

**CARIBOU – TARGHEE NATIONAL FOREST
WILDLAND FIRE USE GUIDE BOOK SOUTH**



UNITED STATES DEPARTMENT OF AGRICULTURE
INTERMOUNTAIN REGION
2004



Caribou Targhee Wildland Fire Use Guidebook South

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I INTRODUCTION

1.1 Abstract

The Caribou-Targhee Wildland Fire Use Guidebook South is intended to serve as guide to successfully navigate the authority and responsibility required to manage natural ignitions in the geographical areas described herein. The guidebook is a compilation of established National, Regional and Forest direction regarding Wildland Fire Use. This is not a decision document, rather an implementation guide for direction established in the 2003 Caribou Revised Forest Plan. The Guidebook is intended as a “living document” and will be summarily updated as policy changes and/or additional subsections are evaluated. While only one subsection (Fire Management Area) has been evaluated under the current plan, it is anticipated that the remaining subsections be evaluated, and the guidebook amended to include these areas.

1.2 Revisions

The Caribou-Targhee Wildland Fire Use Guidebook South was designed and intended as a modular document to be updated as additional subsections are evaluated for fire use suitability. These revisions/additions are to be approved by the Forest Supervisor and documented in the table below. Include a brief discussion describing the revision, author, and date approved. Revisions pertaining to policy will not require Forest Supervisor signature but will be recorded in the revision description. One copy of the guidebook will be issued to each District, one to Dispatch and one to the Forest Fire Management Officer. Notice of revision will be sent to the holders of these copies who are then responsible for updating District copies. An electronic version of the guidebook will be maintained on the Caribou-Targhee Forest Website and will be considered the master document. Efforts will be made to keep this copy current as policy changes/and or additional subsections are added.

Table 1.2-1: Revisions/Additions

Revision Description/Author	Forest Supervisor Signature	Date Approved

1.3 Authority

5140.1 – Authority - Both the National Forest Management Act of October 22, 1976 (16 U.S.C. 1600 et seq.), and the Clean Air Act, as amended (42 U.S.C. 7401 et seq.), are applicable to the use of fire on National Forest System lands. These acts are summarized in FSM 5101.1.

The Federal Wildland Fire Management Policy adopted December 18, 1995, by the Secretaries of Agriculture and the Interior directs agency heads and other officials to implement the principles, policies, and recommendations in the Final Report of the Federal Wildland Fire Management Policy and Program Review (FSM 5101.4). Additional direction is in the Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide (FSM 5140.32, 5108). See Series 5000 manual direction at: <http://fsweb.wo.fs.fed.us/directives/html/fsm5000.html>

5140.41 - Regional Forester: The Regional Forester has the authority and responsibility for:

1. Approving direction for fire use embodied in forest plans.
2. Managing the Regional fire use program and coordinating the Regional fire use program with the National program.
3. Ensuring that Forests conduct prescribed fires and wildland fire use projects in compliance with National and Regional fire management policies and standards.
4. Under severe burning conditions, deciding whether or not to approve new fire use or continuation of existing fire use (FSM 5140.31, para. 9).
5. Ensuring the development and application of Regional standards for consistent preparation of the Wildland Fire Implementation Plan (WFIP).
6. Ensuring the development and use of smoke management criteria to guide decisions on fire use projects (FSM 5144).
7. Ensuring the timely preparation and transmittal of annual accomplishment reports to the national fire use database (FSM 5147).

5140.42 - Forest Supervisor: The Forest Supervisor has the authority and responsibility for:

1. Integrating the role and use of fire and establishing fire management direction to meet resource objectives in the applicable forest plans.
2. Approving the Wildland Fire Implementation Plan (WFIP). This authority may be delegated to a District Ranger, but only if the District Ranger has the requisite fire management knowledge, experience, and staff available.
3. Reporting to the Regional Forester existing or potentially severe burning conditions on the unit. Where the Regional Forester decides that the Supervisor may continue to make decisions on fire use on the unit under severe burning conditions, the Supervisor, depending on the complexity of the situation, may delegate fire use approval authority to a District Ranger, but only if the District

- Ranger has the requisite fire management knowledge, experience, and staff available.
4. Providing specific direction on fire use through annual approval of the Fire Management Plan consistent with the approved forest plan.
 5. Ensuring that the WFIP, and the personnel implementing them, including contractors, meet Service-wide and Regional requirements (FSM 5142, 5143, 5145, and 5148).
 6. Ensuring adequate tracking and monitoring of all prescribed or wildland fire use at the Forest level (FSM 5142.21, para. 12 and FSM 5147).

1.4 Fire Use Objectives and Acceptable Outcomes

Fire Management objectives provide a general framework within which specific land management objectives are achieved for a management area. General Forest Service fire use objectives outlined in FSM 5140.2 and FSM 2324.21 include:

- To use fire from either management ignitions or natural ignitions in a safe, carefully planned, and cost-effective manner to benefit, protect, maintain, and enhance National Forest System resources.
- Reduce future fire suppression costs.
- Restore natural ecological processes and achieve management objectives adopted in approved forest land and resource management plans (forest plans).
- Permit lightning fires to play, as nearly as possible, their natural ecological role within wilderness.
- Reduce, to an acceptable level, the risks and consequences of wildfire within wilderness or escaping from wilderness.

The Caribou National Forest Plan (revised 2003) acknowledges the natural role of fire in its fire dependant ecosystem. Specifically, forest wide goals and objectives pertaining to fire and Wildland Fire Use include:

Goals

- Forest resources are managed in accordance with the National Fire Plan, Ten-Year Comprehensive Strategy and Implementation Plan, and Cohesive Strategy to improve fire prevention and suppression, assist rural communities, reduce hazardous fuels, and restore fire-adapted ecosystems.
- Fire is allowed to play its natural role where appropriate and desirable to reduce the risk of uncharacteristic wildland fires.
- Fire and other management activities restore or maintain desirable vegetative communities and ecosystem processes. Fire management prescriptions are written to take advantage of natural lightning starts and to restore historical fire regimes.
- Fire and other management activities are used to treat natural and activity fuels with priority on reducing risk from uncharacteristically large or intense wildland fires and protecting communities in the wildland-urban interface.

Objectives

- Develop and implement at least one wildland fire use plan each year at the Subsection scale. Priority should be given to the ecological subsections where this activity is emphasized.

The Caribou-Targhee Fire Use Guidebook South should also strive to achieve the following secondary objectives in order to permit lightning-caused fires to play their natural ecological role and reduce the risks and consequences of wildfire within the subsection.

- Safety- No injuries to personnel and/or members of the public. Strive to minimize damage to administrative sites and private property, while providing for firefighter and public safety first.
- Air Quality- Assess Air Quality impacts in communities surrounding the included FMA. Smoke from wildland fire use is not human-caused, so it is permissible to impact the air quality in wilderness.
- Education- Provide and increase opportunities for the public to observe and interpret fire's natural role in the ecosystem.
- Economic- Minimize the cost of fire management programs.

Acceptable outcomes from achieving these objectives are:

- Maintenance and/or enhancement of vegetative mosaics and biological diversity that result from fire.
- Continuing plant and animal relationships that evolve with fire.
- Conservation of genetic traits that certain vegetative species developed in response to fire.
- Living and dead fuels approach a “natural” state of continuity, arrangement, depth, and loading.
- Public awareness that a fire is a natural and essential component of many ecosystems.
- Forest visitors safely witness the natural role of fire.
- Fire effects on historical values are mitigated.
- Non-National Forest System lands are protected from fire.
- Where appropriate, minimum-impact suppression tactics are successfully utilized on holding actions involving Wildland Fire Use and suppression actions on wildfires.
- Appropriate management response and resources expended are commensurate with the location, values threatened and unfavorable impacts that may result from wildland fire.

II AREA DESCRIPTION

This Chapter provides a description of the resources within the Subsection, summarizes applicable Forest Plan goals, standards and guidelines, and lists other management guidelines.

2.1 Subsection Description

The Caribou, Black and Bald, and Little Elk Mountain ranges fall in this subsection. The area consists of mountain ranges and valleys of Mesozoic and Cenozoic age sedimentary, intrusive and metamorphic rock, such as limestone, siltstone, conglomerate and sandstone that have been modified by geomorphic processes. Elevations range from 5,600 to 9,800 feet (1,707 to 2,987 meters). Slopes range from 5 to 60%. The major vegetation types include coniferous forest, grasslands, and shrublands. This map unit is separated from similar subsections by geology and climate.

Mean annual precipitation ranges from 28 inches (71 cms) on the lowest elevations to 40 inches (102 cms) on the highest elevations. Most precipitation occurs in the spring and winter with 60% of the precipitation falling as snow. The mean annual air temperature is 29 to 38 degrees F (-1.7° to 3.3° C).

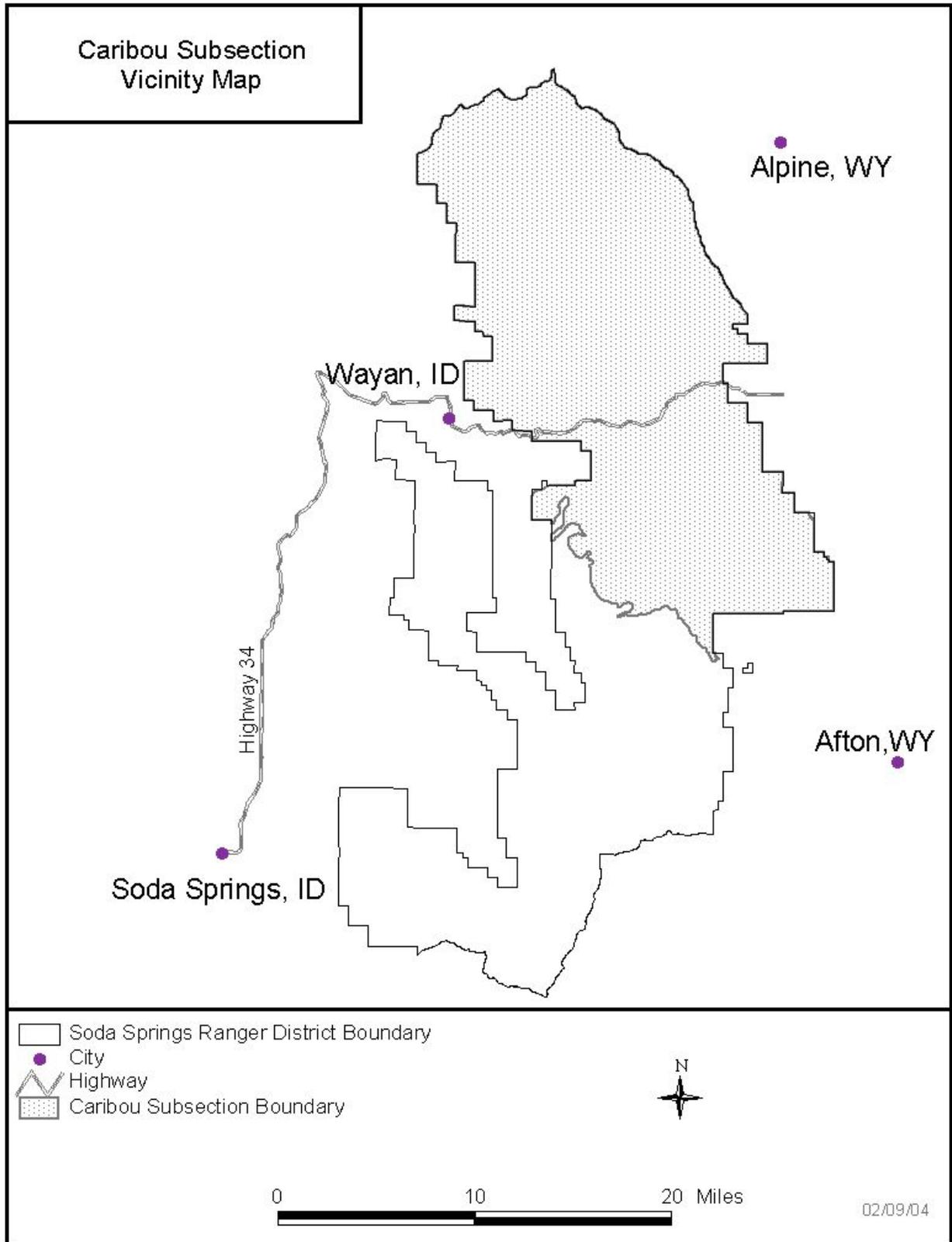
Valley bottoms usually have live streams running through them. The landscape is slightly to moderately dissected. The natural disturbance processes are fire, flooding in drainageways, insects and disease in conifer stands, windthrow and gravitational transfer. Human-caused disturbances include mining for gold using historic hydraulic techniques, roads, dredging, logging, and grazing.

2.1.1 Landscape Settings: Mountain Ranges and Valleys

The mountain ranges make up the high elevation sites with slopes ranging from 20 to 40 percent. These landscapes include ridges, mountain slopes and canyons that are formed in sedimentary, intrusive and metamorphic parent materials. Soils are shallow (0 to 20 inches) to deep (40 to 60 inches) and well drained. Surface textures are silt loam or loam. Soils are classified as Argic Cryoborolls, Typic Cryochrepts, and Mollic Cryoboralfs, often associated with subalpine fir and sagebrush potential natural vegetation.

The valleys are located on low to mid elevation sites with slope ranging from 5 to 30 percent. These landscapes include draws and open basins that formed in sedimentary parent materials. Soils are moderately deep (20 to 40 inches) to very deep (greater than 60 inches) and well drained. Surface textures are loam or silt loam. Soils are classified as Argic Cryoborolls, Argic Pachic Cryoborolls and Pachic Cryoborolls, often associated with sagebrush, grass and riparian potential natural vegetation.

Figure 2.1-1: Vicinity Map



2.1.2 Landtype Associations

- Caribou Basins, Toeslopes and Fans/Mountain Big Sagebrush-Lodgepole pine-Aspen
- Smith Canyons and Stable Foothills/Alpine fir-Sagebrush-Mountain Mahogany
- Caribou Mountain Glaciated Cirques and Headwalls/Alpine fir and Sagebrush
- Tincup Unstable Foothills and Basins/Alpine fir and Sagebrush
- McCoy Unstable Mountains and Canyons/Douglas fir-alpine fir- Sagebrush
- Tincup Unstable Low Mountains and Broken Slopes/Douglas fir-Aspen-Sagebrush
- Elk Mountain Sideslopes and Ridglands/Alpine fir-Lodgepole pine and Sagebrush

2.1.3 Management Emphasis

Through prescription area application, the following will be emphasized within this subsection. This does not preclude other activities but with limited resources, management would be focused in these areas.

- Restoration and regeneration of the aspen ecosystem, focusing on areas succeeding to conifers
- Wildland fire use, particularly in the higher elevations where other treatment methods would not be effective
- Retention of primitive and semi-primitive recreation opportunities
- Wildlife security areas and primitive backcountry hunting experiences
- Linkage habitat between the Caribou and the Targhee NF and Greater Yellowstone Ecosystem
- Historical value of past mining activities
- Restoration and protection of Yellowstone cutthroat trout strongholds

2.2 Management Prescriptions

Management prescriptions, a set of management practices, are applied to a specific area of land to attain multiple-use and other goals and objectives. The purpose of management prescriptions is to provide a basis for consistently displaying management direction on Forest Service administered lands. Management prescriptions in the Forest Plan are intended to provide a general sense of the management direction or treatment of the land where each prescription is applied. They identify the emphasis and focus of multiple-use management activities in a specific area; however, **emphasis**, as used in this context, is defined as a focus or a highlight and does not necessarily mean exclusive use.

Management prescriptions provide a more focused view of specific land areas and how they will be managed. The specific direction stated in a management prescription determines what uses are allowed and to what extent the uses are permitted.

The prescriptions are organized in categories and presented in a sequence allowing progressively more active management. Management prescriptions are not designed to stand-alone. They are one part of the management direction package for the Forest that also includes *Forest-wide* goals, objectives, standards, and guidelines. Where a management prescription allows an activity, such as recreation or livestock grazing, the standards and guidelines in the prescription or in the Forest-wide direction provide specific parameters within which the activity must be managed. In land areas where prescriptions are applied, direction in this section would override

forest-wide direction. Management prescriptions follow a number sequence, where lower numbers reflect less intensive management or use, and larger numbers reflect more human use or development. The Prescription Area Categories are explained at the beginning of each Category Section.

Placing a management prescription number or title on an area does not make a decision about how any future site-specific conflict will be resolved. The responsible local Forest Service official has the discretion to determine how such conflicts may be resolved, through informal administration or more formal environmental analysis. When doing environmental analysis for future site-specific decisions, consideration must be given to the entire management direction package for a particular land area, including the goals, objectives, prescriptions, standards, guidelines, and desired conditions to be achieved in the area.

If an emergency event occurs on the Forest, deviation from these standards and guidelines may occur in order to protect human life, property values and structures, and forest resources. Activities in response to emergency events include such things as law enforcement, search and rescue, floods and fire fighting.

2.2.1 Caribou Subsection Management Prescriptions

There are twelve management prescription areas designated in the Caribou Subsection. For additional information on the goals, objectives, standards, and guidelines for each management prescription area refer to Revised Forest Plan (RFP) 4-16 to 4-82.

Table 2.2-1: Caribou Subsection Management Prescription

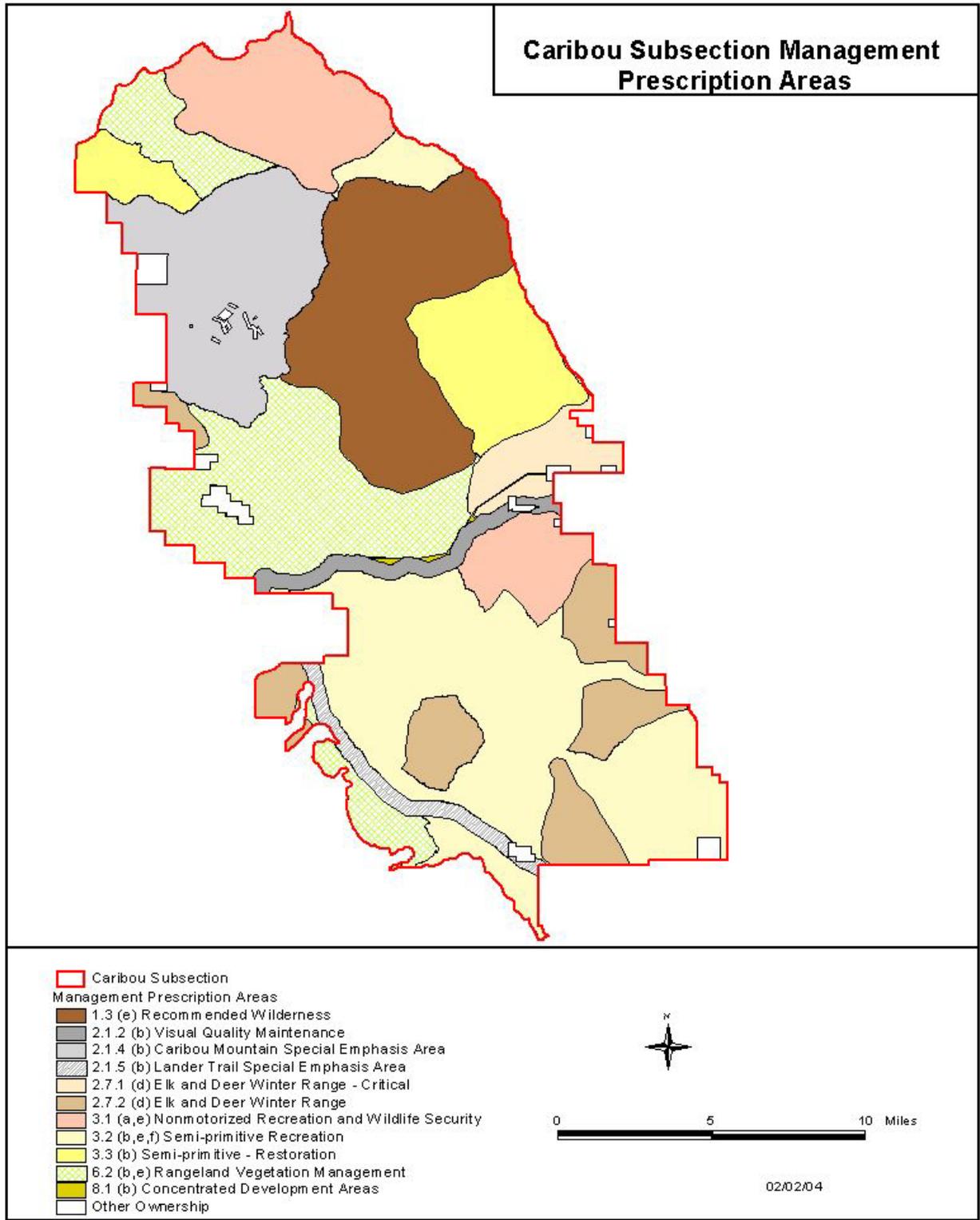
Name Prescription	Prescriptions	Acres	Wildland Fire Use	Prescribed Fire
Recommended Wilderness	1.3 (e)	29,187	Yes ¹	Yes
Visual Quality Maintenance	2.1.2 (b)	3,537	Yes	Yes
Caribou Mountain Special Emphasis	2.1.4 (b)	22,867	Yes	Yes
Lander Trail Special Emphasis Area	2.1.5 (b)	3,149	Yes	Yes
Elk and Deer Winter Range Critical	2.7.1 (d)	5,620	Yes	Yes
Elk and Deer Winter Range	2.7.2 (d)	16,801	Yes	Yes
Aquatic Influence Zone	2.8.3	NA	Yes	Yes
Nonmotorized Recreation and Wildlife Security	3.1 (a/e)	21,079	Yes	Yes
Semi-Primitive Recreation	3.2 (b/e/f)	47,703	Yes	Yes
Semi-Primitive Restoration ³	3.3 (b)	16,585	Yes	Yes
Rangeland Vegetation Management	6.2 (b/e)	33,342	Yes	Yes
Concentrated Development Area	8.1 (b)	247	No ²	Yes
Private Land	Private	2,339	NA	NA
State	State	617	NA	NA
Total Acres		203,073		

¹ A **yes** designation in either the Wildland Fire Use column or Prescribed Fire Column indicates that particular management activity is permitted within the given management prescription.

² A **no** designation in either the Wildland Fire Use column or Prescribed Fire Column indicates that particular management activity is not permitted within the given management prescription.

³ Allowing Wildland Fire Use is a priority for the Semi-Primitive Restoration prescription.

Figure 2.2-1: Prescription Areas.



2.3 Air Quality

The Caribou Subsection is within Montana/Idaho airshed number 20. The nearest non-attainment area is Pocatello, Idaho for PM₁₀ (~52 miles to the west). The Subsection and the entire Caribou National Forest is a class II airshed (for Prevention of Significant Deterioration purpose). The Caribou subsection is approximately 36 miles southwest of Grand Teton National Park and 63 miles west of Bridger Wilderness area. Local sensitive receptors near the subsection are the communities of Wayan Idaho, Alpine, Thayne, and Afton Wyoming.

A portion of the Caribou Subsection is in the State of Wyoming. The monitoring unit for Wyoming portions of the subsections will be the Wyoming Department of Environmental Quality, Division of Air Quality (WDEQ/AQD). *Currently, permits are not required for WFU.* Air quality standards for Wyoming are PM 2.5 and will be monitored by WDEQ/AQD.

Air quality within the local area is excellent with very limited local emission sources and consistent wind dispersion. Existing sources of emissions in the local area include mining equipment, vehicles, farm equipment, road dust, and residential wood burning. Emissions are very limited with no local visible sources of impairment. Wind dispersion throughout the entire area is robust, with no local visible inversions or localized concentrations of emissions. For additional information on current air quality, please refer to the state of Idaho, Department of Environmental Quality website (<http://www2.state.id.us/deq/>).

2.3.1 Guidelines

The Federal Wildland and Prescribed Fire Management Policy requires federal land managers to decide within two hours of discovering a fire whether to manage the fire for resource benefit or suppress the fire (USDI and USDA, 1998). This decision is based on many factors including the potential for unacceptable smoke impacts. Montana and Idaho federal land managers, and the two state DEQs developed a four-level air quality restriction system to assist fire managers in the decision-making process (refer to Table 2.3-1). The federal land manager's sponsor a meteorologist who determines the threshold level on a daily basis based on fire activity, weather forecasts, and air quality data. A recommendation to suppress any new fires may be made at level three ("Warning") or four ("Alert").

Table 2.3-1: Suggested Air Quality Restriction Levels for Wildland Fire Use.

Level	24-Hour PM _{2.5} (ug/m ³) ¹	Description
I	0-15	Current air quality is " GOOD. " No restrictions to wildland fire use based on air quality information.
II	15-40	Air quality " WATCH ": Current air quality is MODERATE. No restrictions to wildland fire use based on air quality information, but a closer watch on conditions by the Smoke Monitoring Unit of the Montana/Idaho Airshed Group. If conditions worsen, burners may be restricted by geographic region or airshed in Montana and/or Idaho.
III	40-65	Air quality " WARNING ": Current air quality is UNHEALTHY FOR SENSITIVE GROUPS and conditions are worsening or expected to persist. Depending on season and conditions, future Wildland Fire Use may be restricted due to air quality concerns. Burners should consider reducing smoke impacts by limiting future Wildland Fire Use through their two-hour go/no-go decisions. Formal restrictions may occur at Air Quality Restriction Level IV.
IV	>65	Air quality " ALERT ": Current air quality is UNHEALTHY, and conditions are worsening or expected to persist. Future Wildland Fire Use ignitions will likely be restricted due to air quality concerns. An "Air Quality Coordinating Committee" composed of the Smoke Monitoring Unit, MT and ID-DEQ, R-1 and R-4 FS, and others (BLM, NPS, etc.) will interface with existing fire coordination centers and infrastructure on daily air quality restrictions and direction. Final decisions on air quality restrictions are always retained with the state air regulatory agencies. At this level, the process has to address the two-hour go/no-go decision timeframe required for WFU.

