequent decrease in the potential for catastrophic fire. The above described range of potential impacts would not impair park wildlife or the values for which this resource has been protected in Mount Rainier National Park.</p>		
Aquatic Wildlife	Negligible to moderate changes in water chemistry from changes to soils, short- lived increases in water temperature and moderate to		Fire Management Officer Chief Natural and

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p>long- term changes in vegetation associated with water resources. Changes in accumulation of woody debris, hydrologic processes, erosion patterns and nutrient cycling.</p> <p>Indirect effects on species composition and habitat dynamics.</p>		<p>Cultural Resources Resource Advisor Biologist Wildlife Ecologist</p>
<p>Rare, Threatened or Endangered Plants</p>	<p><i>No effect.</i> There are no listed plants that occur in Mount Rainier National Park.</p>	<p>N/A</p>	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Plant Ecologist</p>
<p>Rare, Threatened or Endangered Species: Mammals and Birds</p>	<p><i>No effect</i> on wild wolves, Canada lynx or grizzly bears</p> <p><i>No effect</i> on bald eagles</p> <p><u>Northern spotted owl and marbled murrelet</u> <i>May affect, likely to adversely affect</i></p> <p>Actions And Effects <u>Wildland Fire Suppression/Wildland Fire Use</u></p> <ul style="list-style-type: none"> • Wildfires may burn suitable habitat for species such as the Northern spotted owl and marbled murrelet which are dependent on late- successional forests for nesting habitat. The fires could burn or degrade habitat that would take 100 years or longer to regenerate into suitable habitat once again. • Smoke drift into suitable habitat 	<p><u>Specific Conservation Measures Cited in USFWS Biological Opinion</u> <u>(Note: These measures would be renegotiated 5 years after plan approval. See also Appendix 1)</u></p> <p>Northern Spotted Owls</p> <ul style="list-style-type: none"> • No stand replacing fires would be allowed to burn in spotted owl core areas (100 acre circle) at any time. • Only non- motorized suppression techniques would be used in the 100 acre core area of spotted owl territories during the early nesting season. • Ground fires would be allowed to burn up to 10 percent of a spotted owl 100 acre core area beginning August 1. • Spotted owl territories would be maintained with at least 55 percent of the 1.8 mile circle and 75 percent of the 0.7 mile 	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Wildlife Ecologist Biologist</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<ul style="list-style-type: none"> • Direct incidental take • Adverse impacts to habitat from suppression efforts, including removal of trees during construction of fireline or hazard tree removal (on a localized level) may also adversely affect threatened and endangered species. <p><u>Hazard Fuel Reduction</u></p> <ul style="list-style-type: none"> • Removal of woody debris from the ground • Removal of ladder fuels and limbs and thinning stands • Noise disturbance from possible heavy equipment and chippers and especially hand- operated power tools <p>Likely Range Of Impacts <u>Wildland Fire Suppression</u></p> <p><i>Northern Spotted Owls and Marbled Murrelets</i> The use of chainsaws, heavy equipment and small helicopters outside the 100 acre core would introduce a level of sound and human activity and may disrupt normal behavior, causing adult spotted owls to flush from the nest, abort a feeding attempt or postpone the feeding of a chick. All owls or murrelets associated with 80 acres of suitable habitat would be negatively affected by these suppression activities. There could be up to 80 acres of suppression fires over five years, including six acres of fires per year, with one fire</p>	<p>circle in suitable habitat.</p> <ul style="list-style-type: none"> • All fires that occur in unsurveyed suitable spotted owl habitat or within the 0.7 mile circle before August 1 would be suppressed. • From March 15 to July 31, ground fires are permitted in up to 10 percent of the 0.7 mile circle in non- nesting spotted owl territories. <p>Marbled Murrelets</p> <ul style="list-style-type: none"> • All fires that occur in occupied marbled murrelet habitat before August 6 would be suppressed. • No more than 45 acres of stand replacing fires would occur in occupied marbled murrelet habitat. It is likely that this stand loss would occur in quality habitat, away from human activities and would therefore not increase predation risk. <p>Northern Spotted Owls and Marbled Murrelets</p> <ul style="list-style-type: none"> • No more than 927 acres of stand replacing fires would occur in suitable spotted owl or unoccupied marbled murrelet habitat. • Hazard fuel treatments would occur after August 5. • Retardants and foams would be used outside of suitable habitat. If retardants need to be used in suitable habitat, such use would be addressed under future emergency consultation. 	

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p>over 56 acres affected by wildland fire suppression.</p> <p>Explosive blasts may occur after spotted owl young have fledged and therefore disturbance would be insignificant. This disturbance is overestimated for marbled murrelets. Their habitat runs east west and is not over a mile wide and therefore it is unlikely that the effects of such blasts would fall entirely within occupied habitat.</p> <p>Up to two instances of disturbance from air tankers in suitable habitat during the nesting season could occur and could cause northern spotted owls or marbled murrelets to flush from the nest, abort a feeding attempt or postpone feeding a chick during the low overflight.</p> <p><u>Hazard Fuel Reduction</u> (Including limbing, brushing (no trees cut greater than eight inches DBH) within developed areas and fuel breaks (at least 30 feet wide) along perimeter of developed areas). There could be up to 10 acres affected, but not lost.</p> <p><u>Wildland Fire Use</u> There could be up to 927 acres affected over 5 years, with approximately 185.4 acres per year).</p> <p><i>Northern Spotted Owls</i> Up to 25 percent of occupied territory (0.7 mile</p>	<p><u>Other Conservation Measures Cited in Biological Opinion</u></p> <ul style="list-style-type: none"> • To minimize smoke related effects to northern spotted owls, suppression of all fires within 0.7 mile radius of an active nesting territory as well as within unsuitable habitat would occur between March 15 and August 1. • No more than two explosive blasts (affecting an are up to 0.5 miles long, equal to or greater than a two pound charge) could occur within occupied habitat after August 5. • Air tankers would remain above the disturbance threshold for spotted owls during their flight path to and from a fire but could fly below this threshold twice in occupied habitat (each affecting up to 0.5 miles and 2,650 acres) over 5 years. • No more than 927 acres of stand replacement fire in suitable habitat would occur over 5 years. <p><u>Reporting Requirements Associated with USFWS Biological Opinion</u></p> <ul style="list-style-type: none"> • NPS would conduct monitoring of the implementation associated with the FMP to describe the progress of implementation of the FMP, including the use of reasonable and prudent measures, and impacts to spotted owls, marbled murrelets and bull trout. 	

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p>radius) could be affected by stand replacing fire during the late nesting or non- nesting season. Because it is not possible to predict where a fire will start, this measure would maintain northern spotted owl territories above incidental take thresholds. Therefore northern spotted owls are not expected to be displaced from their home ranges. Without this measure, northern spotted owls may continue to persist in the territory, but marginal habitat conditions could compromise their ability to survive and successfully reproduce.</p> <p>During the early, late or non- nesting seasons up to 45 percent of the 1.8 mile radius could be affected by a stand replacing fire. 55 percent would be maintained as suitable habitat. Research has demonstrated that northern spotted owl abundance and productivity may significantly decrease when the proportion of suitable habitat within 0.7 miles of an activity center falls below 500 acres or about 50% of the total.</p> <p><i>Marbled Murrelets</i> Up to 45 acres of suitable habitat could be affected by stand replacement fire. Because fires in suitable marbled murrelet habitat are likely to be small in size and because suitable habitat is in relatively large and contiguous stands, this amount of suitable habitat loss would not impair the ability of murrelets to continue to nest in the stand.</p>	<ul style="list-style-type: none"> • On or before December 31 of each year (of implementation) associated with the BO, the NPS would submit a report containing the following information to the USFWS: <ul style="list-style-type: none"> ○ The location, timing, size and severity of each fire that occurs in the Park. ○ The kinds and amounts of suppression activities used (if any) for each fire. ○ A calculation of the extent of effects in acres using the thresholds in Table 6 of the BO. • Any dead or injured listed species found in the action area would be reported within 24 hours (by phone). • The USFWS would be notified in writing within 3 working days of the accidental death of, or injury to a federally listed species or of the finding of any dead or injured listed species during implementation of the proposed Federal action. This notification must include the date, time and location of the incident or discovery, as well as any pertinent information on circumstances surrounding the incident or discovery. <p><u>Specific Conservation Measures Used in Analysis</u></p> <ul style="list-style-type: none"> • No trees larger than 8 inches in diameter would be cut during hazard fuel reduction operations. • In suitable habitat, no area greater than 80 	

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	<p><u>Prescribed Fire</u> (actual levels would undergo separate environmental analysis).</p> <p><u>Assumptions used in analysis</u></p> <ul style="list-style-type: none"> • All fires and mechanical treatments below species- appropriate elevations occur within suitable habitat. • All fires <i>within suitable habitat</i> are potentially intense enough to kill old- growth trees. (Most fires in the region, however, tend to be small, smoldering spots with some large, high intensity fires that kill most trees in the area.) • All suitable murrelet habitat is <i>not</i> occupied by marbled murrelets. [NPS monitoring (Myers 2003, Lechleitner <i>et al.</i> 1996) indicate that only three watersheds of 8,780 acres of habitat in the park is considered contiguous occupied habitat. Marbled murrelet detections (8 inbound) were recorded by RADAR in 2000 near the Nisqually entrance. Despite years of field observer surveys, no murrelets have ever been detected on Eastern watersheds.] • All suitable habitat may be utilized by northern spotted owls. (This assumption does not take into account interactions between barred owls and spotted owls.) • Effects of fire- related activity above 4,500 feet in elevation or disturbance issues within habitat may be indirect effects. • On the whole, these estimates slightly over- 	<p>acres over five years would have fires suppressed</p> <ul style="list-style-type: none"> • In suitable habitat, no area greater than 10 acres in five years would receive hazard fuel treatment • In suitable habitat, no area greater than 927 acres over five years would receive wildland fire use for resource benefits. Based on fire history, this total is expected to occur in a series of small fires. • If acreages exceed these in any year, NPS staff would contact USFWS immediately to initiate emergency consultation or to reinitiate this consultation. • Suitable habitat for marbled murrelets does not include the Ohanapecosh, Muddy Fork or Stevens Creek portions of the Cowlitz watershed, or the White River. These are further than 50 miles from ocean foraging habitat. <p>Other Conservation Measures: Terrestrial Wildlife</p> <ul style="list-style-type: none"> • A resource advisor would be assigned to fires as needed to minimize impacts to threatened and endangered species. • Information regarding location of sensitive wildlife resources would be provided to the Incident Commander for consideration in planning fire activities. • When possible, crews would hike into and out from a fire rather than flying. • When possible, handtools would be used rather than power equipment. 	

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	<p>estimate effects for many years but dramatically under- estimate effects for other years.</p> <p><u>Other potential effects</u> Presence of humans in campgrounds and spike camps has the potential to increase corvid activity, and consequently lead to increased nest predation, due to improper storage of food and waste.</p>	<ul style="list-style-type: none"> • When possible, helicopters would fly from nearby airports and helibases, rather than staging within threatened and endangered species habitat in the park. • When possible, helicopter operations in the park would be staged at Kautz Creek or at sites greater than 4,500 feet rather than other forested areas of the park. • Seasonal operating restrictions that limit wildland fire use in or adjacent to unsurveyed suitable habitat and known occupied sites during the nesting and brood rearing season (March 15 through July 31) would minimize the potential that an individual spotted owl could be directly harmed by this action. • Helicopters would be staged, to the degree possible, during nesting season fire suppression efforts above the elevation of northern spotted owl (4,500 feet) and marbled murrelet (3,800 feet) nesting habitat (e.g. Fourth Crossing rather than Kautz Creek) • In areas below 4,500 feet, helicopters used in wildland fire suppression efforts would fly ½ mile (about 2,600 feet) above the canopy during the early nesting season (March 15- August 5) for both northern spotted owls and marbled murrelets • Garbage and food items would be handled appropriately by firefighters to minimize attraction of corvids. • Flights and other noise producing activities 	

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		<p>would be limited within two hours of sunrise and sunset, when possible.</p> <p><u>Other Standard Conservation Measures</u></p> <ul style="list-style-type: none"> • The park would continue to build on its inventory and monitoring program for rare, threatened and endangered species and habitats • To the extent practicable, the use of prescribed fire (after future environmental analysis) would either avoid nesting or spawning seasons or would not be conducted in areas where analysis of rare species and habitat had not been made. • For naturally occurring wildland fires (lightning strikes) and future prescribed fires, documentation of immediate post-fire threats to rare, threatened and endangered species and habitats, and actions to prevent further degradation of these would occur immediately following fire use or suppression activities. • To the degree possible, direct fire- related mortality of rare species, including known habitat or activity sites would be avoided. • Suppression activities, fire effects monitoring and smoke production would be carefully monitored in the vicinity of known habitat to ensure its use in the decision process for all fires (including suppression and use). • To the degree possible, construction of fire lines would avoid known rare, threatened 	