¹ When the main source of particulate matter is from fire, PM_{2.5} may be estimated from PM₁₀ by assuming the PM_{2.5} is 80% of the PM₁₀. The air quality levels correspond to the EPA's Air Quality Index for 24-hour PM_{2.5}. Shorter-term air quality levels, such as one-hour and eight-hour average concentrations and visibility observations, will also be used to determine the air quality levels and restrictions.

2.4 Fisheries

The Caribou Range & Overthrust Mountains Subsection (hereafter referred to as Caribou Subsection) contains numerous waters that provide habitat for fish, amphibians, and other aquatic life. It can be divided into seven general areas for fire management relating to aquatic resources:

- McCoy Creek drainage
- Jackknife Creek drainage
- Tincup Creek drainage
- Blackfoot River drainage
- Stump Creek drainage
- Grays Lake drainage
- Salt River immediate vicinity

Fish species present in the Caribou Subsection include Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*), brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), mottled sculpin (*Cottus bairdi*), Piute sculpin (*C. beldingi*), speckled dace (*Rhinichthys osculus*), longnose dace (*R. cataractae*), redbase shiner (*Richardsonius balteatus*), mountain sucker (*Catostomus platyrhynchus*), Utah sucker (*C. ardens*), mountain whitefish (*Prosopium williamsoni*), and leatherside chub (*Gila copei*).

Of particular interest is the Yellowstone cutthroat trout, a species classified in Region 4 as Sensitive. Isolated populations of this species may be at extreme risk of permanent loss from high intensity/severity fires. Such fires may elevate stream temperatures to lethal levels and, when followed by heavy precipitation, may result in the introduction of sediment and ash to streams in toxic quantities. Large complexes of metapopulations of Yellowstone cutthroat trout (those populations connected to others and exchanging individuals through migration) are at low risk of permanent loss except from high intensity/severity fires that cover a large geographic area.

Based on the presence of isolated populations, or a low number of connected populations, of Yellowstone cutthroat trout the following areas of the Caribou Subsection are at high risk of permanent population loss from fires if high in intensity/severity: Tincup Creek drainage, Stump Creek drainage, Grays Lake drainage, and Salt River immediate vicinity.

Based on the presence of large metapopulation complexes of Yellowstone cutthroat trout, the following areas are at low risk of permanent population loss from fires: McCoy Creek drainage, Jackknife Creek drainage, and Blackfoot River drainage. Although short-term negative impacts would result from fires in these areas, those effects would be outweighed by the long-term habitat improvements and population increases fires would produce by restoring natural processes.

Yellowstone cutthroat trout populations are at risk of loss or depression due to potential introduction of nonnative fish species and diseases when water is transferred between drainages during fire suppression efforts. Of greatest concern is the introduction of brook trout and whirling disease into areas where they do not presently occur. Brook trout are known to occur in the following areas: Blackfoot River drainage, Stump Creek drainage, Grays Lake drainage, and Salt River immediate vicinity. Whirling disease is present in the Jackknife Creek drainage, Tincup Creek drainage, Blackfoot River drainage, Salt River immediate vicinity, and probably the Stump Creek drainage.

Amphibians present or likely to occur in the Caribou Subsection include the Great Basin spadefoot toad (*Spea intermontanus*), western (boreal) toad (*Bufo boreas*), boreal chorus frog (*Pseudacris triseriata maculata*), northern leopard frog (*Rana pipiens*), and tiger salamander (*Ambystoma tigrinum*). Of particular interest is the boreal toad, which appears to be declining in much of its historic range. Fires could eliminate rare populations of this species. Within the Caribou Subsection, boreal toads have been found in recent years in or near Pole Creek of the McCoy Creek drainage, Tincup Creek of the Tincup Creek drainage and Lanes Creek of the Blackfoot River drainage.

2.4.1 Guidelines

Restoration and protection of Yellowstone cutthroat trout strongholds is a management emphasis for the Caribou Subsection in the Revised Forest Plan (RFP). The following are recommendations for the fisheries resource:

- Fire management should occur in a manner that is not likely to result in permanent loss of any Yellowstone cutthroat trout population or boreal toad population.
- A fisheries biologist should be contacted immediately when a fire in one of the following areas exceeds, or is likely to exceed, 50 acres in size: Tincup Creek drainage, Stump Creek drainage, Grays Lake drainage, and Salt River immediate vicinity. The biologist should be updated on a daily basis regarding the fire's size, location, direction, intensity/severity, and proximity to perennial streams. This will allow the biologist to give timely input regarding the appropriate management response to protect aquatic resources.
- A fisheries biologist should be contacted immediately when a fire in one of the following areas exceeds, or is likely to exceed, 250 acres in size: McCoy Creek drainage, Jackknife Creek drainage, and Blackfoot River drainage. The biologist should be updated on a daily basis regarding the fire's size, location, direction, intensity/severity, and proximity to perennial streams. This will allow the biologist to give timely input regarding the appropriate management response to protect aquatic resources.

- Fire use and management should occur in a manner that will maintain or achieve desired future conditions of all Aquatic Influence Zones (AIZs), prevent water temperatures excessive for fish, and prevent the introduction of potentially lethal quantities of ash and sediment into streams. In cases where this recommendation cannot be fully met, post-fire mitigation should be performed to the extent needed for long-term fish habitat and fish population restoration.
- Water for fire suppression efforts should not be transferred from areas with brook trout (Blackfoot River drainage, Stump Creek drainage, Grays Lake drainage, and Salt River immediate vicinity) to areas without brook trout (McCoy Creek drainage, Jackknife Creek drainage, and Tincup Creek drainage), or between waters within areas with brook trout, unless it is screened to prevent incidental fish movement. There is no acceptable mitigation for movement of brook trout to new waters.
- Water for fire suppression efforts should not be transferred from areas with whirling disease (Jackknife Creek drainage, Tincup Creek drainage, Blackfoot River drainage, Salt River immediate vicinity, and possibly the Stump Creek drainage) to areas without whirling disease (McCoy Creek drainage, Grays Lake drainage, and possibly the Stump Creek drainage) unless it is effectively treated with chlorine to kill the parasite. There is no acceptable mitigation for movement of whirling disease into new areas.
- To protect fish and amphibians, fire retardant should not be dumped over live water. This includes perennial streams, flowing intermittent streams, springs, seeps, bogs, and other wet areas. Fire retardants may be toxic to aquatic organisms. An effort should be made to apply retardant outside AIZs to the extent possible, rather than inside AIZs. If an application of retardant into a stream occurs and results in a fish kill, post-fire mitigation should be performed for long-term restoration of the fish population.

2.4.2 Forest Plan Direction

The overarching goal of the RFP is to restore native ecosystems to a healthy, resilient state using a combination of active management activities and natural processes. Management direction is improved to maintain or restore riparian vegetation, channel stability and function, and other aquatic resources. New standards and guidelines are established for riparian and aquatic areas, which provide for the protection of these resources and dependent species. Restoration of ecological systems is a key component of maintaining the viability of native and desired nonnative species. One management emphasis is restoration of Yellowstone cutthroat trout (*Oncorhynchus clarki lewisi*) (YCT) stronghold populations (i.e. populations in streams where that species is predominant).

Riparian-dependent species like YCT and amphibians receive primary emphasis within AIZs surrounding streams, ponds, lakes, reservoirs, and wetlands (wet meadows, springs, seeps, bogs, etc.). Aquatic Influence Zone management direction overrides direction from other management areas overlapping. Default AIZ widths are listed in the RFP 4-45 to 4-46.

Fire size can be constrained by Forest Plan Guideline #1 under the Watershed and Riparian Resources section of Biological Elements (RFP pg 3-16). This guideline requires that no more than 30% of a Hydrologic Unit Code 6 (HUC-6) or Project Work Inventory (PWI) watershed be in a hydrologically disturbed condition at any one time. Hydrologically disturbed condition is defined as change in natural canopy cover such as canopy removal or change in surface soil characteristics.

2.5 Grazing Allotments

There are currently thirty-six active allotments entirely or partially within the Caribou subsection. Information regarding individual grazing allotments is summarized in Table 2.5-1 and displayed in Figure 2.5-1.

2.5.1 Guidelines

- Range Permittees must be notified at the start of fire. The development of the Maximum Manageable Area for Fire Use projects during Stage III would consider the impacts to permittees/livestock.

2.5.2 Forest Plan Direction

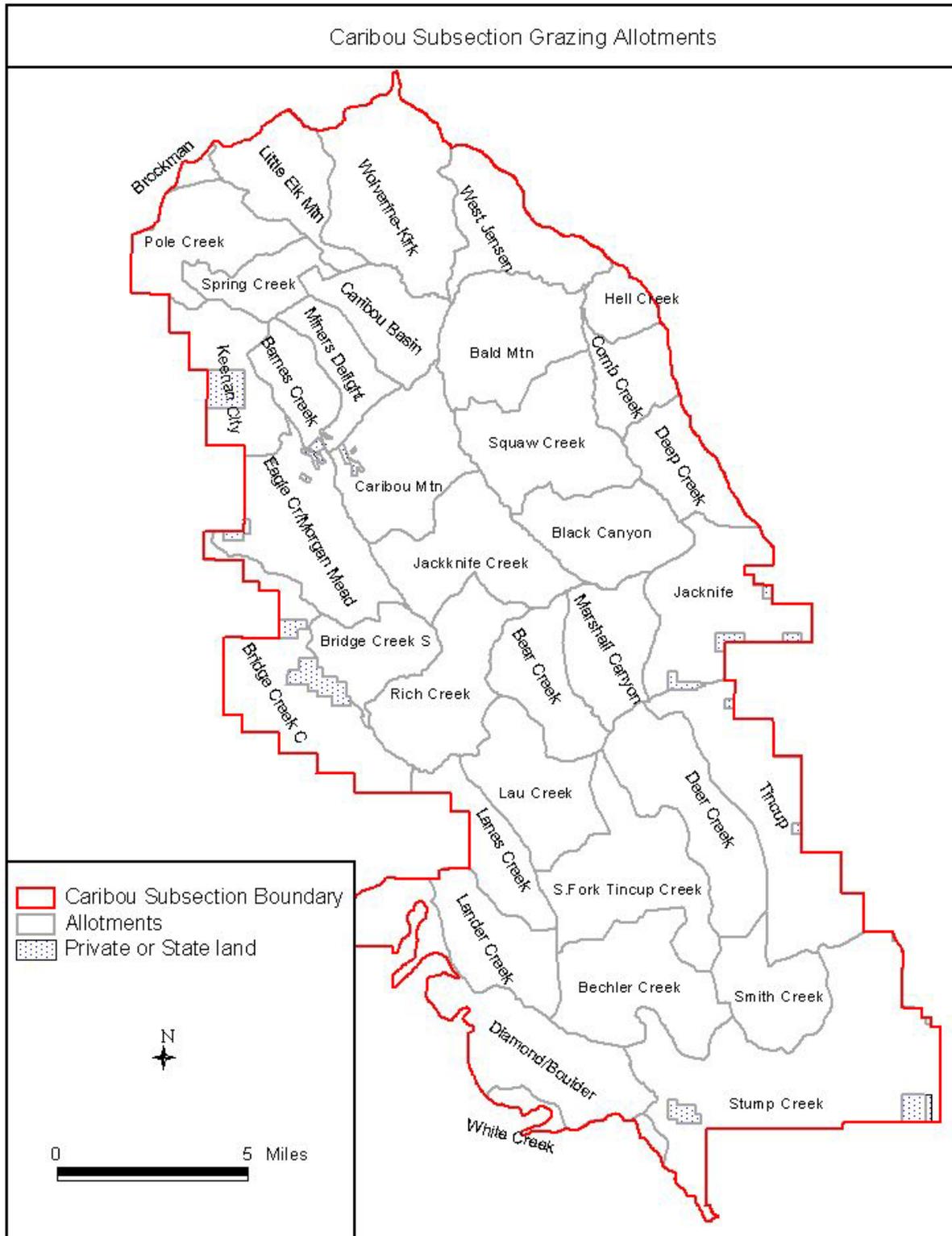
Grazing Management Forest Plan standards [S] and guidelines [G] (CNF RFP S&Gs) are found on pages {3-42 to 43}. The following is the standard that needs to be considered in fire use planning.

- Livestock grazing shall be restricted following prescribed or natural fire and/or rangeland planting or seeding before seed set of the second growing season, or until the objectives of the treatment are achieved.

Table 2.5-1: Grazing Allotments

Allotment Name	Permittee Name	Acres	Allotment Type	Season of Use
Barnes Creek	Ball Brother Sheep Co.	2,747	Sheep	7/1-9/15
Bridge Creek Sheep	Ball Brother Sheep Co.	3,678	Sheep	9/15-9/30
Eagle Creek/Morgan Meadow	Ball Brother Sheep Co.	7,608	Sheep	7/1-9/15
Keenan City	Ball Brother Sheep Co.	3,993	Sheep	7/1-9/15
Miners Delight	Ball Brother Sheep Co.	2,973	Sheep	7/1-9/15
Spring Creek	Ball Brother Sheep Co.	2,717	Sheep	7/1-9/15
West Jensen	Ball Brother Sheep Co.	5,281	Sheep	6/21-9/15
White Creek	Ball Brother Sheep Co.	987	Sheep	7/1-9/15
Bridge Creek Cattle	Bridge Creek Cattlemen's Ass.	7,289	Cattle	6/11-9/30
Bald Mountain	Charles Dansie	6,706	Sheep	7/1-9/15
Caribou Basin	Caribou Basin Cattlemen's Ass.	4,199	Cattle	6/11-9/30
Bechler Creek	Etcheverry Sheep Co.	7,249	Sheep	7/1-8/30
Deer Creek	Etcheverry Sheep Co.	7,292	Sheep	7/1-9/15
Smith Creek	Etcheverry Sheep Co.	4,383	Sheep	7/-8/30
South Fork Tincup Creek	Etcheverry Sheep Co.	8,096	Sheep	7/1-9/15
Jacknife	Jacknife Cattlemen's Ass.	7,217	Cattle	6/6-10/10
Boulder/Diamond Creek	Mays Land & Livestock Inc.	9,511	Sheep	7/1-9/10
Deep Creek	Mays Land & Livestock Inc.	3,692	Sheep	7/1-9/10
Lander Creek	David D. Morris	4,645	Sheep	7/1-9/15
Lanes Creek	David D. Morris	3,671	Sheep	7/1-9/15
Black Canyon	Rose Oxarango	5,404	Sheep	6/25-9/10
Comb Creek	Rose Oxarango	3,084	Sheep	6/26-8/31
Hell Creek	Rose Oxarango	1,791	Sheep	6/26-8/31
Squaw Creek	Rose Oxarango	7,177	Sheep	6/26-8/31
Wolverine-Kirk	Rose Oxarango	8,983	Sheep	6/25-9/10
Little Elk Mountain	Karen Phillips	4,560	Sheep	7/1-8/31
Bear Creek	Rich Livestock Co.	4,401	Sheep	7/1-9/20
Caribou Mountain	Rich Livestock Co.	6,637	Sheep	7/1-9/20
Jackknife Creek	Rich Livestock Co.	6,842	Sheep	7/1-9/20
Lau Creek	Rich Livestock Co.	5,770	Sheep	7/1-9/20
Marshall Canyon	Rich Livestock Co.	4,610	Sheep	7/1-9/20
Rich Creek	Rich Livestock Co.	6,496	Sheep	7/1-9/20
Tincup	Salt River Cattlemen's Ass.	8,886	Cattle	6/6-10/10
Stump Creek	Star Valley Cattlemen's Ass.	15,977	Cattle	6/6-9/30
Pole Creek	Ken Wixom	5,130	Sheep	7/1-8/31
Brockman Sheep & Goat	Hampton Ford Properties	429	Sheep	7/1-9/20

Figure 2.5-1: Grazing Allotments.



2.6 Heritage Resource

The review of the Forest Service heritage resource records for the Caribou subsection indicates there are 23 inventoried cultural resource sites that may be affected by wildland fire use. The majority of these sites have not been evaluated for their significance. None of these sites have been nominated for or are listed on the National Register of Historic Places. It should be stressed that these are known sites, and although this subsection has received some sample survey coverage, additional sites and sensitive areas may be present. This area has high frequencies of Historic Mining and American Indian sites in the upper reaches of the drainages. The vast majority is associated with late 1800s to early 1900s historic Euro-American placer and lode (hardrock) mining operations. This area may also contain spiritual sites important to local tribes.

Heritage resources, like other resources, must be managed in such a way that the resource is not degraded. Where possible and considering firefighter safety, cultural resources should be avoided and/or protected from wildfire and tactical holding actions. If suppression efforts may create significant ground disturbance in the vicinity of known or suspected heritage resources, the Forest Archaeologist should be notified.

These guidelines apply only to wildland fire use treatments. Post-fire rehabilitation treatments involving ground disturbing activities will require separate consultation and may, depending on previous survey coverage, require archaeological inventory.

2.6.1 Guidelines

- Consult Fire Management Plan, archaeological database and Forest Archaeological Site Atlas located at the appropriate District Office. In the event of a Fire Use event, the FUMA will consult the Fire Use Guidebook, archaeological database, and Forest Archaeological Site Atlas for a listing of heritage resource sites that could occur within or adjacent to the allowable burn area. Site lists will be updated as necessary. Current efforts are underway to update site atlases located at each District office. Upon completion of this endeavor, the district atlases will be available for use in preparation of the Wildland Fire Implementation Plan.
- Contacting Archaeologist: If known heritage resource sites are located within or adjacent to the allowable burn area, contact the Forest Archaeologist to help determine protection strategy.
- Wildland Fire Implementation Plans will identify heritage resource sites within and adjacent to the allowable burn areas. Potential tactics that could be used to protect sites include: burnout and backing fires to produce safe black line around a site, use of trails and natural features to herd or shift the fire away from sites, water and/or bucket drops, scratch lines, and possible wet line and foam applications.
- Wildland fire personnel: Assure that burn personnel are briefed on the strategy and specific techniques to be used to protect heritage resources.

- Escaped Fire: Should the fire leave prescription and warrant suppression, an appropriate management response will be initiated. Contact the Forest Archaeologist to help develop a response strategy when heritage resources are threatened.

Follow-up Studies: The Caribou-Targhee National Forest is currently lacking information regarding the effects of fire and firefighting procedures on heritage resources within its jurisdiction. The activities proposed in the guidebook offer an opportunity to study such effects for better management of the resource in the future. It is therefore recommended that follow up studies involving current archaeological survey and testing techniques, along with quantitative analysis of the results, be included in post-fire treatments.

2.7 Hydrology

2.7.1 Guidelines

The following streams have been identified as not meeting beneficial uses by IDEQ. The Forest follows the “zero tolerance” set in law on addition of a pollutant due to management activities to these streams. A WFU event within 300 feet of the streams in the below table, their perennial tributaries or 150 feet of their intermittent tributaries has the potential to cause these affects. Fires within this corridor should involve consultation with a hydrologist. Table 1 is the latest available list of 303d streams, which is usually published every two years.

Table 2.7-1: 2002 Draft List of 303(d) Streams (as of April 2004)

Stream	Trunk Stream		Failing use(s)	Cause
Cabin Cr	Jackknife Cr		CB, SS	S
Chicken Cr	Tincup Cr		CB, SS	U
Luthi Cyn	Tincup Cr		CB, SS	U
Stump Cr	Salt R (in Wyo)		CB	U
White Cyn	Stump Cr		CB, SS	S

CB = Cold Water Biota; SS = Salmonid Spawning; B = Bacteria; N = Nutrients; S = Sediment; U = Unknown or as yet undetermined.

As of 2003, draft 303d streams are available as a map database on the web from the link: <http://inside3.uidaho.edu/WebMapping/IDEQ/SelectHUC.asp?Basin=Upper%20Snake>

The only beneficial uses that have failed to date in the Caribou Subsection are Cold Water Aquatic Life (CB) and Salmonid Spawning (SS). The three problems of most common concern to a WFU event are: 1) Too high water temperature caused by removal of shading vegetation and/or overly widened channel; 2) Excess sediment; 3) Excess nutrients. If burn percentage and/or intensity are too high, loss of beneficial uses may result. Idaho has a water quality anti-degradation policy. The objective of this policy is to ensure that existing water uses and the level of water quality necessary to protect these uses, is maintained and protected (IDAPA 16.01.02.051.01).

WFU in stream corridors with heavy fuel loading, where fire may burn to within 300 feet of the channel may require special attention. Fires within this corridor where it is combined with heavy fuel loading areas may require appropriate management response to protect against the potential for severe impacts including suppression and post event monitoring if the fire intensity/severity becomes too intense and/or burn percentage too great. Mitigation might include any measures to better insure that fire intensity/severity is low and burn percentage is within limits that assure that the fire will meet the desired future conditions (DFC's) of the AIZ. These might include restriction to higher fuel moistures, higher RH, lower temperatures, earlier in year, etc. In general, effective corridors to be considered for affects to riparian community are a maximum of 300 feet. This is a proven number generally recognized as sufficient to contain overland flows for most soil types to minimize sediment contribution to streams. This is intended only as a general "blind" guideline to assure protection without site-specific assessment. In general, a high burn percentage or moderate or high intensity fire will not create undo impacts where the burned length is small in comparison to the total stream length, as long as the riparian in the unburned portion below the burn area is functioning properly and able to prevent channel blowout from a thunderstorm event. However, areas of mostly fine-grained soils that have a high erosion hazard, where rills and gullies are common such as is described in the soils section, may require consideration of a wider affects corridor to prevent sediment delivery to streams. In general, fire intensity that does not kill a majority of the riparian canopy should not require mitigation, as this will not impact riparian values in the short term, and still provide benefits in the long term. Higher burn percentages may remove enough ground cover, which could significant increases the delivery of sediment to the streams. No generalized guidance on burn percentage is supported, however consideration should be given to individual watershed condition and isolated sensitive fish populations.

2.7.2 Forest Plan Direction

WFU MMA may be constrained by Forest Plan Guideline #1 under Biological Elements (RFP 3-16) which requires that no more than 30 percent of a Hydrologic Unit Code 6 (HUC-6) or Project Work Inventory (PWI) watershed be in a hydrologically disturbed condition. Hydrologically disturbed condition is defined as change in natural canopy cover such as canopy removal or change in surface soil condition such as compaction. McCoy, Jackknife and Tincup Creeks each are composed of 4-6 HUC-6 units; conversely, there is only one PWI in each one of these drainages.

2.8 Noxious Weeds

Noxious weeds, although not a cover type, are noteworthy due to the continuing problem they represent. The District has an active noxious weed treatment program carried out by certified applicators. The Subsection is part of an Integrated Weed Management Area as described in the Caribou-Targhee Weed Management Strategy (2000) and also is included in the Highlands Cooperative Weed Management Area.

Several species of noxious weeds have been found within the subsection, these include: musk thistle, Canada thistle, leafy spurge, dyers woad, spotted knapweed, yellow toadflax, Dalmatian toadflax, Scotch thistle, black henbane, white top, and tall white top. Canada thistle and musk thistle are the most widely distributed of the noxious weeds present in the subsection.

Leafy spurge has been located in several places within the subsection. The heaviest infestation of this species has been found west of Thayne and north of Auburn, Wyoming in the Jensen Creek and Tom's Creek areas. Over 50 different infestations have been located in this area. Leafy spurge has also been located along Jackknife Creek, along Stump Creek, near Tincup Creek, and near the Stump Creek Guard Station.

Yellow toadflax is scattered through the analysis area south of the Tincup Highway, with the largest concentrations being found in the Diamond Creek area.

Mulesear and tarweed, although not considered as noxious weeds, are also a management concern in the project area.

2.8.1 Guideline

Monitoring should be conducted for two years after burns to make certain the areas remain free of noxious weeds. Any noxious weed areas found would need to be aggressively treated and monitored until eradication of the weeds from the burn area is accomplished. Funds would be needed to assure that district personnel could direct their efforts of monitoring and treating noxious weeds into the burned area, while maintaining their on going weed control efforts.

2.8.2 Forest Plan Direction

- Minimize the establishment and spread of noxious weeds and other invasive plant species through the application of Forest direction, Integrated Pest Management (IPM), and Best Management Practices (RFP 3-20).
- Noxious weeds shall be aggressively treated throughout the Forest, unless specifically prohibited, following the Caribou Noxious Weed Strategy. Using Integrated Weed Management methods of control and access shall be consistent with the goals of each prescription area.
- Monitor, as needed, disturbed areas, such as landings, skid trails, roads, mines, burned areas, etc, for noxious weeds or invasive species and treat where necessary (RFP 3-21).

2.9 Minerals

Caribou Mountain, located from T4S R44E to T3S R44E, has a history of historic and current gold mining activities. Within this area, there are several active mining claims, patented mining claims and mill sites. Mining activity mainly occurs on Caribou Mountain in the summer

months after the snow melts and access is possible. Mining claims often will have cabins or, small travel camp trailers that the miners occupy while mining, and a variety of mining equipment that may range from heavy machinery to small-scale mining equipment.

The main resource concerns for Caribou Mountain would mainly include any property located on a mining claim, buildings, and privately owned property. Refer to the minerals portion of the protection considerations section for a list of active and patented mining claims.