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		<p>or endangered species habitat.</p> <ul style="list-style-type: none"> • During future prescribed fire use, in known rare, threatened or endangered species habitat post nesting season, cooler burn prescriptions would be used and some degree of hazard fuel removal could be used to limit the potential for crown fires. • Hazard fuel reduction activities would have no effect, or would be not likely to adversely affect or would have only beneficial effects or they would not be conducted within known or potential habitat for rare, threatened or endangered birds. • Noise from heavy equipment or chainsaw use above ambient levels would occur more than ¼ mile away from potential habitat. • In areas below suitable habitat for nesting birds (4,800 feet), helicopters used in wildland fire suppression efforts would fly ½ mile (about 2,600 feet) above the canopy during the early nesting season. • Helicopters would be staged, to the degree possible, during nesting season fire suppression efforts, above the elevation of northern spotted owl (4,800 feet) or marbled murrelet (3,500 feet) nesting habitat. • All food and garbage would be secured in such a way that they are not available to wildlife, and would be removed from the 	

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
		site during the decamping process.	
<p>Rare, Threatened or Endangered Species: Fish</p>	<p><i>May affect, likely to adversely affect Puget Sound Bull Trout</i></p> <p><i>May affect, not likely to adversely affect Puget Sound Chinook</i></p> <p>Effects of fire on listed fish species will vary widely based on the proximity of the fire to fish bearing streams, steepness of slopes in burned areas, soil types, seasonal timing of the activity, condition of existing habitat, and relative abundance and extent of distribution of each population.</p> <p><u>Wildland Fire Use</u></p> <ul style="list-style-type: none"> Riparian vegetation could be burned to the extent that stream temperatures would rise and fish would be affected during catastrophic wildland fire Long- term beneficial effects to fish by increasing the nature and extent of woody debris in streams and rivers. <p>DIRECT EFFECTS</p> <p>1. Water Quality</p> <ul style="list-style-type: none"> Short term changes in water quality including temporary increases in turbidity and sediment levels and water temperature. Increased erosion Deposition of fine sediment 	<p><u>SPECIFIC CONSERVATION MEASURES NOTED IN USFWS BIOLOGICAL OPINION</u></p> <p>There were no specific conservation measures noted in the USFWS Biological Opinion related to effects on Bull Trout.</p> <p>Impact Mitigation Measures would be the same as water quality measures above plus:</p> <p><u>Specific Conservation Measures: Aquatic Wildlife</u> In addition to Appendix 1 in the Fire Management Plan EA, the following Best Management Practices (BMP's) are designed to minimize impacts to listed fish species and aquatic habitats:</p> <p><u>Fire Suppression (Retardants, Foams, and Water Withdrawals):</u></p> <ul style="list-style-type: none"> A resource advisor would be consulted on fires greater than 0.25 acres regarding the presence of federally listed fish species. Avoid using retardants, foams, and surfactants near lakes or flowing streams (e.g. not to be applied within 300 feet of waterway with listed fish species). Avoid water withdrawals from fish bearing streams whenever possible. Direct the spraying of foam away from waterways whenever possible. Avoid backflushing pumps and charged hoses into lakes or flowing streams. Utilize check bleeder valves whenever possible. Direct flow 	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Wildlife Ecologist Biologist</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<ul style="list-style-type: none"> • Suspended sediments may increase stress and reduce growth • Loss of intergravel cover • Avoidance of suspended sediments by juveniles • Elevated turbidity levels <p>2. Fire Retardants and Foams</p> <ul style="list-style-type: none"> • Direct application to waterway via aerial drops from planes or helicopters • Accidental discharge into streams by firefighters using hoses and residual foam associated with helicopter bucket drops during refilling from a water source. <p>3. Direct Mortality to Salmonids and Macroinvertebrates</p> <p>4. Removal of water from streams with listed fish species</p> <p>INDIRECT EFFECTS</p> <p>Indirect physical effects may include hydrologic change, changes in channel morphology, increased sedimentation, changes in water yield, and increases in water temperature.</p> <p><u>Cumulative Effects</u></p> <p>State and private logging adjacent to the park boundary will likely continue to impact NPS administered threatened and endangered species habitat in the future. State fire</p>	<p>away from water sources when draining pumps or charged hoses.</p> <ul style="list-style-type: none"> • Stream profile would be restored in areas where check dams were constructed. • If tactically possible, use of foam or retardant would be limited to upslope areas. Helicopter bucket dipping from streams in or adjacent to spawning should be avoided, including inlet streams to lakes. • Helicopter bucket dipping should be conducted only after chemical injection systems have been removed, disconnected or rinsed clean if foam is not needed for that fire suppression activity. If foam application is necessary, crews would consider whether to use a remote dip tank away from water sources. • Pump intakes placed in fish bearing lakes or streams would be covered with 1/8 inch or less screened material. • Avoid the use of riparian areas (300 feet from flowing water) as landing areas and refueling areas for helicopter operations whenever possible. • Locate fire camps away from riparian areas whenever possible. <p><u>Sediment Control:</u></p> <ul style="list-style-type: none"> • Limit fire lines to three feet in width, construct erosion control structures, and rehabilitate them to minimize sediment delivery to streams whenever possible. • To protect fisheries resources, stream disturbing activities shall generally occur during 	

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	<p>management practices have the potential to impact park resources through noise disturbance, smoke effects, or fires escaping into the park.</p>	<p>the dry season from July 15 through August 15.</p> <ul style="list-style-type: none"> • Erosion control methods shall be used to prevent silt- laden water from entering the stream whenever deemed necessary. On larger fires, Federal Burned Area Emergency Rehabilitation (BAER) Standards may be utilized. • Wastewater from project activities and water removed from within the work area would be routed to an area landward of the ordinary high water line to allow for removal of fine sediment and other contaminants prior to being discharged to the stream. Sediment entering the stream channel may affect spawning gravels, substrate embeddedness, pool frequency/quality and development of large pools. Chemical contaminants may have a negative biological affect on many forms of aquatic life including salmonids and macroinvertebrates. <p><u>Water Quality:</u></p> <ul style="list-style-type: none"> • In the event of a hazardous fuel spill, MORA would adhere to the Spill Prevention Control and Countermeasures Plan. On larger pumping and helicopter operations, minimal spill prevention kits would be available onsite. The desired outcome is to control, absorb, or contain the spill for clean- up and disposal. • Any machinery maintenance involving potential contaminants (fuel, oil, hydraulic fluid, etc) would occur outside the riparian area whenever possible. This measure is designed to 	