2.10 Soils

Fire is a natural component of the disturbance regime for both forested and rangeland ecosystems. Frequency of burning and the implemented management practices during the recovery time between fires are important for the long-term success of maintaining soil productivity. The degree of any adverse effect is directly proportional to the burn intensity/severity. Effects can be extremely variable from one area to another. Characteristics of ground cover and soil physical, chemical and microbiological properties all must be considered when interpreting fire and making fire management plans.

The geology of the Subsection is primarily sedimentary rocks of the Wayan Formation, Bear River Formation and the Gannett Group. These formations consist of red calcareous mudstone, various colored sandstones, limestones, shales and conglomerate. Areas around Caribou Mountain have intrusive igneous rocks such as andesite and dioritic dikes and sills. Soils that formed from this geology appear to have lower fertility than those that formed in the sedimentary landforms. Areas of exposed gray shale outcrops that are evident in Caribou Basin and on Little and Big Elk Mountains have high natural erosion rates with little ground cover. These formations tend to be unstable and landslides are often observed in the area. The landslides in this area are mostly recent in terms of geologic time.

Soils were mapped, described and interpreted for use and management in the Soil Survey of the Caribou National Forest (USDA FS 1990). For a display of the hazard ratings for the landtypes, refer to Table 2.10-1 and Figure 2.10-1.

On many sites, vegetation productivity is directly influenced by soil characteristics such as soil depth, infiltration/permeability, soil texture and rock fragment content among other factors (USDA Forest Service 1995). Soils are most productive where they are deep and have an adequate supply of moisture during the growing season. These soil conditions are represented in most riparian areas and in many aspen and mountain shrub types in the analysis area. Potential productivity ratings along with other interpretations for the soils are found in the project file.

Table 2.10-1: Acres of erosion hazard for the Caribou Subsection.

Erosion Hazard	Acres	% of Area
Unstable Soil Potential	146,641	72%
Erosion Potential hmm ¹	21,941	11%
Erosion Potential hhm ²	32,421	16%
Erosion Potential hhh ³	8,386	4%

¹ **hmm** - Only one of the three soil families in the map unit has a high erosion rating and the remaining two soil families have a moderate rating (< 50% area has a high erosion rating).

² **hhm** - Two of the three soil families in the map unit have a high erosion hazard rating and one soil family has a moderate rating (50% to 75% of the area in the map unit has a high erosion hazard).

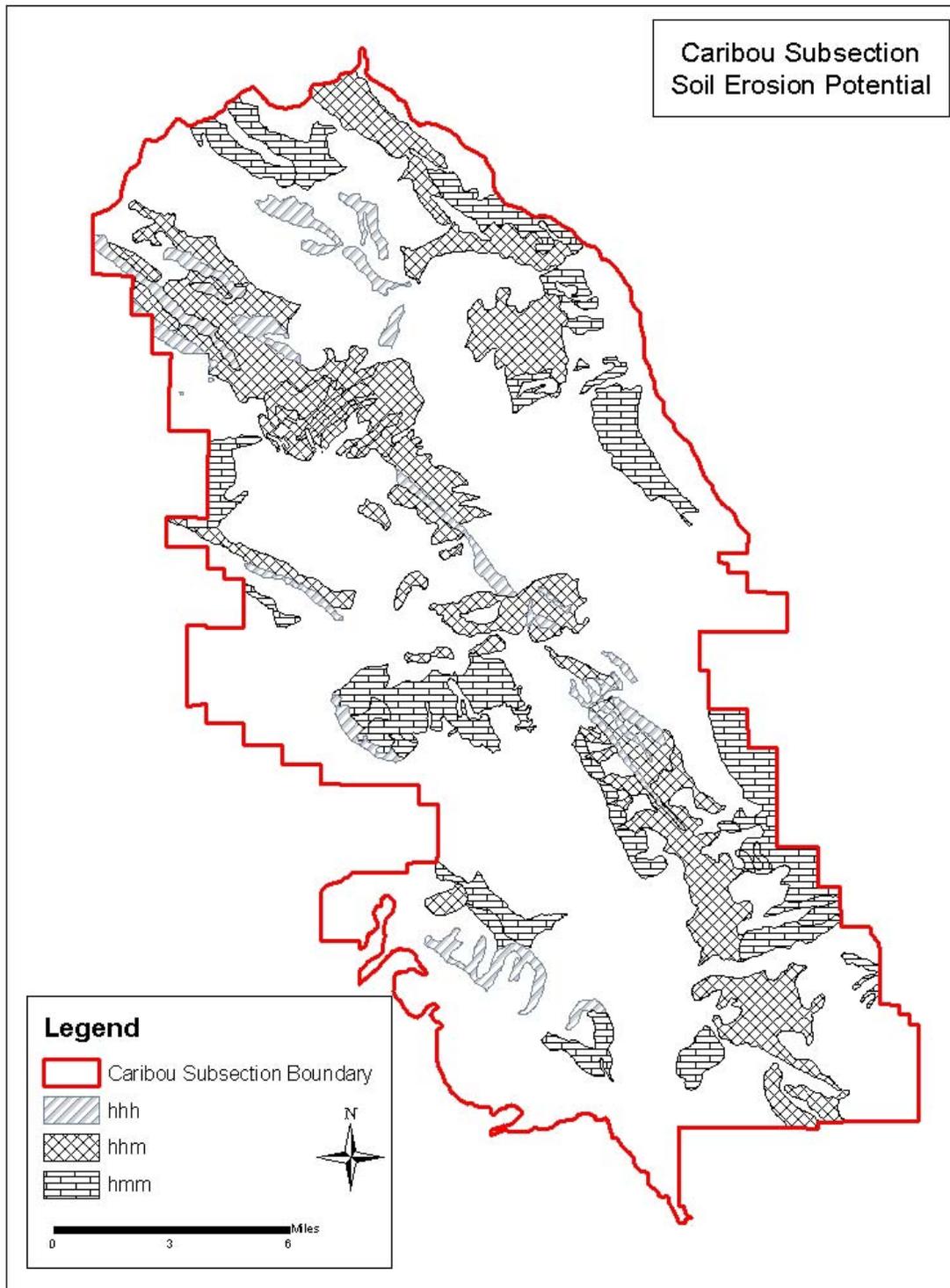
³ **hhh** - All three soil families in the map unit have high erosion hazard rating (>75% of the area has a high erosion rating).

2.10.1 Forest Plan Direction

The Revised Forest Plan for the Caribou National forest states the Desired Future Conditions of the soil as follows For the Standards and Guidelines on how to achieve this goal, refer to 3-6 thru 3-7 (RFP 2003):

1. Soil quality, productivity and hydrologic function are maintained and restored where needed. Long term soil productivity is sustained and meets future land needs.
2. Soils have adequate protective cover, adequate levels of soil organic matter (litter) and coarse woody material. Physical, chemical and biological processes in most soils function to sustain the site.
3. Microbiotic crusts and their importance to soil stability are recognized. Management practices are designed to retain these soil components.

Figure 2.10-1: Erosion Potential



2.11 Vegetation

2.11.1 Forested Vegetation

Approximately 60% of the analysis area can be characterized as forested vegetation (FV) and as typical for high elevation forest in the intermountain west. The Caribou National Forest manages approximately 99% of the acres that are classified as forested vegetation, the other 1% is managed by private or the State of Idaho. For this document forested vegetation within the analysis area has been broken into four cover types aspen, Douglas-fir, lodgepole and subalpine fir/mixed conifer.

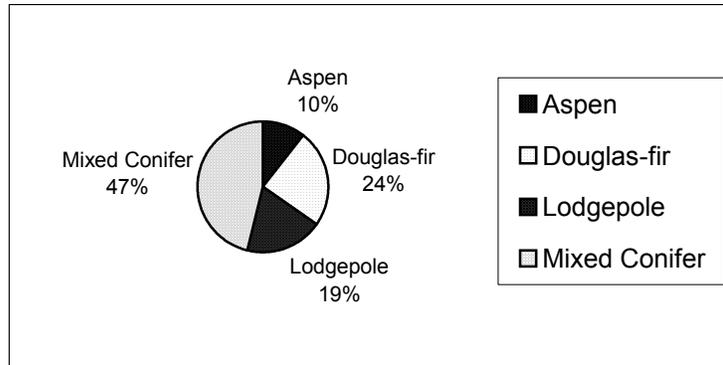


Figure 2.11-1: Forest Cover Types

Table 2.11-1: Forest Cover Types

Cover Type (% of FV)	Jurisdiction	Description
Aspen (6%)	98% FS 2% Non FS	Aspen can vary from an early seral to persistent seral species. It can also occur as a climax species, occupying sites below the limit of conifers.
Douglas-fir (15%)	99% FS <1% Non FS	Rocky Mountain Douglas-fir is found throughout the Subsection. At the lower drier edge of its zone, it is confined to north slopes and shaded areas and is often the climax species for the site. At the higher levels, it can grow on any aspect including sunny rocky south and west exposures. On cooler moist sites it is an early seral species with subalpine fir and Engelmann spruce as climax species. Aspen is often an important early seral species in this type.
Lodgepole (11%)	99% FS <1% Non FS	Lodgepole pine is a pioneer species that requires a disturbance that exposes bare mineral soil to regenerate. In most stands in this type lodgepole is the seral species with subalpine fir being the climax species. However in other stands lodgepole can be considered as persistent seral due to the fire return interval. Aspen may be found as a minor component of the type.
Mixed Conifer (28%)	99% FS 1% Non FS	Stands that currently have a mix of conifer species or are currently dominated by subalpine fir have been included in this type. In this type subalpine fir is the dominant climax species with occasional Engelmann spruce. Aspen, lodgepole pine and Douglas-fir often occur in various ratios in the early seral stage.

2.11.2 Non-Forested Vegetation

Approximately 40% of the analysis area can be characterized as non-forested vegetation (NFV). The Caribou National Forest manages approximately 98% of the acres that are classified as non-forested vegetation, and the other 2% is managed by private or the State of Idaho. For this document non-forested vegetation has been broken into four cover types: sagebrush/grass, mountain shrub, mountain brush and riparian/water.

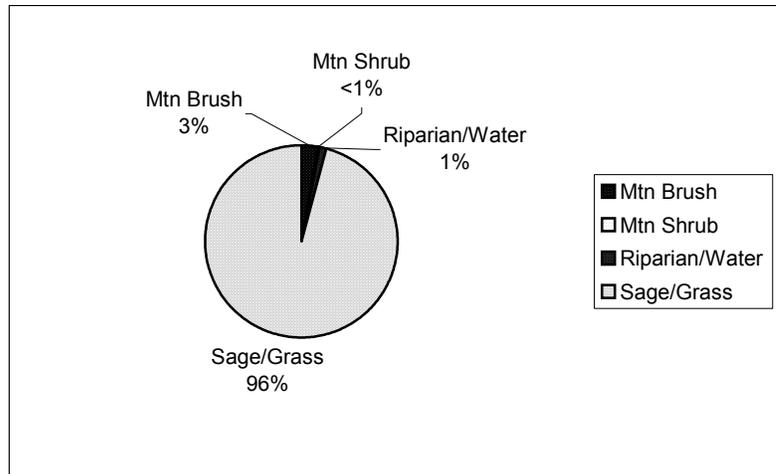
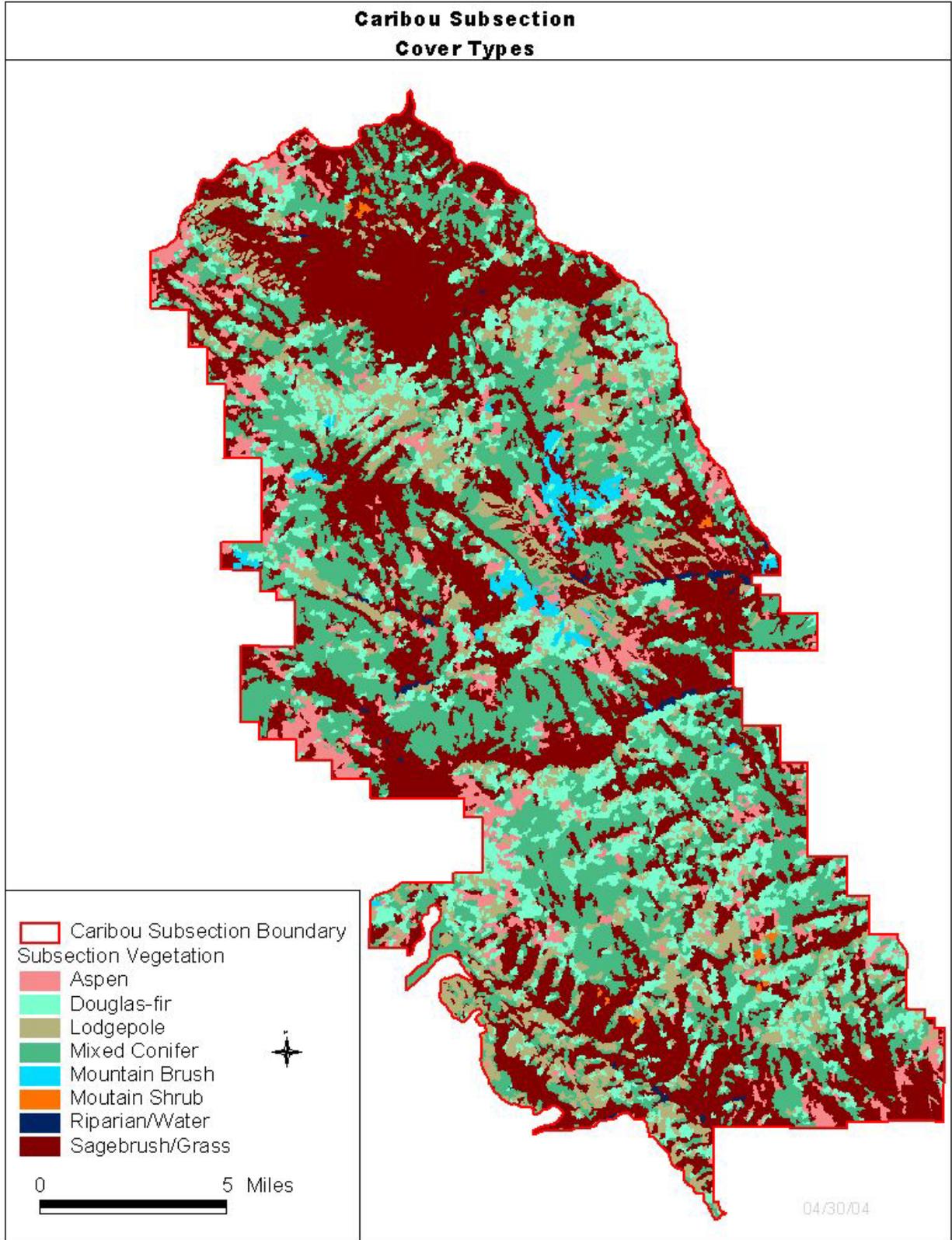


Figure 2.11-2: Non-Forest Cover Types

Table 2.11-2: Non-Forest Cover Types

Cover Type (% of FV)	Jurisdiction	Description
Sagebrush/Grass (39%)	97% FS 2% Non FS	Areas that are currently dominated by sagebrush have been included in this type. Sagebrush is found on more acres than other species within the analysis area (more than 33,000 acres or over 27%). This type is dominated by the presence of big sagebrush however many sagebrush taxa may be represented. This type may have a variety of other brush species represented but they will generally represent less than 10% of the canopy cover. This type generally has an associated herbaceous layer of perennial grasses and forbs in varying amounts. Grass and forb species composition is strongly influenced by physical and chemical soil characteristics and by grazing pressure.
Mountain Shrub (<1%)	100% FS	Areas included in this type are currently dominated by curlleaf mountain mahogany, rocky mountain juniper or bigtooth maple. This type covers a broad ecological spectrum from moderate to deep well drained soils to shallow rocky soils on ridge tops and southerly exposures. This type could be considered the transitional type. It represents what grows where it is too harsh for trees and not suited for sagebrush. Curlleaf mountain mahogany is the only mahogany found in the assessment area, it is a hardwood evergreen with tree like form. Rocky mountain juniper is the dominant juniper species found within the assessment area, it is a shrubby tree with scale-like evergreen leaves.
Mountain Brush (1%)	99% FS <1% Non FS	Areas that currently have one or more of the mountain brush species representing over 10 % of the canopy cover have been included in this type. The mountain brush type is found intermingled with sagebrush at mid elevations and conifer/aspen forests at higher elevations. Mountain brush species are: chokecherry, serviceberry, rose, mountain snowberry, elderberry and ceanothus. These species may occur alone and form rather distinct types or may have mixed composition. These species generally sprout after fire and normally occupy slightly moister areas than sagebrush. However, sagebrush and bitterbrush are also often represented. This type generally has an associated herbaceous layer of perennial grasses and forbs in varying amounts. Grass and forb species composition is strongly influenced by physical and chemical soil characteristics and by grazing pressure.
Riparian/Water (<1%)	92% FS 7% Non FS	Areas that currently are dominated by riparian species or water have been included in this type. This type includes a wide range of riparian types from marsh type wetlands along Bear River to patches of willow. Most of the riparian that is located on national forest land is associated with stream channels. The type off national forest is a mix of marsh, open water and stream channel riparian.

Figure 2.11-3: Cover Types for the Caribou Subsection



2.11.3 Disturbance Regime

Fire

Fire has been a frequent visitor in the Caribou Subsection, either as localized spot fires or as large, expansive conflagrations. Barrett (1994) documented several major fire years throughout the Caribou National Forest in 1745, 1781, 1844, and 1934. Since the 1970, over 58 fires have been suppressed within the analysis area, which equates to ~2 wildfires per year. The results of fire suppression and historical grazing practices have had an impact on forested and non-forested community types. The lack of fire has resulted in two primary changes. First, it has resulted in an increased incidence of large fuel accumulations. Secondly, it has caused modification of vegetation structure and composition.

Table 2.11-3: Fires by Size Class and Cause from 1970-2003. Total number of wildfires is 58 and 8,414 acres.

Size Class	Human Caused	Acres	Lightning Caused	Acres
A (< 25 Acres)	5	0.5	20	2.5
B (.25-9.9 Acres)	8	18	17	25
C (10-99.9 Acres)	2	40	1	27
D (100-299.9 Acres)	2	283	2	217
G (> 5000 Acres)	0	0	1	7800
Total	17	342	41	8,072

Fire's role as a disturbance agent can best be described by historic fire regimes and frequencies. During 1994, Barrett conducted fire history studies for his report on "Fire Regimes on the Caribou National Forest." Barrett's report provides a fairly good estimate of both fire regimes and frequencies that can be made for this area. This is outlined in the table below.

Vegetation Type	Landscape Scale Reference/Desired Condition		Current Condition	Trend
Aspen	Fire (G4)* Insects Disease	8–141 Ave 39 yrs Endemic Endemic	90 Years + Endemic Endemic	Average post settlement fire interval in more than twice that of pre-settlement. Insect and disease both have increased slightly, but remain at endemic levels.
Douglas-fir	Fire (G3/4)* Insects Disease	8 –154 Ave 78 yrs Endemic Endemic	102 Years + Endemic Endemic	Average post settlement fire interval is approaching the upper range of the historic fire interval. Insect and disease both have increased slightly, but remain at endemic levels
Lodgepole	Fire (G6/4)* Insects Disease	11 –191 Ave 77 yrs Endemic Endemic	104 Years + Endemic Endemic	Average post settlement fire interval has been exceeded by 30 years and is approaching the upper range of the historic fire interval.
Mixed Conifer	Fire (G6/4) Insects Disease	11 –191 Ave 77 yrs Endemic Endemic	104 Years + Endemic Endemic	Insect and disease both have increased slightly, but remain at endemic levels
Mountain Shrub	Fire*	50-100 years*	Approximately 80 yrs +	Average post settlement fire interval is approaching the upper range of the historic fire interval.
Mountain Brush	Fire	25-76 years	Approximately 40 yrs +	Average post settlement fire interval is approaching the upper range of the historic fire interval.
Sagebrush/ Grass	Fire	25-76 years	Approximately 60yrs +	Average post settlement fire interval is approaching the upper range of the historic fire interval.
Riparian		No Data	No Data	

* See appendix A for Fire Group descriptions.

Insect and disease

Insects and disease have also played a role in shaping vegetation composition and structure. Insects that have played a role include mountain pine beetle, Douglas-fir bark beetle, spruce budworm, and fir engraver. The effects of these insects can range from small pockets of mortality to large epidemics that cover large areas. The diseases that exist include mistletoe,

various rusts and root diseases, and many forms of cankers. The effects of these diseases tend to be limited in scope, effecting growth more than causing mortality, but where likely important in shaping fire intensity and severity.

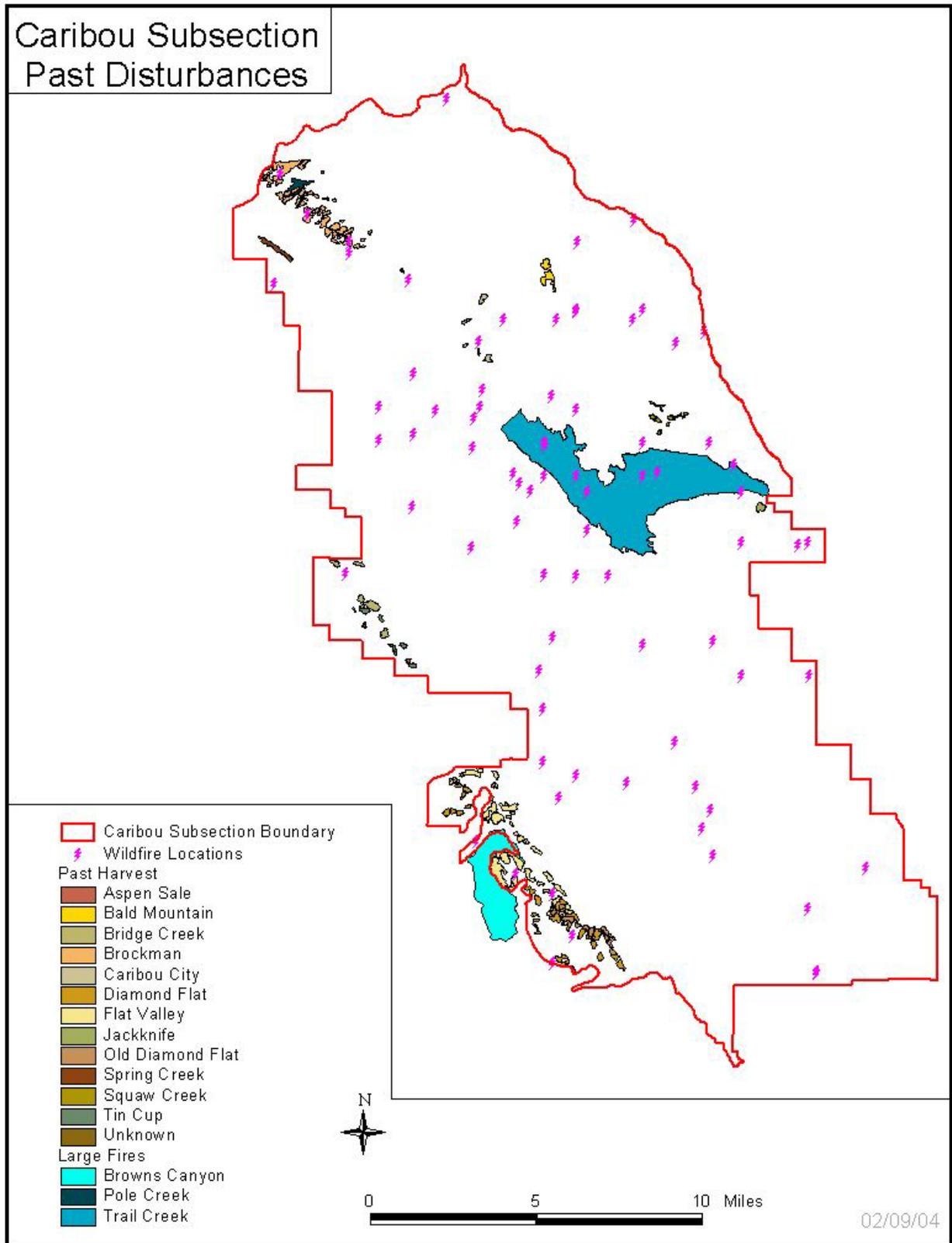
2.11.4 Other Disturbance

Past timber harvest (the last 30 years) has contributed some structural diversity to the Subsection. Harvest activities have been concentrated in the lodgepole pine and mixed conifer types. The following table summarizes all known harvesting activities. These harvest areas were considered during the development of the interior, boundary, and suppression risk zones. Most of these harvest areas are within the suppression zone.

Table 2.11-4: Past Timber Harvest

NAME	ACRES	Harvest Year
Aspen Sale	12	1990
Bald Mountain	114	1983
Bridge Creek	159	1976
Brockman	739	1971 & 1990-91
Caribou City	78	1985
Diamond Flat	546	1992-1994
Flat Valley	906	1984-1985
Jackknife	36	1978
Old Diamond Flat	200	1965
Spring Creek	85	1988
Squaw Creek	84	1964
Tin Cup	96	1983
Unknown	3	No Date
Total Harvested Acres	3,058	

Figure 2.11-4: Past Disturbances with the Caribou Subsection.



2.12 Wildlife

This area provides habitat for wildlife found in conifer and aspen forest and shrub-steppe wildlife from 6,000' – 9,000' elevation. Much of the aspen stands are being invaded by conifer encroachment. This area also provided connectivity or linkage habitat for carnivores with large territories (lynx, wolverine, wolves, and grizzly bears). Species descriptions are given in order of forest plan guidance.