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		<p>avoid/minimize the introduction of chemical contaminants associated with machinery.</p> <ul style="list-style-type: none"> • Prior to starting work each day, all machinery would be inspected for leaks (fuel, oil, hydraulic fluid, etc) and all necessary repairs would be made before the commencement of work. This measure is designed to avoid/minimize the introduction of chemical contaminants associated with machinery used in project implementation. • Minimize the amount of time that heavy equipment is in riparian areas or stream channels. • Removal of mature coniferous and deciduous trees within 300 ft. of a wetland, stream, or river would be minimized. The crew would directionally fall trees towards the waterway. Helicopter landings in stream and river channels would occur outside the active channel whenever possible 	
Archeological Resources	<p><u>Wildland Fire Suppression/Wildland Fire Use/Prescribed Fire</u></p> <ul style="list-style-type: none"> • Loss or damage of physical artifacts (dependent on construction material – e.g. wood, shell, masonry, clay, stone, bone, plant or other organic material, etc. – and context – soil, rock shelter, surface deposit, buried deposit, etc.); • Loss or damage to contextual information, including compaction, erosion and partial or complete consumption of organic matter; 	<p>General Mitigation Strategies: To minimize or eliminate potential impacts to archeological resources,</p> <ul style="list-style-type: none"> • The park would continue to build on its inventory and monitoring program for archeological resources, including conducting surface and subsurface testing as necessary to document the potential for archeological resources or to understand the extent of archeological resources found. • Prior to the development of Prescribed 	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Archeologist</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<ul style="list-style-type: none"> • Inability to relocate previously identified archeological sites without vegetation context; • Ability to locate previously undetected cultural resources obscured by vegetation; • Increased potential for vandalism to archeological sites; • Increased knowledge of the areal extent of archeological context for previously recorded sites due to exposure of other site features; • Change in the potential of for long-term preservation of artifacts (i.e. artifacts may become more brittle); • Consumption of or decreased potential to detect some archeological resources for instance charred surficial deposits of bone, etc.; • Ability to increase protection for or to avoid impacts to known archeological resources through the use of low intensity prescribed fire or hazard fuel reduction. <p><u>Prescribed Fire</u> Few effects due to employment of mitigation strategies, including survey of prescribed fire perimeters prior to implementation of this use.</p> <p><u>Hazard Fuel Reduction (Debris Burning)</u> Activities would be conducted under controlled situations and after assessment of potential</p>	<p>Fire plans (and subsequent environmental analysis), areas proposed for fires would be surveyed for the presence of archeological resources. Post- burn surveys would also be conducted.</p> <ul style="list-style-type: none"> • Heavy equipment or other ground disturbing activities would not be used in known sensitive archeological resources sites. • The location and extent of known sensitive archeological resources would be considered in the decision to use wildland or prescribed fire. • Inclusion of park archeologist would occur in the planning and suppression process. The archeologist would also accompany crews to assist in identification of a fireline rout that would avoid damage to known resources in sensitive areas. • There would be no fire line construction in the vicinity of known archeological resources. • During archeological assessment and monitoring there would be surface or subsurface surveys accompanied by screening of sediments as necessary to determine the presence or significance of archeological resources. • If prehistoric or historic archeological resources were discovered during any portion of the selected alternative, work in the area associated with the find would cease until evaluated by the park 	

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	<p>impacts to prehistoric and historic archeological resources.</p> <p><u>Hazard Fuel Reduction (Manual/Mechanical)</u></p> <ul style="list-style-type: none"> • Activities would be conducted under controlled situations and after assessment of potential impacts to prehistoric and historic archeological resources. • Activities would primarily be conducted adjacent to developed areas and historic structures, where surface surveys of archeological resources has been made. 	<p>archeologist or designated representative. If necessary or possible, relocation of the work to a non- sensitive area may be required to enable completion of additional site testing and documentation. Every effort would be made to avoid further disturbance to the site.</p> <ul style="list-style-type: none"> • In the event of a significant find, consultation with the Washington State Historic Preservation Office and Native American tribes would occur and recommendations would be sought for appropriate treatment of the resources located. • Increased law enforcement patrols in known archeological sites following fires that removed surface vegetation obscuring sites. • Confinement of mop- up activities to smaller areas to allow archeologists more lead time to examine the ground surface before crews complete their work. <p>Mitigation strategies related to Hazard Fuel Reduction:</p> <ul style="list-style-type: none"> • Hazard fuel reduction would only be conducted within designated areas that have been analyzed for the presence of archeological resources. • If the potential to impact archeological resources was identified, these activities would not be conducted. If previously unidentified archeological resources were 	