Summary – in order of importance: Reduce conifer invading aspen. Maintain 80% mature mountain big sagebrush. Limit disturbance near active bald eagle nests along Palisades and Salt River. Leave snags along riparian areas. Maintain 40% mature/old forest habitat for owls. Maintain 80% aspen, chokecherry and serviceberry.

2.12.1 Forest Plan Direction

Wildlife Forest Plan standards [S] and guidelines [G] (CNF RFP S&Gs) are found on pages {3-24 to 33}. The following is a summary of S&Gs that could be impacted by large fires and need to be considered in fire use planning listed in chronological order. The “disturbance” is described (reworded) in relation to loss/change of habitat from burning or impacts from fire suppression activities:

- Lynx 20% mature/old forest (Forested habitat within a 5th Code HUC)
- Goshawk 33% mature/old forest (6,000 acres)
- Boreal owl 40% mature/old forest (3,600 acres)
- Great gray owl 40% mature/old forest (1,600 acres)
- Sage grouse 80% mature mountain big sagebrush (10 miles from leks)
 - Caribou Basin and Tygee Ridge area west of Star Valley.
- Sharp-tailed grouse 80% mature aspen, chokecherry and serviceberry.
- Landbirds leave mature forest and snags along wet meadows (riparian) and 30-50% mature sagebrush.

Bald Eagles – Active bald eagle nests are located along Palisades Reservoir and the Salt River. Disturbance close (1/4 mile) to active nests before September 1 could displace bald eagles, especially in June and July.

- **Bald Eagle Habitat {3-27}**-- Occupied Nesting Zones (Zone I, 0.25 mile radius of nest) and Primary Use Areas (Zone II, 0.5 mile radius of nest)
 - **Standards**
 - # 2 Vegetation management, such as timber harvest or thinning, which could disturb an active bald eagle nest can occur only between September 1 and January 31 or when documented as unoccupied.
 - **Guidelines**
 - #1. "Control" should be the suppression response for wildfires to minimize loss of habitat unless a site-specific analysis demonstrates differently.
 - #2. All human activities should be minimized from February 1 to August 1.

Canada lynx – the Caribou and Wasatch NFs provide linkage habitat between the Targhee, Bridger-Teton NFs and the Ashley NF. [20 percent of forested habitat in 5th code HUC should be Mature and old age classes]

- **Canada Lynx {3-28}** - Management direction which will maintain linkages for Canada lynx on the Forest is located in the following places:
 - **Vegetation Standard 2 {3-19}** In each 5th code HUC which has the ecological capability to produce forested vegetation, the combination of mature and old age classes (including old growth) shall be at least 20 percent of the forested acres. At least 15 percent of all the forested acres in the HUC are to meet or be actively managed to attain old growth characteristics.

Northern Goshawk – suitable habitat is found throughout the area. There are no known nests in the area at this time. Burning or suppression efforts within 400 acres of an active nest would displace nesting birds from March to September [Guideline – Management Season Table 2.12-1: Management Standards and Guidelines within Active Goshawk Nesting Territories.]. Burning over 1,340 acres of mature/old forest habitat would exceed the 22 percent guideline of 6,000 acres of nonstocked/seedling. Burning 1,980 acres of mature forest would exceed the 33 percent guideline within 6,000 acres.

- **Goshawk Habitat {3-30}** - Standards and Guidelines -- The management standards and guidelines in Table 3.5 below apply to all forest types within active and historic goshawk nesting territories.

Table 2.12-1: Management Standards and Guidelines within Active Goshawk Nesting Territories.

Attribute	Nest Area	Post-Fledging Family Area	Foraging Area
Size of each area (acres) (Standard) [6,000 acres total]	≥ 200 acres	≥ 400 acres	≥ 5,400 acres
Management Season (active nests only) (Guideline)	Sept-Mar	Sept-Mar	Year-long
SIZE CLASS DISTRIBUTION FOR FORESTED ACRES (%) (G):			
Nonstocked/seedling	1,340 acres / 22% of 6,000 acres	0%	≤ 20%
Sapling	1,340 acres / 22% of 6,000 acres	0%	≤ 20%
Pole	1,340 acres / 22% of 6,000 acres	0%	≤ 20%
Mature/old	1,980 acres / 33% of 6,000 acres	100%	≥ 40%

Boreal owl and great gray owl habitat is found in the project area.

- **Boreal Owl Habitat {3-31}**
 - Guideline - Within a 3,600-acre area around all known boreal owl nest sites, maintain over 40% of the forested acres in mature and old age classes. (Hayward and Verner, 1994, Hayward, 1997)
- **Great Gray Owl Habitat {3-31}**
 - Guidelines - Within a 1,600-acre area around all known great gray owl nest sites, maintain over 40% of the forested acres in mature and old age classes. (Hayward and Verner, 1994)

Sage grouse use leks in sagebrush west of Star Valley and historic habitat is located in Caribou Basin.

- **Sage Grouse {3-32}**

- Guidelines - Current guidelines for sage grouse management, such as Connelly et al. (2000), should be used as a basis to develop site-specific recommendations for proposed sagebrush treatments.
 - Breeding habitat: >80% Sagebrush, 16-32” tall, and 15-25% canopy closure
 - Brood-rearing habitat: >40% Sagebrush, 16-32” tall, and 10-25% canopy closure
 - Winter habitat. >80% Sagebrush, 10-14” tall, and 10-30% canopy closure

Sharp-tailed grouse may use the project area as winter habitat.

- **Columbian Sharp-tailed Grouse {3-32}**
 - Guidelines - Current guidelines for sharp-tailed grouse management (Idaho Sharp-tailed grouse Conservation Plan) should be used as a basis to develop site-specific recommendations for proposed sagebrush treatments.
 - Winter habitat- maintain 80% mature winter forage (chokecherry, serviceberry, and aspen above snow height).

Boreal toads (See fisheries. Section 2.4)

Landbirds use all habitats in the area. High priority habitats are riparian, wetlands and sagebrush (see sage grouse).

- **Landbirds**
 - Guidelines
 - Stands of mature trees (including snags and dead-topped trees) should be maintained next to wet meadows.
 - Where feasible, maintain 30 to 50 percent of the sagebrush habitat in a 5th code HUC in contiguous blocks greater than 320 acres to support sagebrush obligate species.

III PROTECTION CONSIDERATIONS

This Chapter discusses the values at risk that occur within and adjacent to the Caribou FMA that may require special protection considerations and provides guidelines for informing Forest users of safety concerns during a WFU event.

3.1 General Information

Administrative sites within the subsections and private land within and adjacent to the subsections may require special protection considerations.

The intent of applied fuel treatment measures would be the protection of identified private property and federal facilities. This includes areas of the subsection that are susceptible to interface fire. The long-term objective of any fuel treatment is to eventually increase the opportunity for natural fire to play its role more fully in the forest ecosystem. Fuel treatments should increase the probability of success of the program, restore ecological balance, and substantially reduce the threat of escape from the area or significant damage to capital investments.

Key perimeter areas that are susceptible to a fire crossing from inside the FMA to outside have been identified. These are areas adjacent to administrative (improvements) sites, private/state lands, or management prescription boundaries and automatically convey a higher risk for managing WFU. The land within each FMA has been categorized into three risk zones: ***Suppression Zone, Boundary Zone and Interior zone***. Fire managers analyzed values at risk, topography, fuel type, historic fire behavior, fire occurrence, and weather patterns to determine the location and extent of these zones. Each zone has different prescriptive criteria associated with it and is discussed in more detail in Chapter 5 Stage I.

Preventative measures can be taken in advance to reduce risk of wildland fire. These include modifying the fuels characteristics within these areas to increase the probability of suppression actions being successful; excluding the vulnerable areas by modifying the maximum manageable area perimeter so that it is located in the most defensible location. The most defensible location may not be within the subsection.

All known administrative sites, cultural sites, and improvements need to be evaluated to determine the appropriate level of fire protection needed. Defensibility of each site must be determined in order to properly identify the measures needed to adequately protect the site. This could be done with surveys using the included evaluation forms addressing pertinent information needed for proper assessment of each site. Seven levels of fire protection are offered for individual sites or groups of sites.

1. No protection
2. Handline construction concurrent with threatening fire
3. Handline and burnout concurrent with fire
4. Fire shelter or water system protection concurring with threatening fire, prepositioning of protection equipment at crucial sites.
5. Fugitive retardant drops concurrent with fire
6. Use of heavy equipment for line construction concurrent with fire

7. Site/Structure/Improvement pretreatment or fuels reduction prior to fire event
 - Fuels reduction adjacent to and around sites with use of prescribed fire or other vegetative manipulation techniques such as pruning, thinning etc.
 - Flammable material movement (firewood, fuel, etc.)
 - Permissible modifications of structures (building materials).

3.2 Improvements

Specific agency protection considerations in the Caribou Subsection-FMA are listed in the table below.

Table 3.2-1: Descriptions and Locations of the Identified Protection Considerations

Site	Description	Legal	Lat/Long
Caribou Mountain Repeater Site	Radio transmitting site	T4S R44E S4	43 02 35N 111 20 37W
Eagle Creek Seismic Station	Seismic measuring equipment	T4S R43E S24	43 03 13N 111 22 09W
Black Mountain Repeater Site	Radio transmitting site	T4S R45E S1	43 06 19N 111 07 18W
Diamond Flat RAWS Station	U.S. Forest Service RAWS Station	T6S R45E S30	42 52 00N 111 13 00W
Caribou Mountain Guard Station	Guard Station, Historic Guard Station, and Warming Hut.	T3S R44E S20	43 08 41N 111 19 26W
Bald Mountain Guard Station	Historic Guard Station	T3S R44E S13	43 09 33N 111 14 42W
Pine Bar Campground	Campground with several campsites	T5S R45E S20	42 58 14N 111 12 20W
Tincup Campground	Campground with several campsites	T5S R46E S6	43 00 50N 111 06 26W
South Fork of Tincup Trailhead Foot Bridge	Foot Bridge across Tincup Creek	T5S R45E S15	42 59 06N 111 09 59W
Fish Creek Trailhead	Foot Bridge across Fish Creek	T3S R45E S15	43 09 33N 111 09 59W
Spring Creek Corral	Corral constructed of wooden poles	T3S R44 E S20	43 08 41N 111 19 26W
Caribou Basin Corral	Corral constructed of wooden poles	T3S R44E S17	43 09 33N 111 19 26 W
Oxarango Corral	Corral constructed of wooden poles	T3S R44E S	43 09 33N 111 17 04W
Eagle Creek Corral	Corral constructed of wooden poles	T4S R44E S19	43 03 27N 111 20 37W
Squaw Creek Corral	Corral constructed of wooden poles	T4S R45E S13	43 04 19N 111 07 37W
Jackknife Corral	Corral constructed of wooden poles	T4S R46E S29	43 02 35N 111 05 15W
Dancehall Flat Corral	Corral constructed of wooden poles	T5S R46E S7	42 59 58N 111 06 26W
Bear Canyon Corral	Corral constructed of wooden poles	T5S R45E S16	42 59 06N 111 11 10W
Bridge Creek Corral	Corral constructed of wooden poles	T5S R44E S15	42 59 06N 111 17 04W
Diamond Flat Corral	Corral constructed of wooden poles	T6S R45E S32	42 51 16N 111 17 20W

3.3 Minerals

This section will include a table of the active mining claims, patented land, and any other feature that could potentially be adversely affected by a fire. A legal description, as well as contact information will also be included. Most of these people were contacted in order to gather their concerns. The District will maintain close contact with the claim owners located in the fire vicinity. These claim owners will be briefed on fire status, expected fire behavior, and any management actions taken on the fire.

Table 3.3-1: Active Mine Claims

Owner	Phone #	Concerns	Legal
Kent Daniels	208-624-7450	None	T3S R44E S16
George Deavor	unknown	None	T3S R44E S17
Tony Crnkovich	307-883-9782	Pumps, hoses, sluice box	T3S R44E Sec.24,25
Joe Sklenar	307-886-5584	Possibly a trailer, a loader and other small mining equipment	T3S R44E S32
Michael Commons	208-528-0800	Possibly a trailer and a FS owned cabin	T3S R44E S29,30,32 T4S R44E S5
Richard Dixon	208-547-4479	Cabin at the confluence of Bilk Cr. and unnamed drainage in the E1/2 sec. 36	T3S R44E S36
Mark Steele	208-547-4748	Cabins, mostly just old foundations	T4S R44E S4,5,8,9

Table 3.3-1: Patented Mine Claims

Owner	Phone #	Concerns	Legal Description
Mark Steele	208-547-4748	Cabins, mostly just old foundations Timber	T4S R44E S4,5,8,9
Alan Pitto	209-333-0702	None	T4S R44E S10

Other sites on Caribou Mountain that may be of concern are Caribou City, an old abandoned mining town, and Caribou basin.

Historic mining activities on the northern and eastern slopes of Caribou Mtn. in the headwaters of Bilk Cr., Iowa Cr., Miner’s Delight Cr., Camp Cr. and Barnes Cr. are extensive and may have areas that are unsurveyed by a qualified archeologist. Most of the cabins or structures in these areas will most likely be dilapidated. Headgates for ditches that were constructed from wood may remain, however, enough time has elapsed in this area that decay has disposed of most artifacts made from biodegradable materials.

3.4 Outfitter Campsites

The Soda Springs District will maintain close contact with special use permit outfitter camps located in the fire vicinity. Outfitters will be briefed on fire status, expected fire behavior, and any management actions taken on the fire.

The possibility exists that some temporary outfitter camp locations may be damaged by fire. If this occurs, the Forest Service will assist and give first consideration to affected outfitters. The Forest Service will immediately investigate any known tangible damage to private property.

Table 3.4-1: Description and Locations of the Outfitters with the Caribou FMA

Operator	Description	Location	Legal	Lat/Long
Hamilton Outfitters	Pack in outfitter camp. Active only in Sept./Oct./Nov.	South Fork of Tincup Creek	T6S R45E S9 NE1/4	42° 54 45N 111° 11 10W
Hamilton Outfitters	Pack in outfitter camp. Active only in Sept./Oct./Nov.	Jack Knife Creek	T4S R45E S19 NE1/4	43° 03 27N 111° 13 31W

3.5 Public Safety

The following will be utilized to inform Forest users of safety concerns and minimize the chances of endangering the personal safety of users in the Forest as a result of the wildland fire use program.

- Forest users will be advised of the hazards and risks in the fire area, as well as safe routes in the vicinity of the fire area.
- Trailheads, and trails in the vicinity of the fire area will be signed appropriately, advising Forest users of fire status, hazards and risks, as well as suggested alternative routes of travel. Government personnel will be updated routinely so they can alert and inform visitors they contact.
- If a fire is located along a major access route, visitor information personnel will be assigned to contact and advise visitors as they enter the fire vicinity.
- It is suggested that visitors be encouraged to document their travel plans and campsites in the trail registry system. This would facilitate contact if fire conditions change dramatically.
- In the event fire conditions deteriorate significantly, and there is imminent danger to known visitors; the Line Officer may elect to use the forest helicopter to warn users and make evacuations of those users incapable of responding rapidly.
- The Line Officer may request official closure of trails and campsites in the fire vicinity if that person feels that the fire presents significant threats to life and visitor safety.

Site Evaluation Worksheet

Site: _____ **Legal:** _____

Factors Influencing Rate of Spread;

Slope _____ Position on slope _____ Aspect _____ Fuel
 Model _____
 Fuel Continuity _____ Ladder Fuel _____

Remarks _____

Resources

Water supply (type and capacity) _____
 Equipment on site _____
 Available Barriers _____

Access/Egress:

Road (width, grade, condition, bridges, etc.) _____
 Trails _____
 Airstrip _____
 Helispot _____
 Boat _____

Occupancy (number, type, duration, etc.) _____

Identified Protection Level:

- _____ No protection
- _____ Handline construction concurrent with threatening fire
- _____ Handline and burnout concurrent with threatening fire
- _____ Fire Shelter or water system protection concurrent with threatening fire
- _____ Use of heavy equipment for fireline construction concurrent with threatening fire
- _____ Pretreatment: fuels reduction of unnatural fuels prior to fire event
 - fuels reduction
 - flammable material movement (firewood, fuel etc.)
 - change in building materials

Proposed Tactics:

Probability of success

		Flame Length					
		0-2'	2-4'	4-6'	6-8'	8'	8+
Fair	40%+	___	___	___	___	___	___
Good	60%+	___	___	___	___	___	___
Excellent	80%=	___	___	___	___	___	___

Prepared By _____ **Date** _____

Draw Site Map on back: attach relevant notes and photographs

Structure Evaluation Worksheet

Structure: _____ **(1 of) Site:** _____

- Roof: Construction, type/condition _____
- Siding: material/condition _____
- Heat traps: gables/decks/porches/vents _____
- Windows: exposed/covered/type _____
- Overhead Lines: power/phone/shutoffs _____
- Underground Lines: power/phone/shutoffs _____
- Fuel Storage: type/quantity/lines/shutoffs _____
- Outside combustibles: wood piles/fences/yard accumulation _____
- _____
- Septic Tank/location: _____
- Position on slope: _____
- Working space – minimum clearance guide:

Slope Percentage	Uphill	Actual	Sides	Actual	Downhill	Actual
Level to 20%	100ft	_____	100ft	_____	100ft	_____
21% to 40%	150ft	_____	150ft	_____	150ft	_____
41% to 60%	200ft	_____	200ft	_____	200ft	_____

Additional Comments: _____

Prepared by: _____ Date: _____

(Attach maps, drawings, notes, digital photographs, or other appropriate information)

IV IMPLEMENTATION

4.1 Required Skills and Qualifications

The minimum national skills, knowledge, standards, and physical qualifications for each position required for fire use implementation are outlined in the Wildland Fire Qualification Subsystem Guide, NWCG, PMS 310-1 (see FSM 5108 for further information on this guide) and the Wildland Fire Qualifications Handbook, FSH 5109.17. Exceptions are noted for Prescribed Fire Planning Specialist, Prescribed Fire Burn Boss Type 3, and Fire Use Manager. Standards are provided for these positions in FSM 5145.21, 5145.22, and 5145.31, respectively (FSM 5145.1).

Line officer delegation of authority to approve Wildland Fire Implementation Plans (WFIP) and implementation positions are the two categories of qualifications concerning management of the WFU program. Each Forest Fire Management Officer and Forest Supervisor will review designated personnel that are delegated the authority for WFU approval on an annual basis. Training, experience, and knowledge will be part of this review prior to issuance of the delegation of authority letter. Line officers must meet the standards outlined in R4 supplement 5100-2001-5 5140.42.

Every wildland fire used to achieve resource objectives requires that the line officer designate a Fire Use Manager (FUMA) who is directly responsible for all aspects of the Wildland Fire Implementation Plan (WFIP)(FSM 5145.3). The FUMA may individually manage multiple fires that do not require significant staffing, external communication, or holding resources for plan implementation, or the FUMA may be the leader of a specialized team needed to manage one or more complex fires. An individual FUMA must be assigned for each wildland fire requiring Stage III analysis described in the Implementation Guide (FSM 5143.32). As complexity increases, consideration should be given to assigning a formal team. Indicators of increasing complexity include: safety, the number of fires being managed, acreage increases, anticipated severe weather, increasing coordination needs, smoke issues, threatened resources, and logistical demands. Fire Use Management Team (FUMT) leaders, Type I or II Incident Commanders may also be designated as FUMAs when they have completed appropriate fire use training (FSM 5145.31). In the case of a long duration fire where the FUMA needs to be relieved due to consecutive days of service, the replacement must be designated by a line officer at the same level of authority as made the initial FUMA assignment.

When required by the Implementation Guide (FSM 5140.32), long-term fire behavior predictions, based on the best scientific process available must be provided by a Long Term Fire Analyst (LTAN) or Fire Behavior Analyst (FBAN) with experience in long-term fire behavior prediction.

The Fire Use Manager (FUMA) or formal team leader determines, through development of the WFIP, the organization and expertise necessary to successfully manage wildland fire(s) to meet resource objectives. The organization required to implement fire use projects is based on the complexity of the project, the number of fires burning, and the

resources available at any one time. On less complex projects, one person may perform multiple duties simultaneously. More complex projects require more highly qualified personnel. The required organization must be delineated in the approved Prescribed Fire Burn Plan (RxBP) or Wildland Fire Implementation Plan (WFIP). Two levels of Fire Use manager have been identified. In general a FUM 1 is required for incidents progressing to Stage 3. Qualifications for FUM1 and FUM2 are described in their entirety in FSH 5109.17.

Requirements of the **FUM1** position require:

- Qualification as a Prescribed Fire Burn Boss 1 (RxB1) and
- Satisfactory performance as a Fire Use Manager on a wildland fire incident used to achieve land use objectives **OR**
- Incident Commander Type 2 **AND**
- Prior successful management of wildland fire use and/or confinement strategies and tactics **AND**
- Satisfactory performance as a Fire Use Manager on a wildland fire incident used to achieve land use objectives.

Requirements for the **FUM2** position require:

- Prescribed Fire Burn Boss Type 2 **AND**
- Satisfactory position performance as a Fire Use Manager on a wildland fire incident used to achieve land use objectives **OR**
- Incident Commander Type 3 **AND**
- Prior successful management of wildland fire use and/or confinement strategies and tactics **AND**
- Satisfactory position performance as a Fire Use Manager on a wildland fire incident used to achieve land use objectives.

In addition, a FUMA must have successfully completed a suitable fire use course at the Regional or National level, such as Advanced Fire Applications, S 580. The required fitness level is moderate. Only assignment as FUMA maintains currency (FSM 5145.31).

Along with the Fire Use Manager and District Ranger involvement, participation in developing the WFIP and managing the WFU may also include local specialists familiar with issues and policies associated with the fire management unit and the wildland fire use program. These specialists may include but are not limited to:

- Aerial Monitor - usually a person familiar with local conditions such as the regular Forest aerial observer. May have the need for an ICS-qualified FOBS or FBAN.
- Resource Advisor - not necessarily ICS qualified; may include other specialists such as wildlife or fish biologist, soil scientist, hydrologist, range, or archaeologist.
- Technical Specialists - experienced with RERAP, FARSITE, and GIS programs.
- Public Information Officer - familiar with language and concepts of wildland fire use.
- Division Supervisor - may implement holding actions identified in the WFIP.

If a wildland fire managed for resource benefits exceeds prescription parameters and cannot be brought back into prescription within **48 hours**, it will be declared a wildfire. A Wildland Fire Situation Analysis will then be prepared and the appropriate suppression response taken.

All personnel assigned to any wildland fire will meet the qualification standards established by their home agency unless they are trainees operating under Task Books and with a fully qualified person for the training position.

A small pool of qualified FUMAs exists in the Greater Yellowstone Area. A list of qualified personnel is updated yearly in the Greater Yellowstone Area Interagency Fire Management Planning and Coordination Guide. Personnel listed in the guide should be available for Fire Use assignments under the jurisdiction of any of the agencies that are members of the GYA.

4.2 Wildland Fire

A wildland fire will be managed for protection considerations whenever an ignition does not meet one or more of the prescription criteria in the initial Stage I decision process, the Stage II analysis and wildland fire implementation plan development, or exceeds prescription parameters during Stage III Management and the daily revalidation. An appropriate management response must be initiated immediately once a fire is no longer being managed as wildland fire use. The appropriate management response will be based on least cost plus value lost that is consistent with Forest management goals and objectives. For additional information on the appropriate management response refer to the Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide (pg 33-35). The following guidelines will help select the most appropriate management response:

- Suppression strategies must consider cost-effectiveness, protection of private property, and human life.
- Pre-plan dispatch guidelines and available resources will dictate the appropriate management response.
- Minimum Impact Suppression Tactics (MIST) should be employed to the maximum extent possible when emphasized in a particular management prescription area (RFP 4-15-85). Refer to section **4.3** for more information on MIST.

4.3 Minimum Impact Management Tactics

The tactics are organized by basic fire management activities—fireline construction, burning out, mop-up, and by specific types of actions such as tree cutting, hazard tree management, helicopter operations, and camp situations. A section on rehabilitation is also included.

One of the most basic tools in minimum impact management tactics is choosing the time of day in which to concentrate fire management efforts. Typically efforts should be concentrated at night or in the cooler parts of the day. Efforts in the heat of the day are often ineffective, especially in lighter fuels such as grass and sagebrush. Efforts at night or the cooler part of the day using the appropriate methods can be quite successful.

Firelining

The basic intent of fireline is to halt additional fire spread. Fireline does not have to be constructed to meet this intent.

- Use aerial tactics (retardant or bucket drops) in light fuels, such as grass.
- Burn out from existing roads or trails, including animal trails.
- Use foam or water along the fire edge.
 - When using water, use spray or mist nozzle settings. Do not use straight stream settings.
 - Use 72-gallon blivits with lightweight hose long-lined in by helicopter in remote areas.
- Use all available natural barriers, such as rocky areas, bare streambeds, vegetation changes, and already cool fire perimeter.
- When hand fireline must be constructed, consider such measures as:
 - Locate the fireline in areas requiring a minimum of scraping and cutting.
 - Keep the width and depth to the minimum necessary to stop the fire's spread.
 - Widen minimal firelines through burning out.
 - Limb or fall trees and snags only when necessary for safety or to prevent fire spread.
 - Minimize clearing of fuels next to the fire's edge.
 - If possible, roll logs out of intended fireline instead of bucking. If not possible to roll, consider building fireline around the log and let it remain in the burned area if it will not pose a serious threat to fire escape.

- When possible, scrape fuels from the base of snags or around heavy fuel concentrations to prevent fire spread and possible spotting.
 - Consider the use of fireline explosives to construct line and fell snags and trees.
- If machine fireline will be used, consider the following:
 - Have dozer operators avoid gouging the soil layer.
 - Use excavators instead of dozers, especially in deep duff.

Burning Out

- Conduct burning out operations using the same considerations and methods as when conducting a prescribed fire. Complete consumption of all live or dead fuels is not necessary. Creating mosaic type burns can also serve to slow or halt fire spread without creating high fire intensities or burn severities.
- Conduct burnouts during periods of lower fire intensity, such as at night or cooler portions of the day.

Mop-up

Some mop-up may be necessary in order to fully contain the fire. However, it is often not necessary to mop-up every smoke. Evaluate the potential of any smoking area to actually threaten escape and further spread before mopping-up.

To lessen mop-up activities:

- Cold trail extensively.
- Try to avoid tool scars by using water or foam to extinguish the fire.
- Minimize spading. When spading, minimize soil disturbance.
- Do not use straight stream nozzle settings except during attempts to extinguish burning snags and trees.
- Roll logs to check for fire instead of bucking or excessive cutting. If rolling is not possible, let the log burn out if it is not a threat to additional fire spread.
- Cool, remove, or burn fuels that may ignite and cause fire spread.
- Allow fuels, snags, and trees to burn until out when they are well inside the fire perimeter and do not pose a serious threat to safety or fire spread.
- When falling appears necessary, consider alternative methods such as fireline.

Tree Cutting

The basic questions to ask when considering cutting a tree down are: 1) does the tree or snag pose a risk of fire escape and continued spread and 2) if the tree or snag does not pose a risk, is it necessary that firefighters be working in its vicinity.

Consider the following alternatives to cutting:

Firelining

- Use minimum limbing (pruning) for trees with branches that extend to the ground.

- Avoid cutting any trees whose limbs are well above the surface fuel layer even when near a fireline.
- Gambel oak is not susceptible to fire spread up the bole; avoid cutting these trees even when near the fireline.
- Scrape around the base of trees or snags near the fireline to keep fire spread from igniting the base.
- Where burning out is planned, fall only those snags that would reach the fireline, should they burn and fall over.
- Avoid felling snags outside of the line in the intended burned out area only if they are an obvious safety hazard to crews working in the area.
- When necessary to cut trees or snags, follow up on rehabilitation to reduce the impact.

Mop-up

- Whenever possible, allow burning trees and snags to burn themselves out or down provided they do not pose a safety risk to crews that must work in the vicinity.
- Identify hazard trees with an observer, flagging, or glow-sticks.
- If burning trees or snags pose a serious threat of spreading firebrands, extinguish the fire with water or dirt. Consider felling by blasting, if available. Felling by chainsaw should be the last resort.

Hazard Trees

- Carefully evaluate any tree for true hazard to trails and roads after the fire. Many tree species can withstand partial consumption of the bole and remain solid on the stump for many years.
- Trees weakened by fire tend to fall over in the direction of the cat face. If the cat face points away from the road or trail allow it to fall over on its own.
- Trees that lean away from the road or trail should be allowed to fall over naturally.
- Evaluate the height of the tree or snag; will it even reach the road or trail? If not, allow it to stand.
- Trees and snags on the downhill side of the road or trail should be left unless they have a pronounced uphill lean.

Helicopter Operations

Planning/Proposed Phase

- What will be the primary function of this helispot (crew shuttle, logistic support, or both)?
- If for logistic support only, use long line remote hook instead of constructed helispots.

- If for crew shuttle, consider the minimum sized helicopter and opening for safe operations and still meet the intended management response.
- Use natural openings as far as practical. If construction is necessary, avoid high visitor use areas. Perform an aerial reconnaissance discussion over the area or fire perimeter where helispots are desired. With a Type II or I Incident Management Team involve, at minimum the Air Operations Manager, Resource Advisor, and Helitack Foreman who will be in charge of on-the-ground construction. With a Type III Incident Management Team involve, at minimum, the Resource Advisor and Helitack Foreman. Draw a sketch and discuss which trees to cut to ensure safe helicopter operations. Insure that all parties involved in the discussion have audio equipped helmets.
- As a group, discuss mitigating measures in order to restore the helispot to as natural a condition as possible or to blend the opening with the surrounding untouched natural landscape.
- If adverse environmental or wilderness impacts are anticipated from proposed helispots inside or within the fire area, are there other possibilities some distance away that would result in less impact and still accomplish the intended management objectives?
- Provide specific instructions, preferably written, for the on-the-ground supervisor and crew to use when constructing the helispot.
- If possible, monitor helispot construction.

Construction Phase

- Cut trees and snags close to the ground, leaving stump heights of 0-3 inches. Follow-up flush cutting may be necessary to reduce stumps to this height.
- If possible, directionally fell trees and snags such that the boles will be in a criss-crossed or in a natural appearing arrangement.
- Buck only what is necessary to create safe and practical operating space in and around the landing pad area.
- Limb only what is necessary to create safe and practical operating space; if possible break limbs instead of cutting them.

Base/Spike Camps and Personal Conduct

- If possible, use existing campsites.
- Camp at impact resistant sites such as rocky or sandy soils or openings within dense vegetation. Avoid camping in meadows or near stream banks and lakeshores.
- Avoid clearing vegetation, trenching around bedding sites, and cutting boughs for bedding.
- Change camp location if the area shows excessive use; use alternate travel routes to avoid excessive trail wear.
- Use stoves for cooking when possible and avoid construction of several campfire sites, especially fire pits and rock rings.

- Locate toilet sites a minimum of 200 feet from water sources.
- Keep latrine holes to less than 8 inches deep to speed decomposition of waste by soil bacteria.
- Evaluate coyote and spike camps versus daily travel to and from base camps, especially where sensitive areas are involved.

Rehabilitation

- Before starting rehabilitation activities, walk through adjacent untouched areas and observe the appearance, arrangement, and color scheme of the vegetation. Use these areas as a guide in directing rehabilitation efforts.
- Firelines and Mop-up Activity
- After fire spread is secured, replace dug-out soil and duff; obliterate berms and leave as natural appearing.
- Provide some means of drainage to prevent erosion on firelines or trails created on steeper slopes, such as shallow depth water bars or natural materials to act as sediment dams.
- Scatter some cut brush and limbs onto fireline or impacted areas so it blends more with the natural appearing landscape.
- Scatter obvious, excess accumulations of cut limbs, seedlings, and saplings into a more natural arrangement.
- Flush cut stumps of felled trees and snags with the ground surface; scatter cut portion out of sight.
- Camouflage cut stumps in a manner that blends with the surrounding landscape.
- Use a variety of methods to camouflage cut faces of stumps and boles instead of just one: rocks, dead woody material, dirt, fragments of stumps or bolewood, fallen or broken green branches, hack with pulaski or ax, etc.
- If needed, bring in some natural material from adjacent untouched areas to use in camouflaging cut faces of boles and stumps.
- Piece together cut sections of downed logs so they appear as un-cut, if possible. Place soil or some existing debris over the cuts.
- Position cut logs where they will be least noticeable to visitors.
- If bolewood can be moved, place cut end adjacent or underneath existing down material.
- For large size bolewood that cannot be moved, place a slant cut (45-60 degree angle) on the bottom side.
- Do not lop and scatter tops of cut trees.
- Selectively place a few of the cut seedlings and saplings in an upright position (wedged between downed logs, old root wads, etc.).
- If there has been an excessive amount of bucking, limbing, and topping; consider slinging or removing cut rounds and tops from the site.
- Consider using explosives on some stumps and cut faces of bolewood to create the appearance of a wind-thrown tree.
- Remove all flagging and trash along the fireline.

Helispots

- If excessive amounts of cut material exist, pile and arrange for it to be burned at a later date or consider slinging cut material from the site.
- Obliterate the landing pad and leave in as natural a condition as possible. Bury painted helispot markers, if they exist.

Camps

- Scatter campfire site rocks and charcoal; cover charred fire ring rocks with soil if necessary.
- Scatter any cut limbs or splittings that may have occurred.
- Cover latrine site.
- Remove camp or tent poles and stakes made from trees and scatter in a nearby tree-covered area.
- Pick up litter and pack out all garbage.

4.4 Wildland Fire Situation Analysis

The Wildland Fire Situation Analysis (WFSA) is a decision making process in which the agency administrator or representative describes the situation, establishes objectives and constraints, compares multiple strategic wildland fire management alternatives, evaluates the expected effects of the alternatives, selects the preferred alternative, and documents the decision.

Use of the WFSA is integral to successful management of both wildland and prescribed fires. It serves as a contingency when fire spread and behavior exceed suppression efforts, when there is an inability to accomplish wildland fire use objectives, or when prescribed fires can no longer be implemented in accordance with the approved plan. The WFSA document can be used to compare alternatives reflecting the full range of appropriate management responses and can assess alternatives for realizing protection and/or resource benefits opportunities.

If a wildland fire use event exceeds the prescription parameters or the Maximum Manageable Area (MMA), a WFSA will be developed. After this decision is made, the fire will never revert back to the original status. The WFSA should be amended as conditions or strategy change.

4.5 Coordination

The following governmental agencies or entities should be consulted during preseason planning and in the event of a WFU within the plan area. Coordination and information-sharing intensity and effort will be based on the overall fire situation complexity.

4.5.1 Other Federal Agencies

USDI Bureau of Land Management	(208) 524-7500
USDI Bureau of Indian Affairs	(208) 238-2301
USDI Fish and Wildlife Service	(208) 237-6975
USFS (Bridger-Teton NF)	(307) 739-5500

4.5.2 States of Wyoming and Idaho

Wyoming Game and Fish	(307) 773-2321
Idaho Dept. of State Lands	(208) 525-7167
Wyoming Dept. of Environmental Quality	(307) 777-7937
Idaho Dept. Of Fish and Game	(208) 232-4703
Idaho Dept. Of Environmental Quality	(208) 236-6160

4.5.3 Local Governments

City Governments

Afton	(307) 885-9831
Alpine	(307) 654-7754
Thayne	(307) 883-2668

County Board of Commissioners

Caribou County	(208) 547-4324
Lincoln County	(307) 877-9056
Bonneville County	(208) 529-1350
Alpine Rural	(307) 654-7581

City/County Health Departments

Caribou County	(208) 547-4375
Lincoln County	(307) 885-9598
Bonneville/Idaho Falls	(208) 528-5799

County Sheriffs

Caribou County	(208) 547-2561
Bonneville County	(208) 529-1350 ext. 1310
Lincoln County	(307) 885-5231

City/Rural/Volunteer Fire Departments

Caribou County	(208) 547-2583
Lincoln County	(307) 886-0329
Bonneville County	(208) 529-1350

4.5.4 Tribal Governments

Shoshone Bannock Tribes	(208) 238-3700
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Coordination must also occur at the local level among the units managing the FMUs. Decisions made by one District could affect the potential decisions made by the adjacent District. Good communications should be maintained to facilitate information exchange concerning WFU within the subsection. Timely information exchange aids in the Stage I and Stage II decision process, this information assists the analysis team and/or decision maker to evaluate the cumulative effects of the decision on adjacent communities, Forest users, and fire suppression resources.

4.5.5 Caribou-Targhee Wildland Fire Use Contact List

Table 4.5-1: Supervisor's Office: 1405 Hollipark Dr. Idaho Falls, ID 83401 (208) 524-7500

Forest Supervisor	Jerry Reese
Forest FMO	Chris Ourada
C-TNF/NPF Fire/Fuels Planner	Gina Martin
Fuels Specialist/Forest AFMO	John Kidd
Recreation/Operations	Lisa Klinger
Public Affairs Officer	Lynn Ballard

Table 4.5-2: Eastern Idaho Interagency Dispatch Center: 1405 Hollipark Dr. Idaho Falls, ID 83401 (208) 524-7600 (208) 529-1020 1-800-438-8160

Dispatch Manager	Kathy Pipkin
Asst. EIIFC Manager (Intelligence)	Kai Olsen
Asst. EIIFC Manager(Operations)	Summer Johnson
Lead BLM Dispatcher	Heather Borgoro
Lead Forest Service Dispatcher	Amy Grows

Table 4.5-3: Ashton / Island Park Ranger District: PO Box 858 Ashton, ID 83420 (208) 652-7442/ HC 65 Box 975 Island Park; ID 83429 (208) 558-7301

District Ranger	Adrienne Keller
Zone FMO	Skip Hurt (shared)
ZAFMO (Operations)	Steve Davis (shared)
ZAFMO (Fuels)	Jim Cox (shared)
Wilderness Program Manager	Megan Bogle

Table 4.5-4: Dubois Ranger Station: PO Box 46 Dubois, ID 83423 (208) 374-5422

District Ranger	Robert Mickelsen
Zone FMO	Skip Hurt (shared)
ZAFMO (Suppression)	Steve Davis (shared)
ZAFMO (Fuels)	Jim Cox (shared)

Table 4.5-5: Palisades Ranger District: 3659 E. Ririe Highway Idaho Falls, ID 83401 (208) 542-5800

District Ranger	Ronald Dickemore
Zone FMO	Larry Zajanc (shared)
ZAFMO (Operations)	Kraig Carroll (shared)

Table 4.5-6: Teton Basin Ranger District: PO Box 777 Driggs, ID 83422 (208) 354-2312

District Ranger	Jay Pence
Zone FMO	Larry Zajanc (shared)
ZAFMO (Operations)	Kraig Carroll (shared)
Wilderness Program Manager	Megan Bogle

Table 4.5-7: Montpelier Ranger District: 322 N. 4th Montpelier, ID 83254 (208) 847-0375

District Ranger	Dennis Duehren
Zone FMO	Garth Alleman
ZAFMO (Operations)	Jared Mattson
ZAFMO (Fuels)	Dylan Johnson

Table 4.5-8: Soda Springs Ranger District: 410 E. Hooper Soda Springs, ID 83276 (208) 547-4356

District Ranger	Dave Whittekiend
Zone FMO	Garth Alleman
ZAFMO (Operations)	Jared Mattson
ZAFMO (Fuels)	Dylan Johnson

Table 4.5-9: Westside Ranger District: 75 S. 140 E. Malad, ID 83252,(208) 766-4743, 4350 Cliff Drive Pocatello, Idaho 83204 (208) 236-7500

District Ranger	Jerald Tower
Zone FMO	Greg Burch (shared)
ZAFMO (Operations)	Jeff Hill (shared)
ZAFMO (Fuels)	Gary Bishop (shared)

4.5.6 Adjacent Forest/Agencies Contacts

Table 4.5-10: Adjacent Forests/Agencies Contact Information

Bridger-Teton National Forest		
Forest FMO	Rod Dykehouse	(307) 739-5576
Bureau of Land Management		
Fire Management Officer	Rick Belger	(208) 524-7601
Teton Interagency Dispatch Center		
		(307) 739-3630

4.6 Inform and Involve Plan

The Wildland Fire Use Inform and Involve program is crucial to gain the support and understanding necessary to re-establish and implement a successful program. The following categories will guide Wildland Fire Use information dissemination and coordination pertaining to Wildland Fire Use on the Caribou-Targhee NF.

Pre-Fire Season Information and Involvement - These activities prepare the subsection complex for the upcoming fire season. Strategies to emphasize public awareness and education also occur here. Refer to Table 4.6-1.

Fire Use Management - A specific inform and involve plan is developed for each WFU. This category of action involves current activity. Refer to Table 4.6-2.

Post-Season Activities - Information gathering and evaluation of the Wildland Fire Use Program. Activities consist of analyzing individual fire monitoring plans and programmatic monitoring data. Program results and interpretations should be disseminated to interested parties, other agencies, and within agency. Refer to Table 4.6-3.

Table 4.6-1: Pre-fire season Information and Involvement

TASK	TOOLS	RESPONSIBILITY	TIMING
Dry run of WFU ignition evaluation and decision scenario	Meeting	Forest Supervisor and District Rangers	Annually by May
Develop list of qualified individuals for positions to implement the Wildland Fire Use Program	GYA FMO meeting	Fire Managers	Annually by May
Present general fire management information to employees	Meetings	District Rangers, & Fire Staff	Annually by June
Provide information to outfitters, permittees, general Forest users, and the public that may be affected by wildland fire use	Meetings	District Rangers	As needed
Integrate Wildland Fire Management into Forest education programs at local schools	Classroom presentations	District Rangers/Fire Management	As needed

Prepare news releases on Wildland Fire Use in the Forest	News Releases	District Rangers and PIO	Pre-fire season and also during and post-fire season
Post Wildland Fire Use info at the trailheads and access points	Posters and signs	District Ranger/Fire Management	Annually by June

Table 4.6-2: Fire Use Management

TASK	TOOLS	RESPONSIBILITY	TIMING
Keep appropriate Line Officer appraised of current and expected fire behavior and fire status	Meetings, phone calls, and briefings associated with analysis and management of WFU	Fire Use Manager (FUMA) Analysis Team	On-going during ignition, fire duration, and when significant changes occur
Make news media aware of Wildland Fire situation	Radio, Television and papers	Forest Supervisor, District Ranger, FUMA, and PIO	On-going during ignition, fire duration, and when significant changes occur
Post "Fire Caution" signs and information at trailheads and access points	Signs and posters	FUMA and District Ranger	Duration of Wildland Fire
Determine conditions that would dictate a fire closure. Coordinate with adjacent units and agencies	Meetings, phone calls, and field recons	Forest Supervisor, Forest FMO, FBA, and FUMA	Determined by current and expected conditions
Post fire closure signs at trailheads and access points. Contact permittees, general forest users, and other agencies	Signs, posters, phone calls and meetings	Forest Supervisor, District Ranger, PIO, and FUMA	When closure is put into effect

Keep National, Regional, and Local political contacts appraised of Wildland Fire status	Phone calls, meetings, briefing papers, and news releases	Regional Office, Forest Supervisor, District Ranger, PIO and FUMA	Based on National, Regional, and Local fire situation
Keep wilderness rangers, field personnel, and frontliners appraised of fire status	Phone calls and meetings	Forest Supervisor and District Ranger	Duration of Wildland Fire

Table 4.6-3: Post-Season Activities

TASK	TOOLS	RESPONSIBILITY	TIMING
Review information and education efforts involving Wildland Fire Use	Meetings	Forest Supervisor, Forest FMO, and District Rangers	Within three months of fire season ending
Evaluate and interpret post-fire monitoring and programmatic monitoring efforts and results	Meetings	Forest Supervisor, Forest FMO, and District Rangers	Within three months of fire season ending
Review C-T Fire Use Guidebook and Forest FMAP to ascertain how they were implemented and how they operated during the past fire season	Evaluation and Recommendation Report	Forest Supervisor	By the end of the calendar year
Contact general Forest users, permittees, and the public concerning this past seasons fire activity	Meetings, phone calls and news releases	District Rangers and PIO	By the end of the calendar year
Report motorized use and mechanized transport with wilderness to Forest Wilderness Program Manager	Phone calls, E-Mail	Dispatch	By the end of the calendar year

4.7 Monitoring & Evaluation

Monitoring and evaluation are important at several phases of the Wildland Fire Use program. These phases are **1: Implementation** (during the fire) **2: Effectiveness** (within 6 months) and **3: Validation**.

4.7.1 Implementation

Any ongoing WFU will be monitored. Fire size, chronology, management actions (e.g. flights, holding actions, and closures) and expenditures are all categories of information that must be tracked. The primary monitoring will be recorded in the Wildland Fire Implementation Plan (WFIP) and the Periodic Fire Assessment form. This information will be used for local/regional data base development and will be completed during the fire by the Fire Use Manager (FUMA). If multiple fires occur it is important to document each fire separately with such items as visibility impairments, days of trail closures, etc. All wildland fire use events will require either a complete or abbreviated ICS-209. An abbreviated ICS-209 is defined as Blocks 2 through 7, 9 through 11, 14, 15, and 44 through 47. Once a WFU reaches 100 acres in size a complete ICS-209 will be required (Great Basin Mob Guide).

4.7.2 Effectiveness

The wildland fire use observation record form (located in Stage III) should be initiated. This form identifies items that need to be captured for all fires Class B or larger and in some cases the evaluation may be helpful for Class A fires. This would indicate if there were problems with the process or if special circumstances related to ecological or social concerns are present (e.g. T&E species or concentrated public use).

The information for the WFU records would be collected on the Forest within six months of the fire. At a minimum the FUMA and Resource Advisor need to be involved. For fires that exceed 100 acres, an on-site interdisciplinary review will be conducted. This review will collect the following data:

- Fire Intensity Mapping (with Photo corroboration)
 - Fire Area (acres)
 - % Crown Fire (acres)
 - % Lethal underburn (acres)
 - % Non-lethal underburn (acres)
 - % Un-burned area within fire perimeter (acres)
 - Indicate vegetation or habitat type and fuel model

- Fuel Consumption - Give a narrative description of what is left or an estimate of percent consumed. This may help with estimate of smoke emissions and risk reduction. It is also important ecologically as it relates to moisture retention, organic material available for soil building, cover, and erosion.

- Extended Damage:
 - Trail system damage as a result of fire. (e.g. loss of trail structures, miles of trail clearing, etc.). Give number of years to restore trail and complete hazard reductions.
 - Other structures (e.g. signs, cabins).
 - Weed infestations within the burned area.
- Look at management actions that have the potential to impact the area characteristics such as use of aircraft, pumps, chainsaws, locations of helispots, spikecamps, and fire control lines. Determine if such actions impacted the area characteristics and if so what alternative course of action may be used in the future to reduce the effects of such use.
- Assess what opportunities were available for additional monitoring or research concerning fire effects on wildlife, soils, water and biodiversity. Were appropriate individuals and/or groups made aware of these opportunities? What was done to facilitate the initiation implementation of additional fire effects monitoring and research?
- A cost analysis should be accomplished for fires over 100 acres in size to determine the cost effectiveness of allowing these fires to burn. The cost comparison should be made using the WFSAs cost analysis versus the actual cost of the WFU project.
- Post-fire evaluations should be implemented at the District office in collaboration with the Supervisors office.

4.7.3 Validation

The primary objective of the WFU program in these subsections is to permit lightning caused fires to play, as nearly as possible, their natural ecological role. This objective cannot be measured in a quantitative way, but can be gauged in a relative sense.

A WFU in any subsection is only a part of a bigger picture; for this reason validation monitoring needs to take place. This overview by regional and forest staff will answer questions relating to broad scale reintroduction of fire into the landscape. This will be completed within six months of the fire.

Information in the fire records will include:

- Total number of starts in the subsection.
- % of fires in WFU status.
- % of fires in Confine, Contain status.
- Acres included in each of the previous categories.
- Agency acceptance.

- Days of restrictions of programs because of smoke, safety concerns, political reasons.
- Decision analysis, including all starts.
- Tracking of off-site smoke problems.

Analyze the rationale as to why some fires are managed as WFU and some are not. Analyze suppression responses to all fires to ascertain whether the chosen strategy was appropriate considering resource values, smoke concerns, public and personnel safety, and threats to administrative facilities and private property.

Determine through history and experience whether adjustments in procedures or guidelines need to be implemented to streamline or improve the effectiveness of the Wildland Fire Use Program.

Evaluate yearly what effect the WFU program has on fire personnel, public, and resource user safety.

Analyze public information requirements during a WFU and ascertain whether opportunities increased for the public and permittees to observe and interpret fires natural role in the ecosystem?

4.8 General Funding Requirements

The initial sighting of all fires within this fire management area will be financed with appropriated fire funds, the same as any other reported or detected ignition. A determination must be made after detection whether the ignition will be a wildland fire use (WFU) or a wildfire.

When it is determined that the fire will be managed as wildland fire use, dispatch will assign the fire a "G" code. This years Region 4 code is G4A3S6 and is for all ABC and D miscellaneous Fire Use events.

All personnel involved with the management of the WFU will charge to the "G" code using the same rules as for "P" codes. Those individuals that are funded from appropriated fire funds (Program Leadership and Production) will charge their base 8 time and all overtime and hazard pay to the "G" code. Those individuals that are not funded by appropriated fire dollars (including fuels funded persons) will charge all time associated with WFU management to the "G" code. If personnel are needed for the management of the WFU that are not located on the Forest, the normal dispatch ordering channels will be used to order those necessary positions.

Managing a WFU that is either inactive, small in size, or has a low probability of developing into a large fire, may only require occasional surveillance. It's anticipated these fires can most efficiently be observed during routine wildfire detection flights. Managing a WFU having more active fire behavior (minor surface spread, some individual tree torching) may also be observed during routine wildfire detection

reconnaissance. A proportionate amount of the total detection cost may be funded from the WFU fire number ("G" code), depending on the time involved and on a case-by-case basis.

If a special flight is deemed necessary or on-site observations are required (as could be expected for large and/or very active fires), the entire cost would be charged to the "G" code.

Any specialized equipment costs for managing the WFU (i.e. helicopters, IR flights, film development, etc.) will be charged to the assigned "G" code.

When prescriptive criteria are exceeded and the fire cannot be brought back into prescription, the fire will then be managed for protection considerations and appropriate suppression action will be taken. Dispatch will then change the fire number from a "G" code to a "P" code. All activities, equipment, tools, and extra personnel needed to perform the appropriate suppression response will be financed as any wildfire suppression by emergency fire suppression funds utilizing this "P" code.

V STAGE I

5.1 Stage I Analysis

(Completed Within Two Hours)

The following process is taken from the Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide. As policy contained within the Implementation Guide is modified, the guidebook will incorporate the resulting changes as they are released.