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		<p>encountered the above mitigation strategies to prevent further disturbance and to assess the significance of these would be implemented.</p> <p>Additional mitigation related to Wildland Fire Use:</p> <ul style="list-style-type: none"> • The decision to employ wildland fire use would be based on analysis of impacts to known archeological resources, among other factors. <p>Mitigation strategies related to Prescribed Fire</p> <ul style="list-style-type: none"> • Prior to selection of Prescribed Fire as a management strategy, archeological surveys and analysis would be conducted. • Use of prescribed fire or carefully controlled Wildland Fire Use would likely be the preferred management strategy in areas where known prehistoric or historic archeological resources were present. If, however, fire would result in damage to such resources, it would be avoided in these areas. • Survey of area within prescribed fire perimeter prior to ignition and avoidance or modification of prescribed fire use (as appropriate) in sensitive archeological resources sites. 	
Historic Structures	<ul style="list-style-type: none"> • Loss or damage of physical buildings or structures • Loss or damage to contextual 	<p>Strategies to minimize or eliminate potential impacts to historic buildings and structures.</p> <ul style="list-style-type: none"> • The park would continue to build on its 	<p>Fire Management Officer Chief Natural and</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p>information, including compaction or erosion</p> <ul style="list-style-type: none"> • Slight increase in the ability to locate previously undetected cultural resources obscured by vegetation, depending on the construction of the building or structure • Increased potential for vandalism; • Slight increase in the potential for expansion of areal extent, or context for previously recorded sites • Change in the potential for long- term preservation • Consumption of or decreased potential to detect some historic resources • Ability to increase protection for or avoid impacts to historic buildings or structures (by using prescribed fire and hazard fuel reduction). <p><u>Hazard Fuel Reduction (Manual/Mechanical)</u> Use of hazard fuel reduction near historic structures</p> <p><u>Hazard Fuel Reduction (Debris Burning)</u> Selective debris collection and burning fuels from developed areas would result in a minor beneficial effect in increasing the ability to control wildland fires that might impact these areas, therefore increasing potential for preserving historic structures from fire.</p>	<p>inventory and monitoring program for historic resources.</p> <ul style="list-style-type: none"> • Prior to the development of Prescribed Fire plans (and subsequent environmental analysis), areas proposed for fires would be surveyed for the presence of historic resources. • Heavy equipment or other ground disturbing activities would not be used in known sensitive archeological resources sites. • The location and extent of known sensitive or significant historic resources would be considered in the decision to use wildland or prescribed fire. • Inclusion of park historical architect and historical landscape architect in the planning and suppression process. • There would be no fire line construction in the vicinity of known historic resources. • If historic resources were discovered or affected during any portion of the selected alternative, consultation with the State Historic Preservation Office would occur. If necessary or possible, relocation of the work to a non- sensitive area may be required to enable completion of consultation and documentation. Every effort would be made to avoid further disturbance to the site. • Increased law enforcement patrols would occur near affected resources following fires. 	<p>Cultural Resources Resource Advisor Historical Architect Historical Landscape Architect</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p><u>Cumulative Impacts</u> There would be negligible short- and long- term cumulative impacts that because of avoidance or mitigation strategies would not result in impairment of historic structures.</p>	<ul style="list-style-type: none"> • Confinement of mop- up activities to smaller areas to allow historic resources professionals more lead time to understand fire effects to historic resources. • Structural inspections (post- fire condition assessment) of historic structures damaged by fire, including immediate mitigation measures such as bracing or weatherproofing. 	
<p>Cultural Landscapes (NHLD)</p>	<ul style="list-style-type: none"> • Negligible to minor temporary effects on circulation • Negligible to moderate short- and long- term effects on landscapes • No effect on topography; • Same effects, as noted above under Historic Structures, on buildings and structures <p><u>Cumulative Impacts</u> There would be negligible short- and long- term cumulative impacts that because of avoidance or mitigation strategies would not result in impairment of Mount Rainier National Historic Landmark District resources.</p>	<p>Mitigation measures would be the same as above under Historic Structures. In addition they would include:</p> <ul style="list-style-type: none"> • During the planning process for hazard fuel mitigation treatments, the park Historical Landscape Architect would be contacted and appropriate landscape preservation strategies employed in carrying out fuel treatments within the Mount Rainier NHLD. 	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Historic Landscape Architect Historic Architect</p>
<p>Ethnographic Resources</p>	<ul style="list-style-type: none"> • Increased huckleberry production, depending on location • Increased wildlife habitat • Slight potential for effects on topography from fireline construction. <p><u>Cumulative Impacts</u> There would be negligible short- and long-</p>	<p>Modified actions in areas where potential for ethnographic resources exists.</p> <p>Mitigation measures would be the same as noted above under Archeological and Historic resources. In addition, pending the development of park prescribed burn plans, additional consultation with Native American tribes would occur to ensure that</p>	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Archeologist</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	term cumulative impacts that because of avoidance or mitigation strategies would not result in impairment of ethnographic resources.	plans reflect both the tribe's and the park's concerns.	
Wilderness	<p><u>Wildland Fire Suppression/Wildland Fire Use/Prescribed Fire</u></p> <ul style="list-style-type: none"> • Temporary closures of portions of the park; • Temporary loss of primitive experience or no ability to experience wilderness in the vicinity of firefighting efforts; • Noise and disturbance in vicinity of firefighting, with attendant effects on perception of solitude; • Increased activity and congestion throughout the park • Restoration of the natural ecological role of fire to park wilderness; • Fewer recreational (noise and disturbance) and scenic impacts • Ability to study the natural role of disturbances • Increased ability to enhance the preservation of cultural resources • Better preservation of park vegetation and wildlife, which have evolved in the presence of periodic natural disturbance by fire; • Increased scenic diversity in park vegetation communities; and • Increased opportunities to see wildlife due to increased diversity in vegetation communities. • Use of chainsaws, portable pumps, 	<p>The following administrative criteria and MIST would be applied to wilderness impacts related to the implementation of the park fire management program.</p> <ul style="list-style-type: none"> • Administrative use of aircraft would be permitted in accordance with Office Order 97- 1: Safety Orientation for New Employees and 79- 8: Aircraft Use Request (see FMP Appendices) and subsequent updates. Permission to use helicopters in wilderness must be specifically granted by the superintendent. Helicopter use in wilderness (for other than emergencies) would generally not be approved between July 1 and Labor Day and use at other times is generally restricted to weekdays. Approval for helicopter use in non-emergency situations would be granted only if it has been determined to be the minimum tool to achieve the purposes of the area for protection of wilderness values (See Environmental Assessment Appendices 1 and 2 and Fire Management Plan Appendix 30). • There are no landing zones constructed in park wilderness. Natural openings would be used if approved under the minimum requirement for helicopter landing as detailed in the FMP. Minimal clearing 	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Wilderness Coordinator</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p>helicopters and fixed wing aircraft to enhance firefighter and public safety, to access difficult terrain, to monitor fire effects, and to protect park resource values at risk</p> <ul style="list-style-type: none"> • use of a variety of communications systems • use of park waters, chemical fire retardant and foams, etc. <p><u>Prescribed Fire</u> Use of prescribed fire to achieve specific resource objectives or to increase defensible space around developed areas or areas with sensitive administrative, cultural or natural resources.</p> <p><u>Hazard Fuel Reduction (Debris Burning)</u> Some potential use in the vicinity of wilderness- located historic structures to increase the ability to control wildland fires.</p> <p><u>Hazard Fuel Reduction (Manual/Mechanical)</u> Most would take place in developed areas and along roadsides with some use occurring using minimum tools adjacent to historic structures or other sensitive cultural resources sites in wilderness.</p> <p><u>Cumulative Impacts</u> Wildland fire use would also result in minor to major adverse impacts and cumulative long-term beneficial impacts on the natural,</p>	<p>would be used in an emergency if other safe alternatives have been ruled out. Site restoration would occur following this use.</p> <ul style="list-style-type: none"> • Fixed wing and other aircraft use would conform to FAA regulations and mitigation strategies to reduce or eliminate impacts to endangered species. • Temporary work crew camps may be established within trailside camps or other resilient zones as approved by the superintendent (but not within view or ¼ mile from established trails). Cache boxes, equipment and supplies would be kept out of sight as possible and removed when no longer needed and restoration would occur upon cessation of use. • Park use of power equipment is dictated by Office Order 87- 1: NPS Use of Mechanized Equipment and Stock for Administrative Activities Otherwise Not Permitted and the Environmental Assessment. The use of Manual/Mechanical equipment is constrained by the Wilderness Act and NPS policy. In determining the appropriate minimum tool for use in wilderness, consideration is given to effects on visitor experience, public safety and wilderness values. Resource protection and safety concerns would take precedence over economic considerations. Alternative methods to power tools would be considered based on the project objectives and minimum tool concerns. 	

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<p>ecological, scenic, scientific, cultural and recreational values of wilderness. The range of potential impacts would not result in impairment to wilderness or wilderness values or the reasons these have been protected in Mount Rainier National Park.</p>	<p>Use of power tools in wilderness would be confined, as much as possible, to the period prior to July 1 and after August 31 to avoid impacts to most visitors' experiences.</p> <ul style="list-style-type: none"> The use of the minimum requirement/ minimum tool concept would be employed for fires in wilderness. Specific emphasis would be on the natural role of fire in the park ecosystem and the need to modify fire use and fire suppression responses (as appropriate) to minimize their effects. Suppression standards (both tactical and strategic) would be used to reduce the environmental effects of suppression. Rehabilitation of fire suppression impacts to park resources would occur as part of and immediately following mop- up. 	
<p>Visitor Experience</p>	<p>Wildland Fire Suppression, Wildland Fire Use and Prescribed Fire</p> <ul style="list-style-type: none"> Changes in scenic vistas Increases in noise effects (related to fire operations activity and the use of mechanical equipment) Health effects related to the presence of smoke and ash Temporary closures of trails and/or roads or traffic delays loss of ability to visit some park attractions; Confusion as to available visitor services Increased concentrations of people where fire camps were established Changes in interpretive services 	<ul style="list-style-type: none"> Expansion of fire information/interpretive program and programming Dissemination of fire information both within and outside the park Adding fire information at turnaround points and at pre- trip planning venues 	<p>Fire Management Officer Chief Natural and Cultural Resources Park Fire Management Team Resource Advisor Chief Ranger</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
	<ul style="list-style-type: none"> • Use, or an increased use of mechanical equipment, such as aircraft, pumps, chainsaws and other power tool • Restrictions on campfires or wilderness access • Enhanced preservation of park ecosystem processes, including direct effects that visitors could observe over time • Potentially enhanced scenic vistas of areas long- disguised by vegetation • New educational opportunities to understand disturbance effects on park ecosystems • Better understanding of park operations • potentially enhanced wildlife and wildflower viewing, etc. <p>Hazard Fuel Reduction (Debris Burning) No or negligible adverse impacts</p> <p>Hazard Fuel Reduction (Manual/Mechanical) Treatment would primarily occur in developed areas where noise and activity would be similar to other activities already occurring</p> <p>Cumulative Impacts There would be limited impacts to and no impairment of visitor experience from the activities associated with wildland fire management in Mount Rainier National Park.</p>		
Park Operations	<u>Wildland Fire Suppression, Wildland Fire Use and Prescribed Fire</u>	<ul style="list-style-type: none"> • No action would be taken unless the threats to human health and safety can be 	Fire Management Officer

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
and Visitor Services	<ul style="list-style-type: none"> • Potential for fewer staff available to manage wide range of park operations during periods of high national alert or extensive park fire operations. • Likelihood of using major and minor park developed areas for staging firefighters • Potential for visitor facilities closures, limitations in hours of operation, cancellations in interpretive programming, fewer patrols, etc. • Loss of concession revenue • Interruptions in scientific studies • Changes in the ways park visitors would access visitor facilities, including roads and trails. • Potential for park staff (and in some cases, visitors) to be exposed to a wide variety of human health and safety effects • Better protection of park resources, including ecosystem processes, historic structures, and administrative facilities • Better training, including cross- training of park staff, resulting in a better understanding and application of fire management operations • Readily transferable skilled park staff able to be used in other NPS and agency fire management operations 	<p>adequately mitigated or addressed.</p> <ul style="list-style-type: none"> • All standard approved fire management techniques to mitigate safety threats would be used. • There would be increased provision of information to park visitors • There would be a focus on keeping facilities open but with fewer services available if possible. • Use of safety guidelines in the Fireline Handbook (National Wildfire Coordinating Group Handbook 3, January 1998). These guidelines include, but are not limited to, use of personal protective equipment (PPE), standard fire orders, watch- out situations, and safety issues common to large fires. • Job Hazard Analyses (JHAs) prepared to identify hazards and mitigation related to individual fire positions and activities. • Qualifications standards. All personnel assigned to fires must meet NPS and interagency wildland fire qualification standards. • Site Specific Plans (including Wildland Fire Situation Analyses, Prescribed Burn Plans, Hazard Fuel Reduction Project Plans, Incident Action Plans, and Wildland Fire Implementation Plans. • Washington State Smoke Management Plan. All prescribed burning and debris disposal would comply with regulations contained in the Washington State 	<p>Deputy Superintendent Chief of Interpretation Chief Ranger Chief of Maintenance Chief Natural and Cultural Resources Park Fire Management Team</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
		<p>Department of Natural Resources Smoke Management Plan. Small burn piles up to about six feet in diameter and would contain less than 100 tons (109,718 kilograms) of natural vegetation. (This meets the definition of small fires under the smoke management plan.) For prescribed fires that would consume 100 tons or more of material, the park would apply to Washington Department of Natural Resources, including the Department of Ecology for smoke management approval. Burns would be timed to minimize smoke impacts on air quality and visibility utilizing favorable conditions of atmospheric stability, mixing height and transport winds. No piles would be ignited during smoke management burn bans or <i>visibility protection periods</i> (including from about Memorial Day to Labor Day).</p> <ul style="list-style-type: none"> • Daily evaluation of fire danger ratings. • Ongoing public and employee education. • Campfire restrictions. During periods of high fire danger the Superintendent may restrict campfires to reduce the chance of escaped or unwanted fires: information about current fire restrictions is made available to the public through press releases; notices provided at ranger stations, visitor centers and trailheads; and visitor contacts. • Area closures. If wildland fires or wildland 	