Federal Wildland Fire Management Policy requires a Wildland Fire Implementation Plan (WFIP) be initiated for all wildland fires. However, only the most complex fires being managed for resource benefits will require completion of all parts of a WFIP. The full WFIP consists of three distinct stages (Stage I, II, & III). Progressive development of these stages will occur for wildland fires managed for resource benefits or where initial attack is not the selected response. Most wildland fires will require completion of Stage I and Stage II information during their management. As resource benefits become more important, strategic decision factors, additional planning, and documentation requirements (additional WFIP stages) are involved. As each stage is prepared, it will be attached to previous stages until completed or management of the fire accomplishes the objectives. When the complete WFIP has been developed, it will be a highly specific operational management plan. Preparation of the WFIP may be accomplished through the forms provided in this plan or using the WFSA software program. It is recommended that units consider using the WFSA computer program as much of the required data can be assembled and pre loaded prior to managing a WFU. The program can be downloaded from: <http://www.fs.fed.us/fire/wfsa/>

The WFIP Stage I represents the Initial Fire Assessment step. It is necessary to establish the foundation information critical to manage the fire. It documents the current and predicted situation, documents all appropriate administrative information, and aids managers by providing them with decision criteria to make the initial decision whether to continue management of the fire for resource benefits or to take suppression action. It also provides the manager with a recommended response action. Stage I consists of two specific components, Fire Situation and the Initial Go/No-Go Decision Criteria Checklist.

Federal Wildland Fire Policy requires Stage I completion within 2 hours after fire confirmation. Time constraints on the initial fire assessment are imperative so appropriate ranges of management responses remain available to the fire manager.

5.1.1 Decision Authority

Decision authority to approve wildland fire use (WFU) lies with the Forest Supervisor for all complexity levels at Regional and National Preparedness Levels I, II, III, but may be delegated to a District Ranger if the District Ranger has the requisite fire management knowledge, experience, and staff available (FSM 5140.42). At National Preparedness Levels IV and V, the Regional Forester must approve all wildland fire use implementation (FSM

5140.32). Upon the approval of Stage I of a wildland fire implementation plan; the Forest Supervisor will notify the Regional Director of Fire and Aviation Management of the decision to initiate management of a wildland fire use event (FSM 5140.32). In order to ensure WFU management oversight, Districts will forward copies of the approved WFIP to the Fire Staff at the Supervisor's Office, who in turn forwards copies of the plans to the Regional Fire Use Specialist. When a fire is expected to burn on two or more agency jurisdictions, all affected Agency Administrators will approve the WFIP (GYACG 1998).

5.1.2 Fire Situation

The information needed for this step comes directly from the initial fire assessment or size-up. This information will be recorded on Form 5.1-1 and can be transferred, as needed to later planning stages or to the WFSA.

5.1.3 Decision Criteria Checklist (Initial Go/No-Go Decision)

The Decision Criteria Checklist provides the agency administrator/line officer with standard decision elements to determine if the current wildland fire meets criteria to be managed as WFU. These decision elements assess threats from the fire, potential effects of the fire, risk from the fire, effects of other fire activity on management capability, and allow the agency administrator to evaluate other, possibly unforeseen or unanticipated issues.

To complete the checklist (Form 5.1-2), the agency administrator evaluates the criteria, based on staff input, and determines the appropriate management response. A "yes" response to any of the decision elements indicates that management should consider a suppression-oriented response. All "no" answers to the decision elements indicate that the fire is a viable WFU candidate. Once the Decision Criteria Checklist is complete, managers can determine the appropriate management response. At the bottom of the Decision Criteria Checklist is a check box identifying the Recommended Response Action. Detailed explanations of the decision elements follow.

Is there a threat to life, property, or resources that cannot be mitigated?

Does the current fire have a high probability of impacting inholdings, permitted facilities, or administrative sites or structures?

Protection of human life is reaffirmed as the first priority in wildland fire management. Protection of property and natural and cultural resources is secondary to firefighter and public safety. In the event that resources are committed to a wildland fire, safety of the personnel becomes the first priority for management of that fire.

General areas where an ignition may pose a threat to property under specified conditions have been identified on the fire plan risk zone map. Site protection plans provide specific guidance regarding structure defensibility under various conditions and describe resource and equipment needs to protect structures. Document mitigating factors (e.g. wet season, late in

season, Normalized Difference Vegetation Index (NVDI) greenness, fuel loading and arrangement), which support wildland fire use in the risk zones.

Forest Service Officials shall avoid giving the agency the appearance of being prepared to serve as a structure fire suppression organization (FSM 5138.2). Forest Service personnel shall limit structural fire suppression actions to structure protection (FSM 5138.3).

Are potential effects on cultural or natural resources outside the range of acceptable effects?

This decision element relates to the objectives found in the plan introduction and the resources described in the Area Description sections. Potential outcomes will be closely related to burning conditions and fire behavior.

Are relative risk indicators and/or risk assessment results unacceptable to the appropriate Agency Administrator

This decision element involves risk assessment for the fire. Since the decision to suppress or manage the fire is time constrained (2-hour decision space), it may not be possible to complete a long-term assessment of risk. In lieu of the quantitative long-term risk assessment, a qualitative assessment process has been devised to provide the agency administrator with a quick and fairly comprehensive assessment of the "relative risk" of the fire. This indicator can be completed in a matter of minutes and will provide information for the agency administrator to answer the third decision element of the checklist. Refer to Figure 5.2-1 and section 5.2 for the Wildland Fire Relative Risk Rating Chart and a description on using the chart.

Is there other proximate fire activity that limits or precludes successful management of this fire?

This decision element gives an indication of other local and regional fire activity, commitments of unit and cooperator resources, and availability to fill special skill positions from local resources for this fire. If current fire activity precludes the ability to manage fire with adequate resources and skill mixtures, then the response to this element will be "Yes" and a suppression-oriented response is indicated.

The Regional Forester must approve all wildland fire use and prescribed implementation at National or Regional Preparedness Levels IV and V (FSM 5140.32).

Base approval of wildland fire use and prescribed fire implementation on an assessment of all fire activity in the Region, on-going or planned; risk assessments; and impacts to Geographical Area resources and to other fire activities which may be in competition for those resources. Include feedback from the Geographic Area Multi-agency Coordinating Group (MAC) at Regional Preparedness Level IV or the National Agency Representative and National MAC Group at National Preparedness Level V.

Are there other Agency Administrator issues that preclude wildland fire use?

The final decision element allows agency administrator discretion in the event there are other issues that were unknown to fire staff that need to be considered when making the decision to manage the fire for resource benefits.

Form 5.1-1: Fire Situation – Wildland Fire Implementation Plan – Stage 1

FIRE NAME:		FIRE NUMBER:		
Jurisdiction(s):				
Administrative Unit(s):				
FMP Unit(s):				
Geographic Area:				
Management Code:				
Start Date/Time:				
Discovery Date/Time:				
Current Date/Time:				
Current Size:				
Legal Description(s):	T.	R.	Sec.	Sub
Latitude:				
Longitude:				
County:				
Local Description:				
Cause:				
Fuel Models/Conditions				
Weather - Current				

Weather - Predicted	
Fire Behavior - Current	
Fire Behavior - Predicted	
Availability of Resources	

Form 5.1-2: Decision Criteria Checklist - Wildland Fire Implementation Plan - Stage I

Decision Element	YES	NO
Is there a threat to life, property, or resources that cannot be mitigated?		
Are potential effects on cultural and natural resources outside the range of acceptable effects?		
Are relative risk indicators and/or risk assessment results unacceptable to the appropriate Agency Administrator?		
Is there other proximate fire activity that limits or precludes successful management of this fire?		
Are there other Agency Administrator issues that preclude wildland fire use?		

The Decision Criteria Checklist is a process to assess whether or not the situation warrants continued wildland fire use implementation. A "YES" response to any element on the checklist indicates that the appropriate management response should be suppression-oriented.

Recommended Response Action (check appropriate box)

NO-GO (Initial attack/suppression action)	
GO (Other appropriate management response)	

Signature: _____ **Date:** _____

5.2 Wildland Fire Relative Risk Rating Chart

To obtain the relative risk rating, connect the top and bottom variables with a single line, and then connect the left and right variables with a single line. Determine the relative risk of this fire at the intersection of the two lines. Use the relative risk as input information for the Decision Criteria Checklist. ***Neither a high or low rating necessarily predisposes a "yes" or "no" answer. They provide an indication, but the line officer must still decide what area of risk is acceptable.***

To use this chart (Figure 5.2-1), assessments must be made of the four variables.

Fire Danger Indicator

The appropriate fire danger indicator can be derived from components or indexes from the National Fire Danger Rating System (NFDRS) outputs. The local pocket cards can be used to provide a rapid assessment for this variable.

Time of Season

The time of season is an indicator of the potential duration of newly ignited fires. The earlier the season, the longer potential duration of the fire exists.

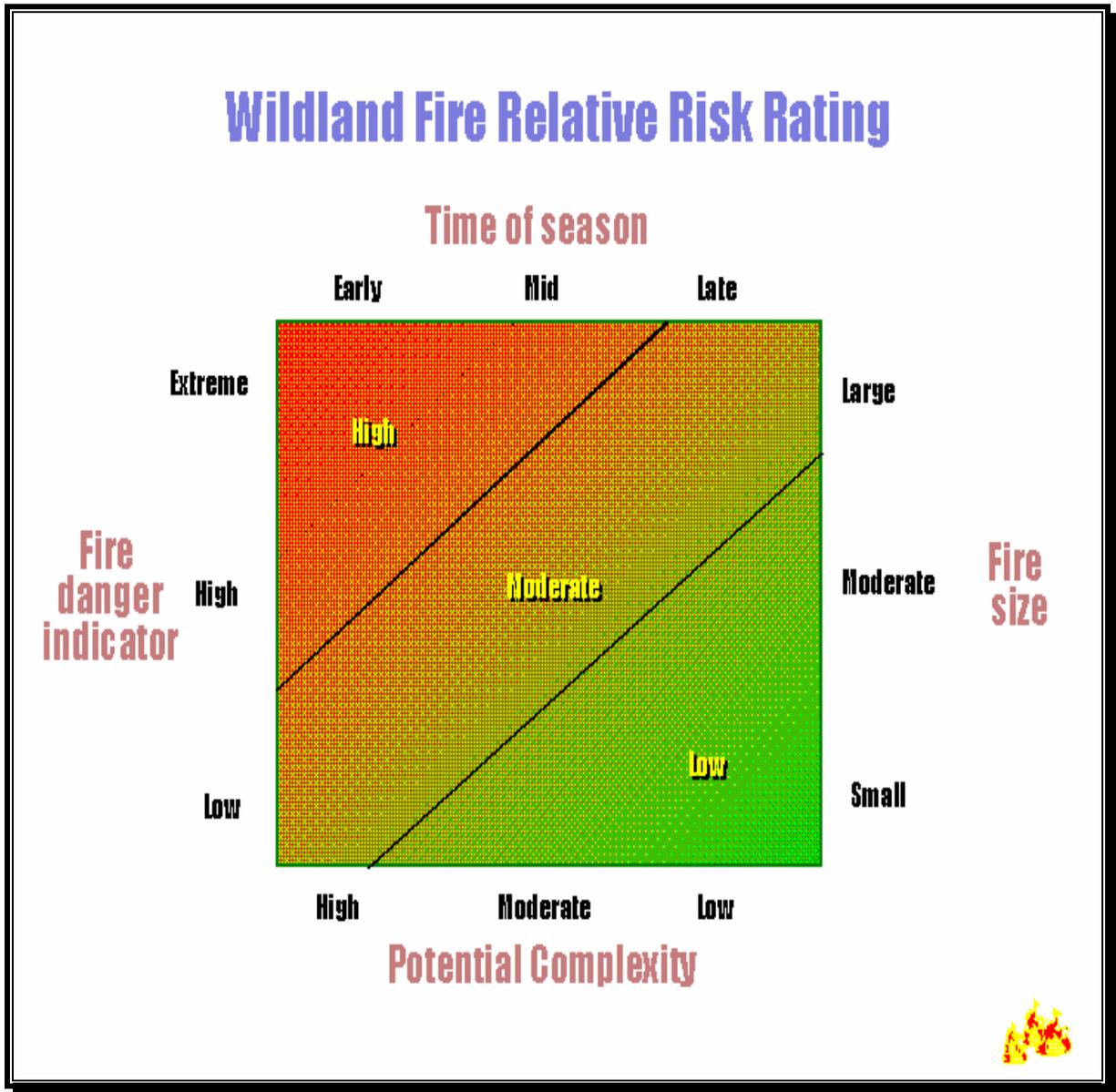
Fire Size

The fire size represents the current fire size and should be available from Fire Situation Information Form 5.1-1.

Potential Complexity

Potential Complexity is an estimate of complexity. If time and sufficient information are available to complete the full Wildland and Prescribed Fire Complexity Rating then the result of that analysis can provide this information. If sufficient time and information are not available, then complexity must be estimated by local fire staff and used for this variable. Refer to Chapter 6 (Stage II) for the Complexity Rating worksheet and rating guide.

Figure 5.2-1: Relative Risk Rating Chart



5.3 Fire Management Prescriptions

Natural ignitions will be allowed to burn under varying weather and fire behavior conditions. The ecological significance of large fires in the subsection is recognized, and naturally caused fires will be allowed, provided they meet the prescription criteria.

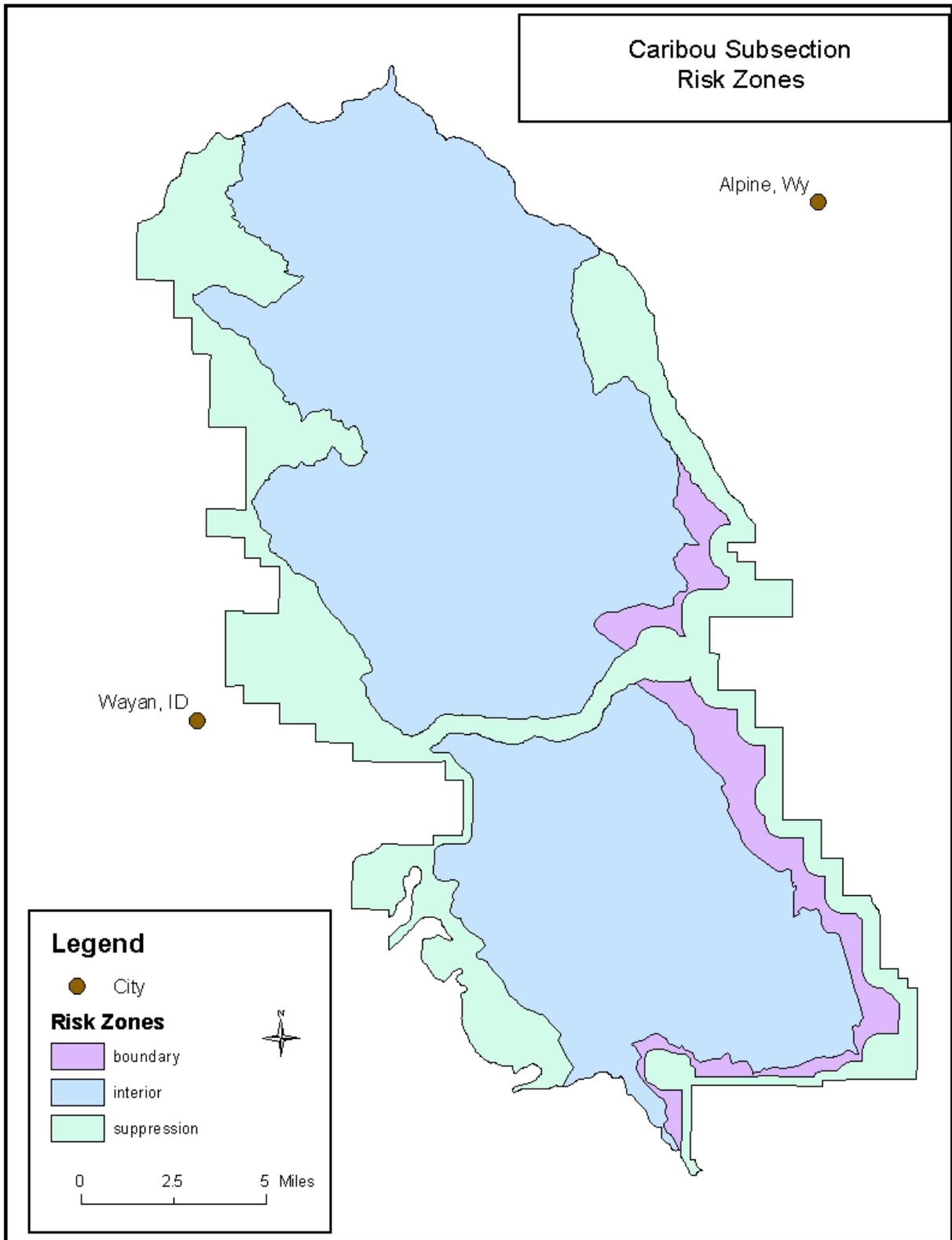
- A site specific Wildland Fire Implementation Plan will be prepared for each fire managed as WFU.
- National, Intermountain Region, and Greater Yellowstone Preparedness levels allow declaration of a WFU.
- The WFIP will be reviewed and revalidated each day by the appropriate line officer.
- Protection of life is assured. There will be adequate time to warn Forest visitors of potential threats from the fire, and there is no predicted threat to visitors and residents outside of the plan area.
- Protection of property is assured.
- Acceptable air quality predicted. Smoke modeling predictions combined with current smoke dispersal forecasts indicate that WFU will not cause significant impacts to neighboring communities and residents. In addition, many smoke complaints by neighboring communities will be considered a "smoke impact".
- Adequate resources are available to carry out the WFIP. Adequate resources include, but are not limited to a Fire Use Manager, Fire Monitors, Public Information Specialists, etc. to implement the plan properly.
- Fire behavior forecasts indicate that WFU will meet prescription elements of the WFIP.
- A risk assessment of impacts to Threatened and Endangered Species and their habitat shows no predicted long-term significant impacts to the recovery of any listed species.
- Social, political and economic assessments indicate no significant impact to neighboring communities and residents.
- Energy Release Component (ERC) is used as one of the initial evaluation criteria. ERC is calculated daily as part of the National Fire Danger Rating System (NFDRS), and is related to the available energy (BTU) per unit area (square foot) within the flaming front at the head of the fire. ERC is considered a "composite" fuel moisture index based on both living and dead fuel moisture. Actual ERC is compared to the historic fire weather charts for the representative weather station. Current ERC is

compared to the historic 90th, 97th, and normal percentile values; and compared to the selected years. A best estimate of the high ERC for the remaining fire season will be predicted based on long-term forecasts and climatological data. Fire behavior predictions will be adjusted to reflect the current and predicted ERC.

- Current drought index and large fuel moisture are assessed. Actual 1000 hour and Keetch-Byrum Drought Index are compared with historic records. Fire behavior predictions are adjusted to reflect current drought conditions. ERC, 1000 hour and Keetch-Byrum Drought Index historic weather charts are located in this chapter and will be updated as necessary.
- The land within the Caribou FMA has been categorized into three risk zones: *Suppression Zone, Boundary Zone and Interior Zone*. Fire managers analyzing values at risk, topography, fuel type, historic fire behavior/occurrence, and weather patterns determined the location and extent of these zones. Prescriptive criteria for each zone follows. Refer to Appendix B for the rationale of determining the risk zones.
 - **Suppression Zone:** All ignitions human or natural originating within the suppression zone will be suppressed utilizing the appropriate management response. Fires entering the suppression zone from either the boundary or interior zones will be managed with the appropriate management response.
 - **Boundary Zone:** A boundary zone has been established on the east and southerly boundary of the Caribou subsection between the suppression zone and the interior zone. Natural ignitions in the boundary zone before August 15th and >90th percentile 3-day average ERC are out of prescription and the appropriate management response would be implemented. All ignitions occurring after August 15th are within prescriptive limits for this zone as well as ignitions occurring prior to August 15th with ERCs < 90th percentile. If a WFU fire moves into this zone prior to August 15th and >90th percentile 3-day average ERC the appropriate management response would be taken.
 - **Interior Zone:** Natural ignitions occurring within the Interior zone should normally pass the initial decision criteria with regard to threat to life, property, or the management area boundary. Provided other criteria are met, ignitions in this area should proceed to the Stage II analysis.

In general, WFU events within the Caribou FMA will utilize the Diamond Flat weather station. All ERC data from this station utilize fuel model G. Exceptions to the default weather station can be made if conditions at the fire site are better reflected by some other station. The Diamond Flat RAWS was recently established in the Flat Valley area (established in 2000). While having very little historical weather information, this station will likely better represent conditions in the Caribou FMA. If another RAWS station is used document the rationale for station selection.

Figure 5.3-1: Caribou Subsection Risk Zones



5.4 Historic Fire Weather Charts

Since the Diamond Flat RAWS was established in 2000 and lacks long term weather data, the Moody RAWS with a longer collection of daily weather observations will also be displayed in this section. The following graphs were generated from weather data for the Diamond Flat (103904) and Moody (102301) weather stations. The graphs display the Energy Release Component, 1000-hour fuel moisture, and Keetch-Byrum Drought Index values starting in 2000 for the Diamond Flat and 1982 for Moody station. The elevation for this RAWS is 7500 ft for Diamond and 7040 ft for Moody.

The graphs were calculated with the program Firefamily Plus. This is a software system for summarizing and analyzing daily weather observations while computing fire danger indices based on the National Fire Danger Rating System (NFDRS). Three-day averages are used to eliminate noise in the data and smooth the line, which serves as the prescriptive limit. Averaging helps to eliminate being in prescription one day and out of prescription the next, particularly during the early and late season when fewer observations are recorded. When plotted, this method results in a graph, which reflects the curve of wetting and drying through the season. Current indices can then be compared with the historical data.

Historically, weather observations have stopped as the fire season ended. Late season weather observations are skewed toward dry years in which fire activity continued into this period. As a result, the late season portion of the graphs generally indicates drier conditions than actually occurred on average.

5.4.1 Energy Release Component

Energy Release Component is a measure of seasonal drying trends and includes both live and dead fuel moisture inputs. ERC is valuable for displaying fire risks and as an element of a fire prescription. Prescriptive criteria are based on fuel model G (dense conifer, heavy down dead), which, due to its greater 100-hour and 1000-hour time lag fuel components, better represents potential for extreme fire behavior in natural fuels. Fuel Model G's responsiveness to drying is not as rapid as fuel models C (open pine, grass understory) or H (short-needle conifer, sparse undergrowth).

The ERC graph developed for the Caribou-Targhee Fire Use Guidebook South represents current and historical weather conditions to provide a reference when evaluating fire management options.

The gray line on the graph is the 3-day average for the data. This line reflects the average of the ERC values for the day in question and the two previous days, for all available data. The maximum ERC line (blue) represents the highest ERC observed for that date. On the Moody figures, the final two lines are the 3-day average lines for the year 1993, a relatively wet year (dotted pink line), 1988 and 2000, relatively dry years (dashed blue line and dashed/dotted green lines respectively). These lines are provided as a basis for comparison. By comparing current ERC values to the 1988, 1993, and 2000 values, Fire managers can make some general expected fire behavior assumptions and ascertain trends in the current fire season.

Current year ERC can be added to the figures below in Firefamily software by plotting the three day average using a separate color on the chart. Weather files are currently updated and available biweekly by personnel at EIFC.