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
		<p>fire use pose an imminent threat to human health or safety, the park Superintendent may close all or a portion of the park, including trails and roads, based on recommendations from the Incident Management Team. Park personnel will notify visitors obtaining permits for backcountry use of the exact location of fire activity. Adjacent land management agencies and nearby residents would also be notified if any fire poses a possible threat outside the park.</p> <p>MIST and best management practices not mentioned above that apply to reducing impacts to human health and safety include:</p> <ul style="list-style-type: none"> • Ensuring that safety is the first priority and primary concern of all firefighters; • Encouraging firefighters to routinely review and apply the 18 Watch Out Situations and 10 Standard Fire Orders during their incident tenure; • Posting lookouts; • Being cautious when felling or burning live or dead trees; • Not enabling wildlife accessibility to food; • Clarifying fire orders; • Maintaining adequate firefighter resources and following established work/rest guidelines; • Thoroughly analyzing fire behavior given predicted weather conditions; • Ensuring all required fire analyses are 	

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
		<p>completed as required;</p> <ul style="list-style-type: none"> • Wearing or using appropriate personal protective equipment (PPE); • Using infrared devices to detect hot spots; • Aerial monitoring of fire; • Knowledge of terrain; • Well- trained staff. 	
Environmental Justice	<p>As a result of the implementation of the park fire management program, landscapes and resource traditionally used by Native American populations would, over time, return naturally to more closely reflect a pre- fire suppression state. Future prescribed fire plans could be used to recreate traditional landscapes as warranted through additional research and consultation with affected Indian tribes. Proposed actions would have negligible to moderate beneficial effects.</p>	<p>In the event of the development of prescribed fire plans, Native American Indians would be consulted and the possible opportunity or need for the re- creation of traditional landscapes investigated.</p>	<p>Fire Management Officer Chief Natural and Cultural Resources Resource Advisor Archeologist</p>
Cumulative Impacts	<p>Effects to a wide range of ecological processes, from population dynamics to nutrient cycling and hydrologic regimes.</p>	<p>Minimizing extensive burns in old growth forest (according to the BO conditions), that could contribute to wide scale population declines for old- growth dependent species would occur.</p>	<p>Fire Management Officer and other responsible staff as indicated above</p>

PUBLIC REVIEW

Mount Rainier National Park conducted internal scoping with appropriate NPS staff and external scoping with the public and interested groups, agencies, and tribes. In response to a public scoping letter and proposal and press release sent out on January 26, 2001, the park received five comment letters. All were from agency representatives. The Okanogan- Wenatchee National Forest (2- 15- 01) responded that they were revising their FMP and that they would like to interface in planning. The Washington State Historic Preservation Office (2- 14- 01) responded with a recommendation to fully incorporate cultural resources issues into the park planning efforts and to consult with concerned tribes regarding cultural resources issues and fire planning. The Puget Sound Clean Air Agency (2- 13- 01) urged the park to incorporate strategies that would reflect the State of Washington's visibility State Implementation Plan (SIP), which was developed to help protect class I areas in the state designated by the Clean Air Act. Another individual from the same agency questioned whether the plan would comply with the smoke management protocols in the SIP which are managed under the Washington State Environmental Protection Act (SEPA). The Washington State Department of Natural Resources (DNR) recommended not pursuing fire suppression, but rather implementing wildland fire use in wilderness as well as encouraging the park to consider the use of prescribed fire in whitebark pine woodlands.

These comments and other internal comments were incorporated into an interagency review draft released to a variety of governmental organizations, including the U.S. Fish and Wildlife Service, area National Forests and tribes. At that time, only the Muckleshoot Indian Tribe responded with a detailed comment letter (March 3, 2003), including a request to strengthen the link between Native Americans and the use of fire in several sections in the Environmental Assessment and to consider the issue of environmental justice as it related to tribes and fire management. These comments were subsequently incorporated into the public review draft of the Fire Management Plan and Environmental Assessment released to the public for a more than 60- day comment period beginning on December 19, 2003 and ending on February 28, 2004. Approximately 38 copies of the Fire Management Plan and Environmental Assessment were distributed on compact disc. Of these 12 were distributed in response to requests from public and agency staff. The press release was also mailed to a list of approximately 60 persons and agencies who have requested to be on a mailing list for Mount Rainier National Park activities. In addition, it was sent to a specific list of another five persons and agencies who have expressed interest in the park fire management program.

In association with the plan's release, the following public meetings were held:

Naches Ranger Station	6:00 p.m. Monday, January 26, 2004
Enumclaw Public Library	6:00 p.m. Wednesday, January 28, 2004
Packwood Fire Station 10	6:00 p.m. Thursday, February 5, 2004

While the interagency briefings that preceded these public meetings were successful in generating U.S. Forest Service, Washington Department of Natural Resources and other interagency participation, they were of limited success in gathering public input on the plan. Only the Enumclaw public meeting had public participation, with approximately five members of the public and one reporter. Nonetheless, the following comments were incorporated into the plan based on these meetings: increased strategies for interagency coordination, especially in public relations efforts and increased dissemination of consistent fire management messages among agencies.

On December 22, 2003 a second letter was sent to tribes indicating the parks interest in meeting to ascertain issues associated with park fire management proposals in the plan and EA. That letter and subsequent follow- up requests for consultation resulted in the following tribal meetings, specifically focused on FMP issues:

Puyallup Tribe of Indians (February 9, 2004)
Squaxin Island Tribe (February 20, 2004),
Cowlitz Indian Tribe (March 3, 2004) and
Nisqually Indian Tribe (March 4, 2004)

These tribes, as well as the Muckleshoot Indian Tribe were most interested in discussing knowledge regarding historic and prehistoric past uses of the park, the future potential use of prescribed fire and its application to potential traditional use collecting. All of the tribes also identified the ongoing protection of culturally sensitive resources and archeological resources as an important consideration. Numerous overtures by both the tribes and the park were also referred to or made to facilitate future gathering of this important information.

Although an article (the press release) was published in the Eatonville Dispatch Buyer's Guide (distributed to all local residents of the Eatonville/Elbe/Ashford area whether subscribers or not) on January 7, 2004 identifying the dates and times of the public meetings and basic information about the Fire Management Plan process and two other articles advertising the public meetings were published in the following newspapers Tacoma News Tribune and Enumclaw Courier, no written public comments were received on the Fire Management Plan or the Environmental Assessment. The Fire Management Plan/Environmental Assessment was also sent to six local public libraries Eatonville, Puyallup, Buckley, Enumclaw, Tacoma and Yakima on the mailing list. At the interagency/public meetings, attendees made comments and questioned actions. These comments have been incorporated into the final versions of both documents as noted in the Errata for the Fire Management Plan Environmental Assessment.