Figure 5.4-1: The ERC for the Moody RAWS

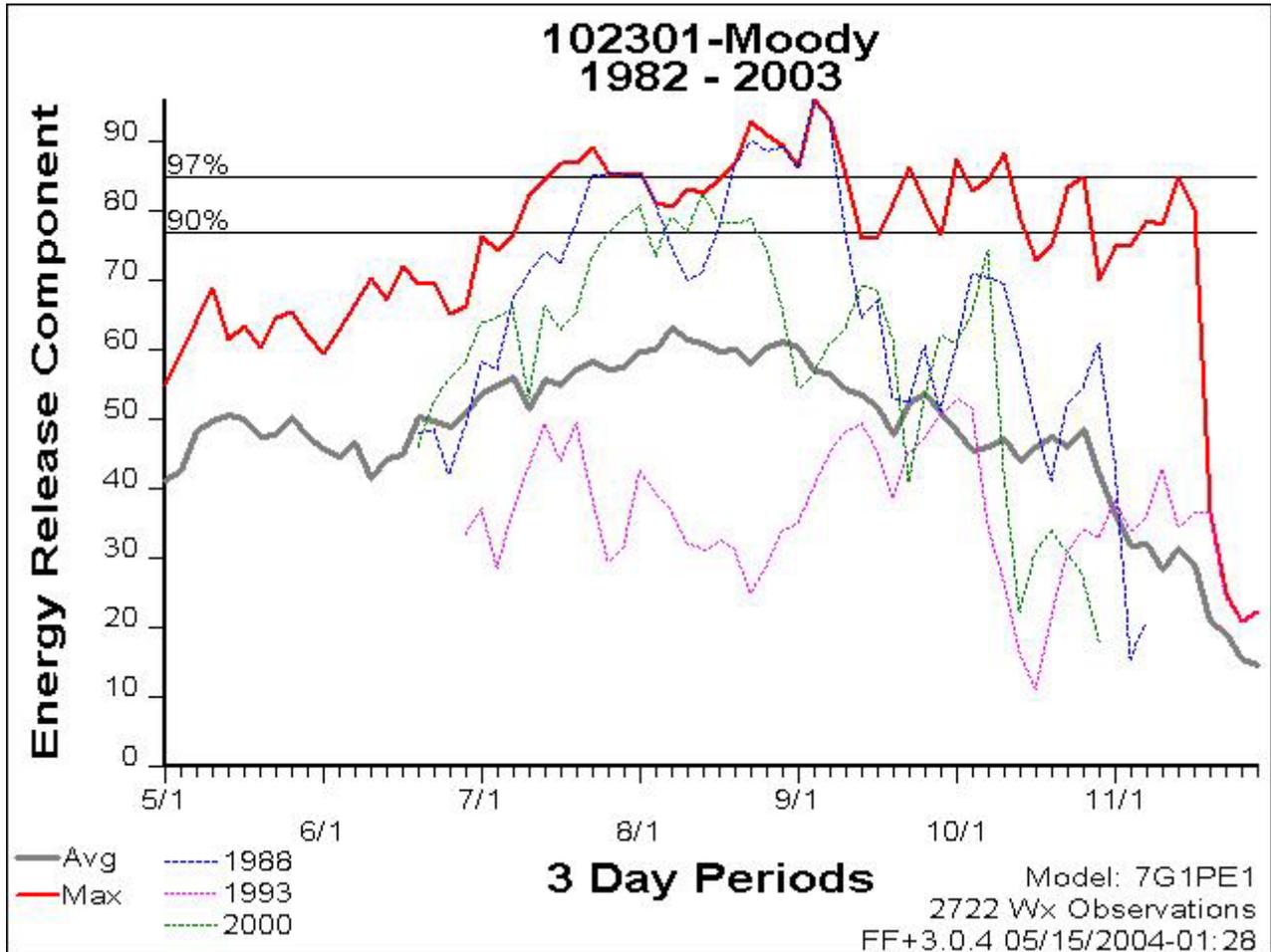
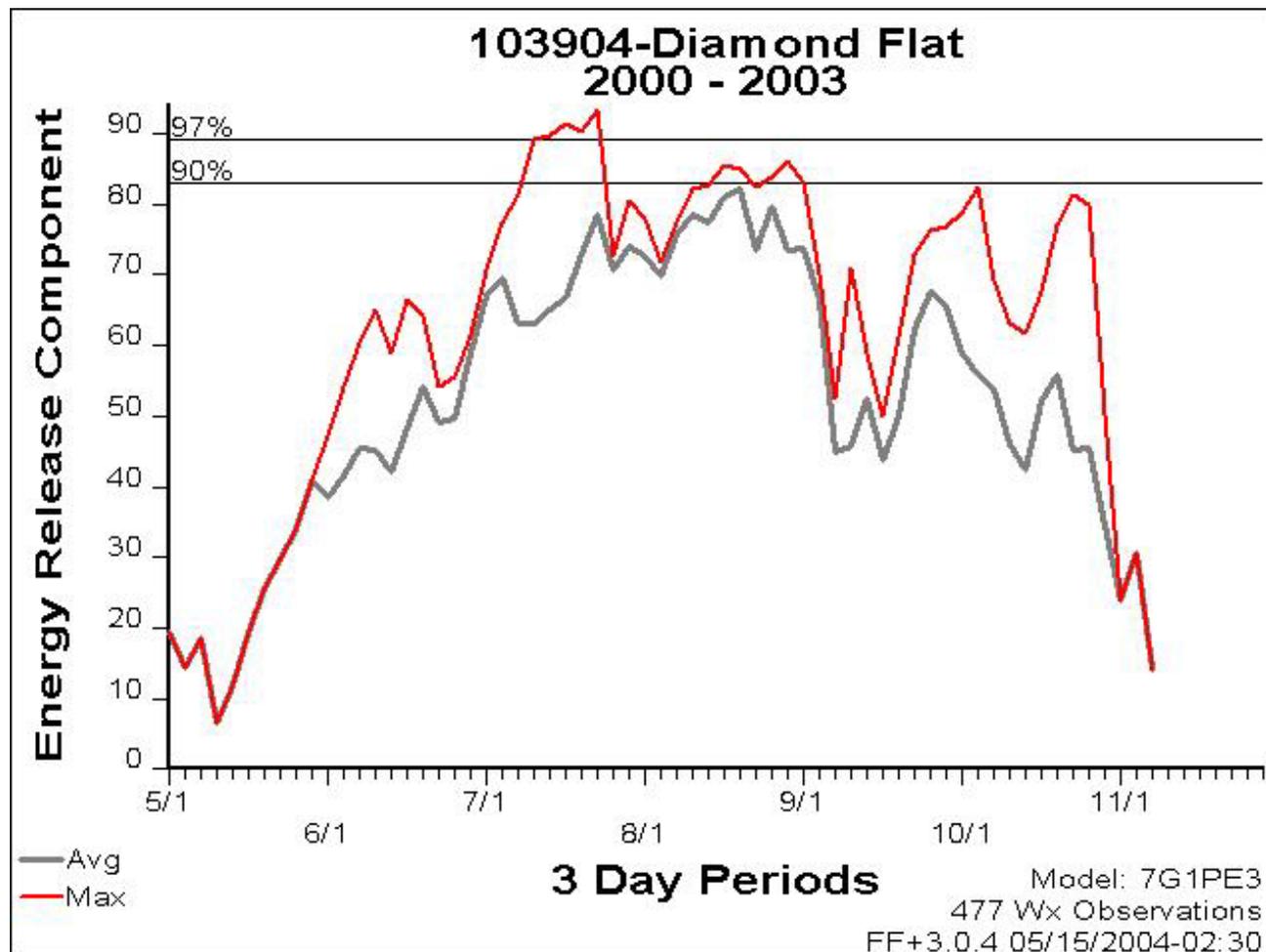


Figure 5.4-2: ERC for Diamond Flat RAWS



5.4.2 1000-Hour and Keetch-Byrum Drought Index

The 1000-hour graph is an indicator of long-term seasonal drying. Keetch-Byrum Drought Index (KBDI) represents the net effect of evapotranspiration and precipitation in producing moisture deficits in deep duff and the upper soil layers.

The graphs generated for 1000-hour fuel moisture and Keetch-Byrum Drought Index are similar to the above description for ERC. Both include (Moody RAWS only) an average line and the 1993 (wet year) and 1988 and 2000 (dry years) for historical comparison. The KBDI includes a maximum, 90th and 97th percentile plots, while the 1000-hour graph includes minimum and 10th (90th) and 3rd (97th) percentile.

Figure 5.4-3: 1000hr Fuel Moisture for the Moody RAWS

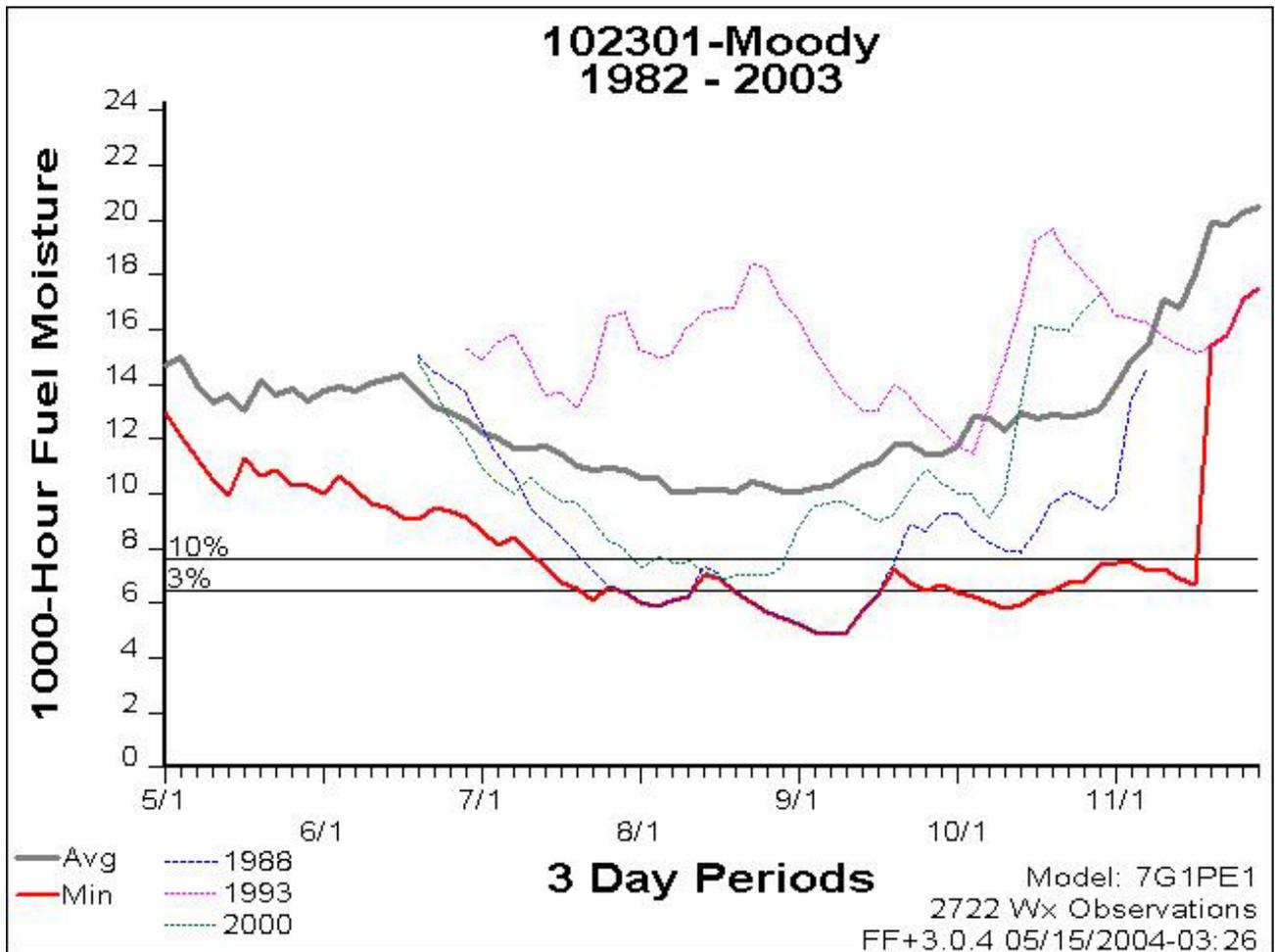


Figure 5.4-4: KBDI for the Moody RAWS

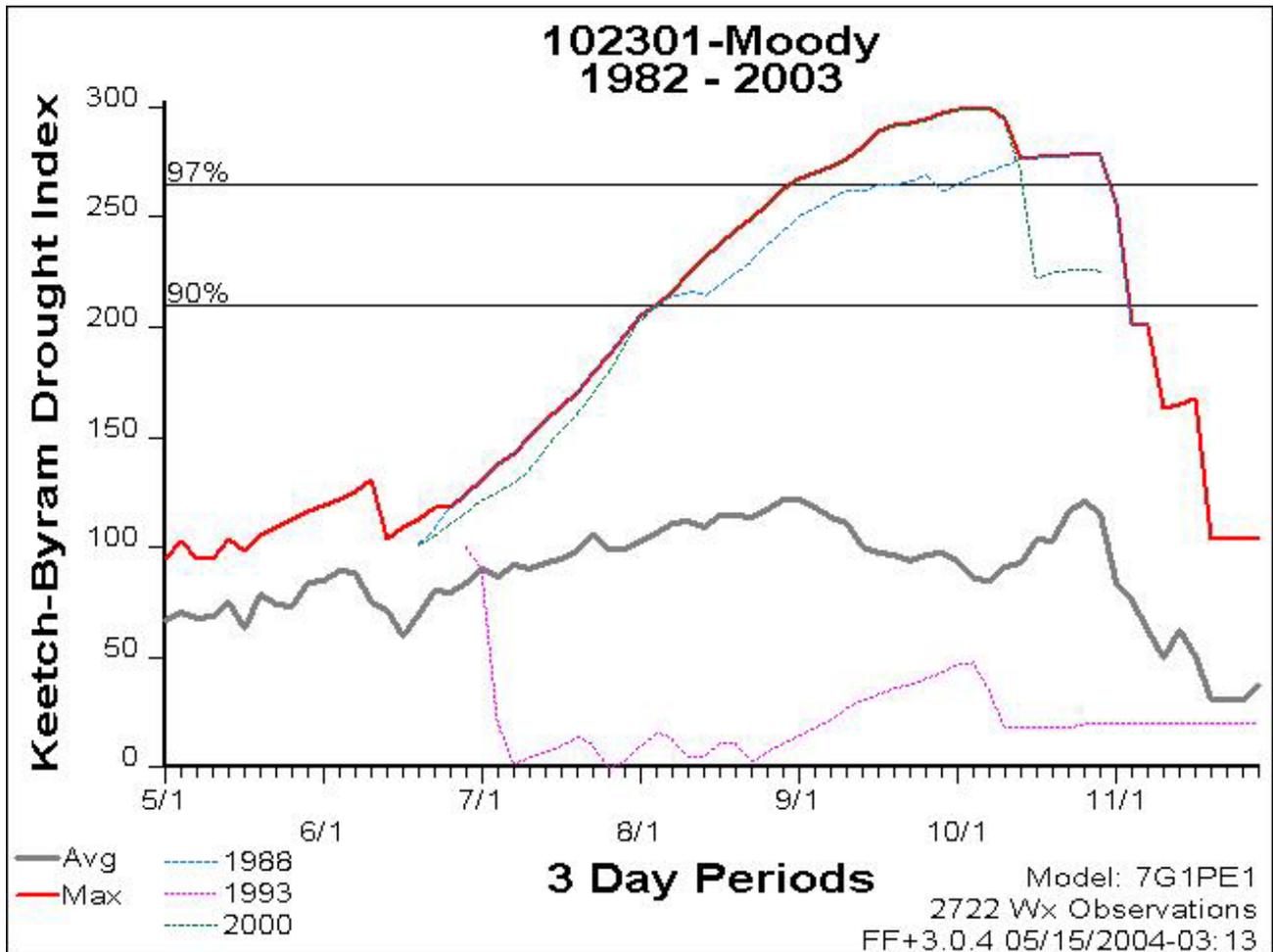


Figure 5.4-5: 1000hr for the Diamond Flat RAWS

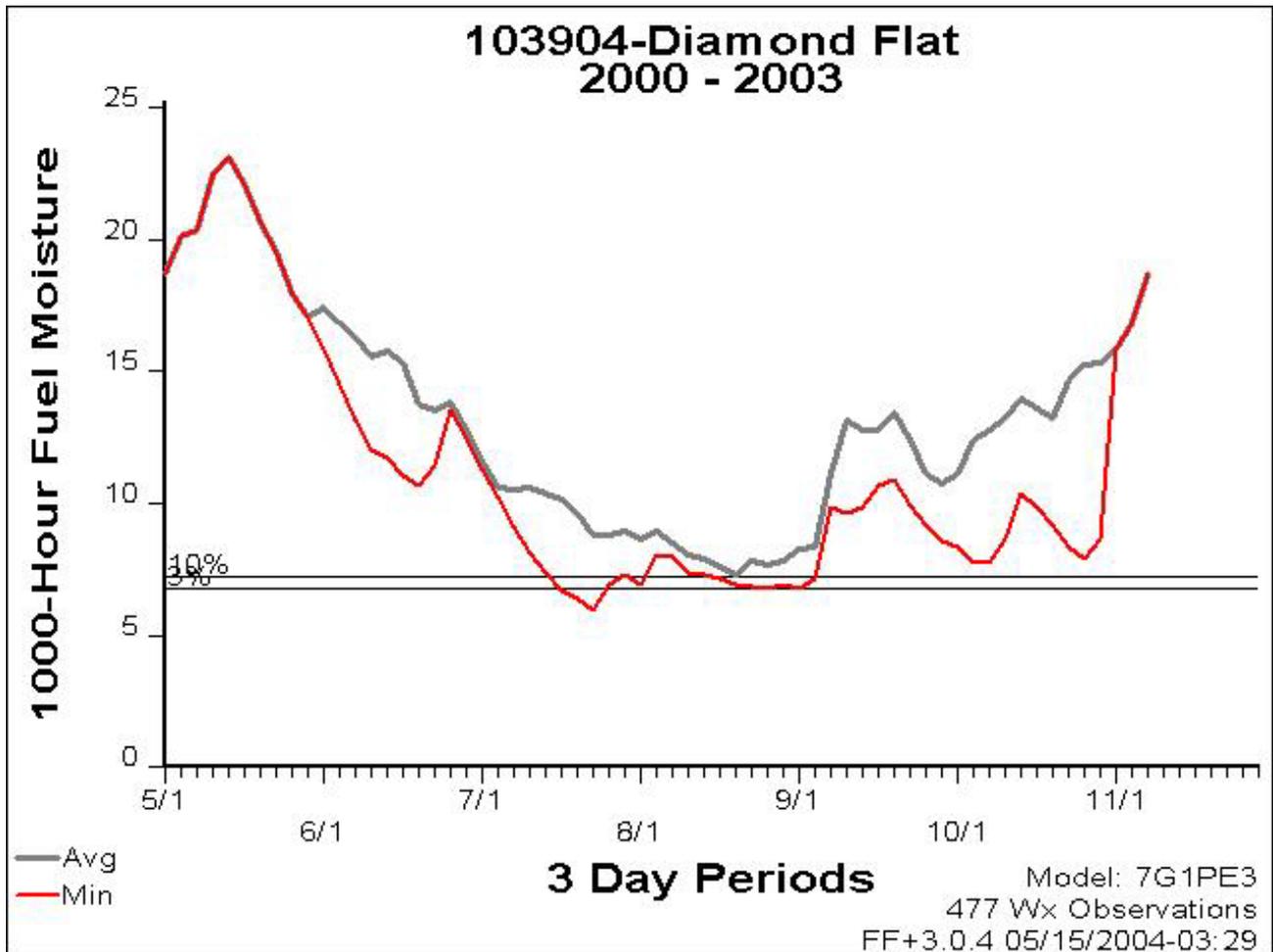
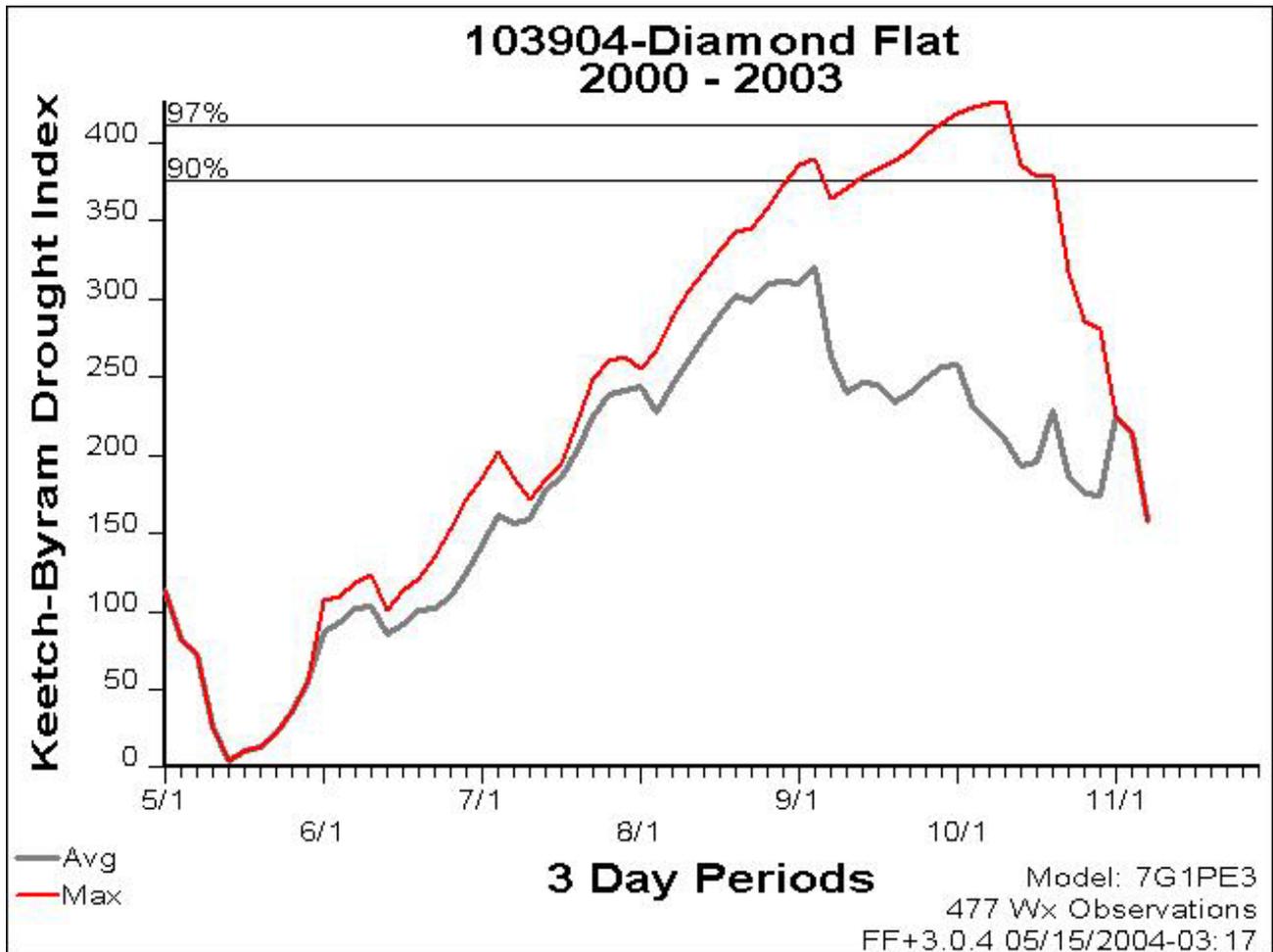


Figure 5.4-6: KBDI for the Diamond Flat RAWS



VI STAGE II

6.1 Stage II Analysis

(Completed within 24 hours after Stage I completion)

The Wildfire Implementation Plan, Short-Term Implementation Actions represents the initiation of management for resource benefits. This stage will provide managers and staff with information to initiate and continue management of the wildland fire for resource benefits. It includes validation of short-term implementation actions as a decision. This stage will provide predictions of where the fire may go, how intense it may burn, how fast it may spread, what the necessary short-term management actions are, what the full complexity is, and if long-term management actions (Stage III) needs to be addressed immediately.

6.2 Fire Behavior Predictions

(Estimated completion times <2hrs.)

Short-term fire behavior predictions are generated through the Fire Behavior Prediction System using the BEHAVE system to obtain predictions of fire intensity and rate of spread based on fuel model, wind, topography, and fuel moisture conditions. These predictions are important because they provide the following supportive information:

- Estimates of fire size and shape at a given time
- Models of management alternatives
- Determination of resource needs, production rates, and requirements
- Placement of resources
- Estimates of behavior under different weather conditions
- Estimates of fire intensity and duration inputs for First Order Fire Effects
- Modeling for contingency action planning
- Developing prescriptions through historical weather records
- Opportunity to calibrate and improve future predictions

6.3 Risk Assessment

(Estimated completion times <24hrs.)

Risk assessment may be quickly made for this stage by referring to the Wildland Fire Relative Risk Rating chart in section 5. If the unit has the capability to complete full long-term risk assessments using RERAP and FARSITE, it is strongly encouraged to begin assessment in preparation for Stage III.

6.4 Short-Term Implementation Actions

(Estimated completion times <24hrs.)

The Short-Term Implementation Action Form 6.4-1 will be completed to describe what the initial or immediate implementation actions will be. These actions can vary significantly, depending upon the specific circumstances of the particular fire. In cases

where the fire may be fuel-limited, surrounded by sparse fuels or natural barriers with only limited spread potential, monitoring may be specified as the necessary implementation action. In other cases, monitoring plus some form of limited mitigation actions may be necessary. Conversely, fuel types in which the fire is burning actively may require immediate actions to delay, check, or direct the spread of the fire.

In describing the Short-Term Implementation Actions, the following action items will be considered:

- Objectives and desired effects
- Safety considerations
- External concerns
- Environmental Concerns
- Threats
- Estimated costs

Form 6.4-1: Short-term Implementation Action form. (*Attach Stage I information*)

Action Items	Information specific to this fire
<p>Objectives and Desired Effects</p>	
<p>Safety Considerations</p>	
<p>External Concerns</p>	
<p>Environmental Concerns</p>	

Threats	
Short-Term Actions	
Estimated Costs	
Signature	
Title/Date	

6.5 Complexity Analysis

(Estimated completion times <5hrs.)

The Wildland Fire and Prescribed Fire Complexity Analysis were developed to evaluate the overall complexity of specific fires. This analysis incorporates an assigned numeric complexity value for specific complexity elements that are weighted in their contribution to overall complexity. The weighted value is multiplied by the numeric value to provide a total element rating. The total values are added to generate the summed complexity numeric value. Breakpoint values are provided for low, moderate, and high complexity. Form 6.5-1 is used to determine overall complexity, and the numerical guide displayed in **Table 6.5-1** facilitates determination of numeric values.

Complexity elements that have been established include:

- Safety
- Threats to boundaries
- Fuels and fire Behavior
- Objectives
- Management organization
- Improvements to be protected
- Natural, cultural, and social values to be protected
- Air quality values to be protected
- Logistics
- Political concerns
- Tactical concerns
- Interagency coordination

Form 6.5-1: Wildland and Prescribed Fire Complexity Rating Worksheet

Complexity Elements	Weighting Factor	Complexity Value	Total Points
Safety	5		
Threats to boundaries	5		
Fuels and fire behavior	5		
Objectives	4		
Management organization	4		
Improvements	3		
Natural, cultural, social values	3		
Air quality values	3		
Logistics	3		
Political concerns	2		
Tactical operations	2		
Interagency coordination	1		
Total complexity points			<input type="text"/>
Complexity Rating (circle)	L	M	H
Complexity Value Breakpoints:	Low Moderate High	40 - 90 91 - 140 141 - 200	

The Wildland and Prescribed Fire Complexity Analysis provides a method to assess the complexity of both wildland and prescribed fires. The analysis incorporates an assigned numeric rating complexity value for specific complexity elements that are weighted in their contribution to overall complexity. The weighted value is multiplied times the numeric rating value to provide a value for that item. Then all values are added to generate the total complexity value. Breakpoint values are provided for low, moderate, and high complexity values. The complexity analysis worksheet is accompanied by a guide to numeric values for each complexity element shown, provided on the following pages.