Following a request for (May 30, 2002 – initial request) and receipt of a species list (July 11, 2003 – last list received) from the USFWS regarding potential listed and proposed species within the park for the Fire Management Plan, a request for comments on the FMP/EA during the public review process (January 23, 2004) was made to the USFWS regarding whether or not that agency had comments on the plan and EA. The USFWS responded with a request for additional information, which was provided on March 26, 2004, along with a request for concurrence on initial determinations of effect for listed and proposed species by the park. That was followed by another USFWS letter requesting a meeting (April 14, 2004), which occurred on April 22, 2004. In that meeting indicated that they would not concur with the specified determinations of effect because specific impacts related to five years of implementation of the FMP had not been made to the degree warranted by that agency. As a result, additional consultation efforts were undertaken and have resulted in a separate biological assessment (BA) (September 7, 2004) that clarifies the selected alternative in the FMP and provides further detail regarding the presumed effects of these actions over the next five years (considered to be the life of the plan). That BA has been incorporated into the Errata for the Fire Management Plan Assessment. The Biological Opinion (BO) (March 2, 2005) on the BA identified conditions on the implementation of the Selected Alternative over the next five years which have been incorporated into this Finding of No Significant Impact. The BO provides more specific effects analysis than did the EA, which indicated a wide range of effects on listed and proposed species. The BA/BO quantifies analysis of effects over the shorter time period (5 years) requested by the USFWS and will guide implementation of the Fire Management Plan. The BO constitutes the basis for USFWS concurrence on the FMP. The BA and BO are available as part of the administrative record for the plan.

Consultation with the Washington State Historic Preservation Office (SHPO) was completed on October 26, 2004 with receipt of their letter concurring with a determination of no adverse effect on cultural resources. With that letter the SHPO requested additional information as it becomes available on tribal consultations. On February 3, 2005, the National Marine Fisheries Service also concurred with determinations of effect regarding potential impacts to anadromous fish.

IMPAIRMENT DISCLOSURE

In addition to determining the environmental consequences of the preferred and other alternatives, NPS policy (*Management Policies 2001*) requires analysis of potential effects to determine whether or not actions would impair park resources. To ensure fulfillment of the NPS mission, NPS Management Policies also requires decision makers to consider impacts and to determine in writing (before approving an action) that a proposed action will not lead to impairment of park resources or values.

The fundamental purpose of all units of the NPS is 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.

As a result, NPS managers seek ways to avoid or to minimize, to the greatest degree practicable, adverse impacts on park resources and values. Impacts to park resources and values may occur when necessary and appropriate to fulfill the purposes of a park, as long as these impacts do not constitute impairment of the affected park resources and values.

Impairment is an impact that, in the professional judgment of the NPS manager, would harm the integrity of park resources or values, including the opportunities that would otherwise be present for enjoyment of these resources or values. Management Policies (NPS 2001) provides further guidance for NPS decision- makers to use in analyzing whether a proposed action would result in impairment.

An impact is more likely to constitute impairment to the extent that it affects a resource or value whose conservation is

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to the opportunities for enjoyment of the park; or
- Identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

An impact would be less likely to constitute impairment to the extent that it is an unavoidable result, which cannot reasonably be further mitigated, of an action necessary to preserve or restore the integrity of park resources or values.

As with many of the management actions considered by the NPS, the careful balance of sometimes competing park resources and values is an important component of the environmental analysis and decision- making process. All elements of an NPS action, however must avoid impairing park resources.

Though providing for the enjoyment of park resources and values by the people of the United States is also a NPS mandate, the NPS has been directed by Congress that in cases where there is a conflict between conserving resources and values and providing for the enjoyment of them that conservation is considered predominant.

The EA identified and evaluated impacts to a host of park resources and values, an analysis that considered the severity, duration, and timing of direct and indirect impacts. The impacts disclosed herein occur in areas that have long been cornerstones of visitor use. The EA found that there will be no major adverse impacts to a resource or value whose conservation is 1) necessary to

Appendix 1

**Mount Rainier National Park Fire Management Plan
Wildland Fire Use Mitigation Strategies for Northern Spotted Owls and Marbled Murrelets**

NORTHERN SPOTTED OWLS	Early Season Northern Spotted Owl March 15- July 31	Late Season Northern Spotted Owl August 1 – September 30	Non-nesting Season Northern Spotted Owl October 1 – March 14
CORE TERRITORY 100 acre circle (0.22 mi radius) Below 4,500 feet	NO fires, all territories Use of non-motorized suppression techniques (hand tools, etc. with low noise disturbance)	Less than 10 % of area affected by ground fire No stand replacement fire	Less than 10% of area affected by ground fire No stand replacement fire
0.7 mi radius circle (984 acres minus 100 acres) OCCUPIED TERRITORY (non-nesting adults) Below 4,500 feet	No intended stand replacement fires Ground fires permitted up to 10% (100 acres)	All fires acceptable Must maintain 75% suitable habitat (up to 25% stand replacement permitted in entirely suitable habitat)	All fires acceptable Must maintain 75% suitable habitat (up to 25% stand replacement OK in entirely suitable habitat)
0.7 mi radius circle ACTIVE NESTS (breeding owls) Below 4,500 feet	NO fire, all territories	All fires acceptable Must maintain 75% suitable habitat (up to 25% stand replacement permitted in entirely suitable habitat)	All fires acceptable Must maintain 75% suitable habitat (up to 25% stand replacement permitted in entirely suitable habitat)
0.7 to 1.8 mi radius circle (6,510 acres minus 984 acres) OCCUPIED TERRITORY (non-nesting adults) And ACTIVE NESTS Below 4,500 feet	All fires acceptable Maintain 55% suitable habitat (up to 45% stand replacement fire permitted in entirely suitable habitat)	All fires acceptable Maintain 55% suitable habitat (up to 45% stand replacement fire permitted in entirely suitable habitat)	All fires acceptable Maintain 55% suitable habitat (up to 45% stand replacement fire permitted in entirely suitable habitat)
Unsurveyed Northern Spotted Owl habitat Below 4500 ft	NO fire	Up to 5-year total of 927 acres	Up to 5-year total of 927 acres
Marbled Murrelet	Early Season Marbled Murrelet April 1 – August 5	Late Season Marbled Murrelet August 6 – September 15	Non-nesting season Marbled Murrelet September 16 – March 30
UNOCCUPIED Marbled Murrelet habitat Below 3800 ft	Up to 5 year total of 927 acres	Up to 5 year total of 927 acres	Up to 5 year total of 927 acres
OCCUPIED Marbled Murrelet habitat Below 3800 ft	NO fire	Up to 45 acres of stand replacement fire over 5 years	Up to 45 acres of stand replacement fire over 5 years