Table 6.5-1: Wildland and Prescribed Fire Complexity Rating Worksheet Numeric Rating Guide

Complexity Element	Guide to Numeric Rating		
	1	3	5
Safety	<ul style="list-style-type: none"> • Safety issues are easily identifiable and mitigated 	<ul style="list-style-type: none"> • Number of significant issues have been identified • All safety hazards have been identified on the LCES worksheet and mitigated 	<ul style="list-style-type: none"> • SOF1 or SOF2 required • Complex safety issues
Threats to Boundaries	<ul style="list-style-type: none"> • Low threat to boundaries • POI < 50% • Boundaries naturally defensible 	<ul style="list-style-type: none"> • Moderate threat to boundaries • 50 < POI < 70% • Moderate risk of slopover or spot fires • Boundaries need mitigation actions for support to strengthen fuel breaks, lines, ect. 	<ul style="list-style-type: none"> • High threat to boundaries • POI > 70% • High risk of slopover or spot fires • Mitigation actions necessary to compensate for continuous fuels
Fuels/Fire Behavior	<ul style="list-style-type: none"> • Low variability in slope & aspect • Weather uniform and predictable • Surface fuels (grass, needles) only • Grass/shrub, or early seral forest communities • Short duration fire • No drought indicated 	<ul style="list-style-type: none"> • Moderate variability in slope & aspect • Weather variable but predictable • Ladder fuels and torching • Fuel types/loads variable • Dense, tall shrub or mid seral forest communities • Moderate duration fire • Drought index indicates normal conditions to moderate drought; expected to worsen 	<ul style="list-style-type: none"> • High variability in slope & aspect • Weather variable and difficult to predict • Extreme fire behavior • Fuel types/loads highly variable • Late seral forest communities or long return interval fire regimes • Altered fire regime, hazardous fuel/stand density conditions • Potential long duration fire • Drought index indicates severe drought; expected to continue

Complexity Element	Guide to Numeric Rating		
	1	3	5
Political Concerns	<ul style="list-style-type: none"> • No impact on neighbors or visitors • No controversy • No media interest 	<ul style="list-style-type: none"> • Some impact on neighbors or visitors • Some controversy, but mitigated • Press release issued, but no media activity during operations 	<ul style="list-style-type: none"> • High impact on neighbors or visitors • High internal or external interest and concern • Media present during operations
Tactical Operations	<ul style="list-style-type: none"> • No ignition or simple ignition patterns • Single ignition method used • Holding requirements minimal 	<ul style="list-style-type: none"> • Multiple firing methods and/or sequences • Use of specialized ignition methods (i.e. terra-torch, Premo Mark III) • Resources required for up to one week • Holding actions to check, direct, or delay fire spread 	<ul style="list-style-type: none"> • Complex firing patterns highly dependant upon local conditions • Simultaneous use of multiple firing methods and/or sequences • Simultaneous ground and aerial ignition • Use of heli-torch • Resources required for over 1 week • Multiple mitigation actions at variable temporal and spatial points identified. Success of actions critical to accomplishments of objectives • Aerial support for mitigation actions desirable/necessary
Interagency Coordination	<ul style="list-style-type: none"> • Cooperators not involved in operations • No concerns 	<ul style="list-style-type: none"> • Simple joint-jurisdiction fires • Some competition for resources • Some concerns 	<ul style="list-style-type: none"> • Complex multi-jurisdictional fires • High competition for resources • High concerns

6.6 Stage III Need Assessment Chart

(Estimated completion times <5hrs.)

The assessment chart provides the agency administrator and staff with an aid to determine if the Stage III, Long-Term Assessment and Implementation Actions, need to be developed, documented, and implemented immediately, or if the fire can be managed through the established short-term implementation actions until indicated otherwise by the Periodic Fire Assessment. For many wildland fires, fuel continuity and spread potential will be low. In other situations, environmental conditions will preclude active burning and spread. For instances such as these, immediate completion of Stage III of the WFIP will not need to occur until specified thresholds are reached. These thresholds are assessed subjectively on this chart and/or through the continued assessment provided by the Periodic Fire Assessment. Refer to Figure 6.6-1.

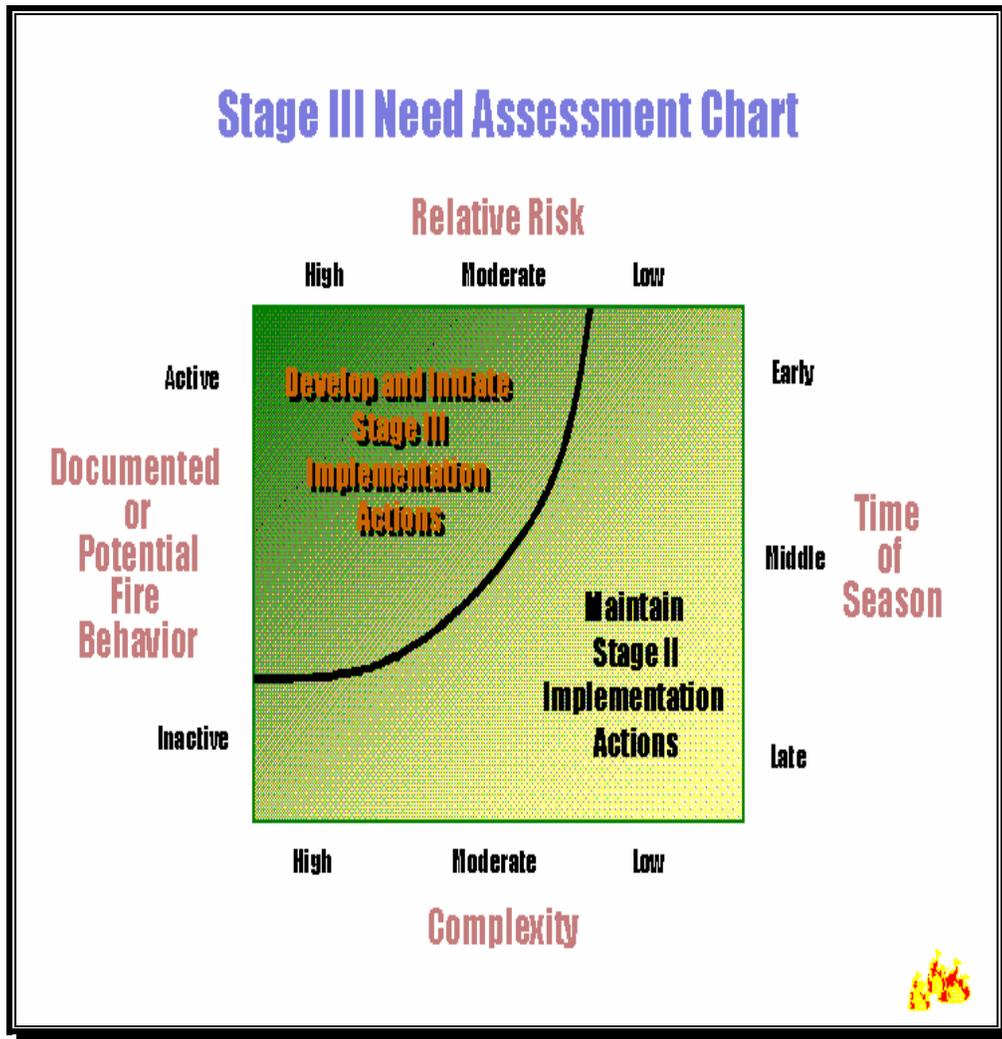
The following Stage III Need Assessment Chart will help agency administrators prioritize planning needs for multiple fires and ensure that those having the greatest need will receive the necessary planning in response to management capability and time constraints. To complete the assessment, local fire staff evaluates the criteria and determines if the fire warrants completion of the long-term implementation actions (Stage III) at this time or if Stage II implementation directions are adequate. If Stage II actions continue, the Periodic Fire Assessment (refer to Chapter 8) will determine if and when Stage III will be initiated.

The chart evaluates the following variables:

- Complexity - determined from the Wildland and Prescribed Fire Complexity Rating, including the review of objectives and type of fire behavior need to meet those objectives (i.e., low intensity, surface fire, high intensity, stand replacement burning etc.).
- Time of the Fire Season - this element is important in determining whether or not Stage III should be completed immediately. Past observations and archived fire danger interactions can be used to identify contributing factors and time periods when specific fuel types exhibit a transition between benign and severe fire behavior. The factors contributing to this transition become important determinants of risk associated with this fuel type. For example, fuel types where fire occurs infrequently but at high intensities, factors of drought, high Energy Release Components (ERC), low relative humidities, high temperatures, and high winds combine to result in sustained high-intensity crown fire activity. The importance of this information lies in the identification of the current point in time and its proximity to the fire behavior transition point. *Where the affected administrative unit is temporally in relation to this threshold is a critical consideration determining the level of WFIP planning and implementation to be done. The closer to this point, the greater the need to prepare WFIP Stage III.*

- Relative Risk - can be determined from the Wildland Fire Relative Risk Rating chart or from long-term risk assessment procedures such as RERAP or FARSITE.
- Fire Behavior - determined from short-term and long-term fire behavior predictions and forecasts.

Figure 6.6-1: Stage III Need Assessment Chart



VII STAGE III

7.1 Stage III: Long-Term Assessment and Implementation Actions

(Maximum completion timeframe: Within 24 hours after Stage II or Periodic Assessment indicates need).

This stage represents completion of long-term implementation actions necessary to successfully accomplish the desired objectives. The WFIP has been progressively developed throughout all stages, and this represents the final stage. It presents tactical implementation information and will be attached to information developed in previous stages.

This stage will provide a definition of Maximum Manageable Area (MMA), the geographic area the fire will be allowed to burn within. It will consider long-term fire behavior predictions and risk assessment. It will assess the probability of the fire reaching the MMA perimeter, and will document those operational management actions necessary to manage long duration fires that will need mitigating measures to strengthen and defend the MMA.

Stage III, as presented in the standard format (Stage III: Long-Term Implementation Actions Form 7.5-1) consists of the information shown below:

- Objectives and Risk Assessment considerations
- Natural and Cultural Resource Objectives and Constraints/Considerations
- MMA Definition and Maps
- Fire Projections and Maps
- Weather Season/Drought Discussion and Prognosis
- Long-Term Risk Assessment
- Probability of Success
- Threats
 - Threats to MMA
 - Threats to Public Use and Firefighter Safety
 - Smoke Dispersion and Effects
 - Other
- Monitoring Actions
- Holding Actions
- Resources Needed to Manage the Fire
- Estimated Costs of Long-Term Implementation Actions
- Contingency Actions
- Information Plan
- Post-Burn Evaluation
- Signatures and Date

Completion of this stage is triggered by either the Stage III Need Assessment Chart or through the Periodic Fire Assessment, Part 2 Stage III Need Assessment Chart. Once Stage III has been completed, the WFIP is completely developed.

7.2 MMA Decision Authority

As previously stated, decision authority to approve wildland fire use lies with the Forest Supervisor, but may be delegated to a District Ranger, but only if the District Ranger has the requisite fire management knowledge, experience, and staff available (FSM 5140.42). In order to ensure management oversight, the Districts will forward copies of approved WFIPs to the Fire Staff at the Supervisor's Office, who in turn forwards copies of the plans to the Regional Fire Use Specialist. When a fire is expected to burn on two or more agency jurisdictions, all affected Agency Administrators will approve the WFIP (GYACG 2000).

MMA's that cross administrative and/or jurisdictional boundaries require approval from all the affected units. The following outlines the necessary approval authority:

- MMA's exclusively on one Ranger District: Forest Supervisor or delegated District Ranger has WFU approval authority.
- MMA's on two Ranger Districts of the same forest: Forest Supervisor or both District Rangers who have been delegated the authority for WFU approval. The District where the WFU originated will be responsible for management, unless otherwise agreed upon in writing.
- MMA's on two or more forests: Each Forest Supervisor or all District Rangers who have been delegated the authority for WFU approval. The District recommending the WFU approval shall take the lead in developing the WFIP, with input from the other affected Districts. The lead district will be responsible for management of the WFU unless otherwise agreed to in writing.

7.3 MMA Determination

All wildland fires being managed under appropriate management response strategies where WFIP planning has progressed to Stage III will have a defined MMA. This is to ensure that there is clear and common understanding of the authorized size and location of the fire among agency administrators and cooperators.

The MMA delineates the ultimate acceptable size for a given wildland fire. It provides for closely directed fire management application in a specific area defined by resource objectives, fire and weather prescription elements, social needs, political considerations, and management capability.

All MMAs will:

- Be based on predetermined MMAs or be developed as part of a WFIP, Stage III.
- Be fixed and not subject to change once established and approved by the agency administrator
- Serve as definition of firm limits of management capability to accommodate the social, political, and resource impacts for all wildland fire managed for resource benefits or other management considerations.

Note - The Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide provides the following direction: *The complex nature of fires and land management precludes the ability of managers to write a set of guidelines or directions that cover all the potential situations. Past experiences and recognition of potential future situations require the following considerations regarding the rigid nature of drawing lines on a map.*

There may be isolated cases where formal implementation of the Wildland Fire Situation Analysis (WFSA) process is not prudent or logical because a wildland fire exceeded the MMA. In these situations, experience may indicate that the MMA will be exceeded by the wildland fire on a very small or non-threatening scale. Management options in this situation include:

- *Constraining the fire spread to the small or non-threatening overrun of the original acceptable area using the available holding forces, and identified in the WFIP, Stage II or III. This must be accomplished within two burning periods.*
- *In the case of relatively long-range spotting, treat an isolated spot generated by this natural process as a separate fire. Determine the appropriate management response for this new ignition separately from the original wildland fire, based on criteria specific to the new ignition.*

If the agency administrator and FUMA determine that the fire cannot continue to be managed within the original approved boundary, a WFSA will be utilized to analyze new strategic and tactical alternatives, and to select an appropriate management response.

7.4 MMA Determination with Multiple Fires

The following information clarifying MMA implementation was taken from the USDA Forest Service Fire and Aviation web page <http://www.fs.fed.us/fire/fireuse/rxfire/5140/index.html>

Recent interpretations and applications of the Federal Fire Policy have produced some conflicting opinions. Those conflicts - regarding determinations made in completing the Wildland Fire Implementation Plan (WFIP) for wildland fire decisions that do not result in direct control actions - are complex and require additional direction. There continues to be discussion regarding the intent and definition of the Maximum Manageable Area (MMA). Reference the definition provided in the Implementation Guide, FSM 5140.32, Chapter 3, page 12. Those needing additional interpretation of this term and its application are encouraged to contact [Dave Bunnell](#).

The MMA applies to a single wildland fire or complex of fires, depending on the direction and provisions contained in the WFIP Stage III analysis. The MMA represents the quantification of management capability and the potential to accommodate fire activity within a specific area defined by the MMA perimeter. Completion of this step provides a measure for success in evaluating the effectiveness of the WFIP. Success of the WFIP will be measured by the management of the fire within planned limits and management capability described in Stage III. Unsuccessful management will be measured as the inability to manage the fire under planned strategies, tactics, and limits described in Stage III analysis.

Fire activity is the combination of actual fire movement and the associated actions taken to influence the spread and intensity of the fire. Management capability may be defined as the combination of both direct actions required to manage fire perimeters and associated actions required to manage recreation use, personnel safety, notification, logistics, operations, coordination, and protection of resources (such as bridges, camps, cabins) if required.

The examples below provide guidance for several situations that have a high probability of occurring. The intent of these interpretations is to provide consistency in process application, reduce confusion over policy, and increase efficiency. The Implementation Guide provides policy for the process of developing the Wildland Fire Implementation Plan, and three distinct analysis stages are outlined. The examples provided below are negotiated decisions provided to increase specific interpretation of various scenarios that have been encountered. It is recognized that many others exist and will eventually be encountered for which no inclusive direction or guidance provided. It is suggested that using your best judgment based on experience and close adherence to what is provided by policy and interpretive example will produce positive results.

7.4.1 Basic Implementation Determinations

The following situations have occurred in past implementations involving wildland fire use and confinement suppression fires. These examples are based on the primary assumption that the Stage III analysis step has been completed or that the appropriate Line Officer (Agency Administrator) determines the need for Stage III analysis for any fire or group of fires.

Determination 1:

For wildland fire occurring in areas approved in FMP for wildland fire use, and for a wildland fire determined by the Stage I analysis of the WFIP to meet resource management objectives:

1. Develop an MMA in association with Stage III portions of the WFIP; or
2. Utilize a predetermined (predesignated) MMA identified in the FMP at Stage III

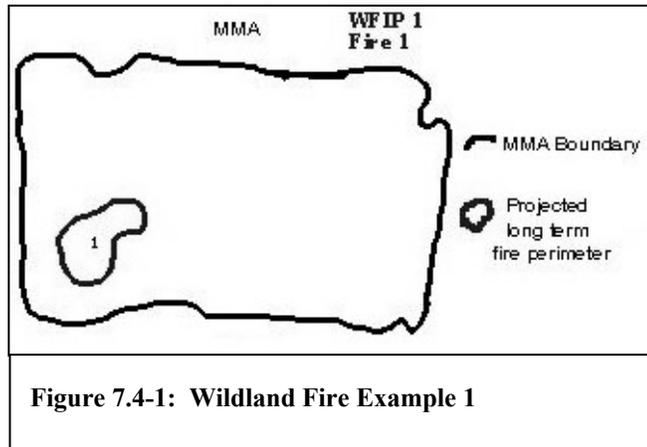


Figure 7.4-1: Wildland Fire Example 1

NOTE: Develop an MMA and Stage III WFIP for a wildland fire where the appropriate management response is determined to be confinement suppression strategy and the fire activity has not exceeded initial attack or management capability. See Figure 7.4-1.

Determination 2:

Additional wildland fires may ignite within a predesignated MMA or within an MMA developed by WFIP Stage III. Additional wildland fire(s) occurring within an MMA designated in an approved Stage III WFIP will be evaluated individually to determine whether they meet the operational constraints described in the original WFIP on a spatial, temporal, and management capability basis. If

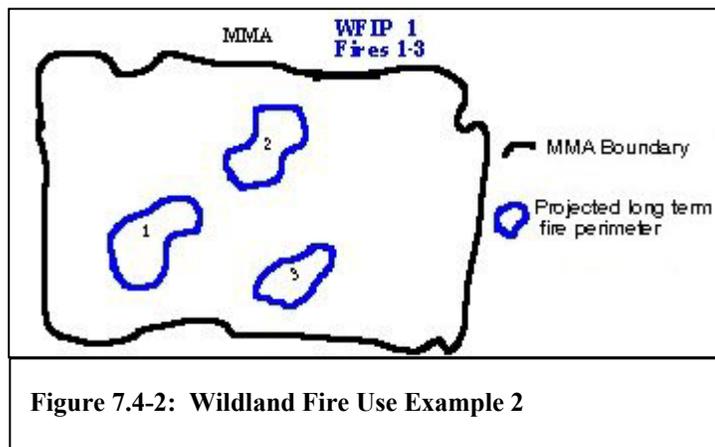


Figure 7.4-2: Wildland Fire Use Example 2

so, the additional fire(s) can be included in the original WFIP. If not, a separate WFIP

must be developed (Determination 3) or an appropriate response suppression must be implemented. See Figure 7.4-2.

NOTE: When two or more wildland fires are managed under the same strategy, they may be reported individually or in combination as a complex of fires.

Determination 3:

For a new wildland fire use fire(s) occurring within an established MMA under an approved Stage III WFIP that is determined not to meet the management constraints of the existing WFIP. If an existing WFIP cannot accommodate a new fire determined in Stage I for wildland fire use, and due to a changed condition in spatial, temporal, management capability, or fuels and weather conditions, the fire is identified to be managed for wildland fire use through the **Go / No Go** decision process of Stage I analysis:

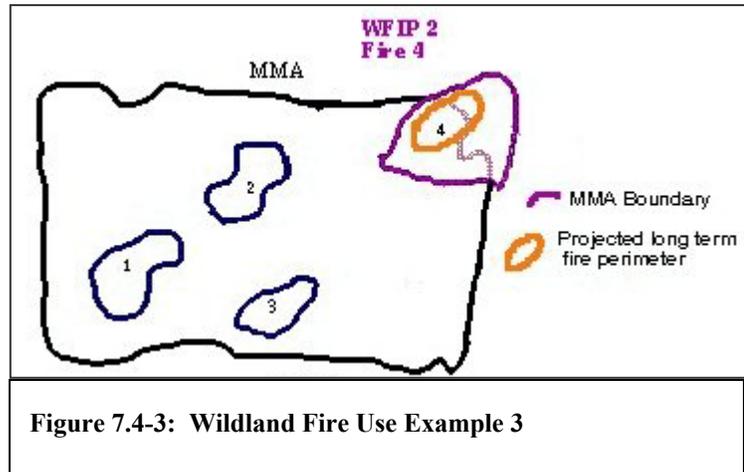


Figure 7.4-3: Wildland Fire Use Example 3

to be managed for wildland fire use through the **Go / No Go** decision process of Stage I analysis:

1. Develop a new Stage II and Stage III WFIP, when needed.
2. Develop a new MMA to accommodate fire activity anticipated by the new fire and associated management actions within the MMA boundaries. See Figure 7.4-3.

NOTE: If wildland fires 1, 2, and/or 3 exceed the original MMA 1 boundary and cannot be returned to planned management capability as described in WFIP 1, then it (they) will be measured as unsuccessful and a WFSA will be used to determine the appropriate suppression response.

Determination 4:

When a new fire starts within an existing MMA and is determined not to be manageable for resource benefits in the Stage I analysis portion of the WFIP, select and implement an appropriate management response by either:

1. Initiating aggressive initial attack actions; or
2. Initiating a WFSA process when current or projected initial attack or management capability is exceeded; or
3. Prepare to implement Stage II and III of the WFIP if the decision is made to implement a confinement suppression strategy (Reference Determination 1 Note).



Figure 7.4-4: Wildland Fire Use Example 4

If a wildland fire within a MMA, managed under an approved WFIP is anticipated to exceed, or exceeds the MMA boundary and cannot be returned to planned management capability (re: Implementation Guide, page 50), then the fire(s) will have exceeded planned limits and a WFSA must be prepared that:

1. Selects and directs the implementation of an appropriate suppression alternative; and
2. Requires that the total fire(s) area be managed under the selected suppression alternative. See Figure 7.4-4.

Determination 5:

(Multiple Fire Program Caution)

When a new fire start will potentially (based on most severe fire spread calculations) overlap two or more existing MMA's, follow directions provided in Determination 3. Caution is advised because of the added complexities of managing multiple wildland fires occurring in overlapping MMA's; these situations can quickly exceed management capabilities. Refer to Figure 7.4-5.

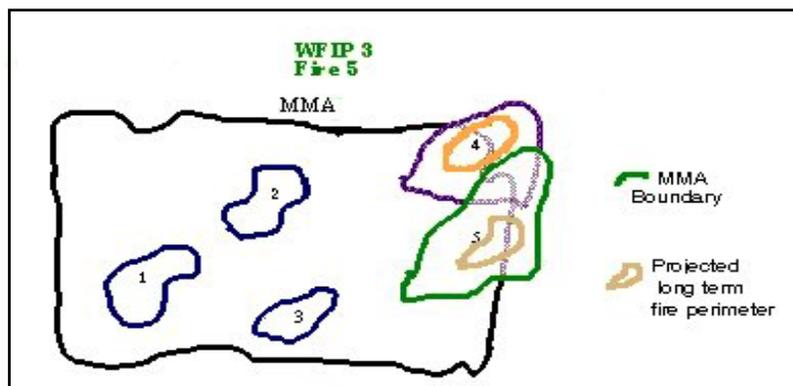


Figure 7.4-5: Wildland Fire Use Example 5

NOTE: The complexity of managing fire offered in this example is difficult to quantify. Experience in past management actions has occasionally produced confusion and poor results. In many cases, quick suppression actions may resolve these potentially confusing management scenarios.

Trade-offs in resource benefits potentially gained by the new wildland fire use may be offset by potential losses incurred if one or more of the previous wildland fire use fires are converted to a suppression response due to management focus on the newly designated wildland fire use and MMA.

Determination 6:

Multiple fires occurring in a short timeframe (24 hours) where no current approved MMA and WFIP (Stage III) currently exist. When multiple ignitions occur in a short timeframe, they may be managed under a single WFIP, or each fire may be analyzed individually.

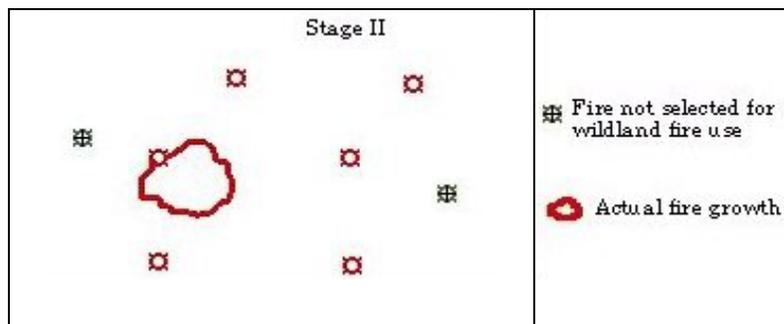


Figure 7.4-6: Wildland Fire Use Example 6

Each individual fire start must be evaluated through Stage I analysis to determine the appropriate management response. All fires selected for wildland fire use objectives may be managed together as a complex of fires. All fires in the complex may be managed together, regardless of strategy selected. Reporting requirements for the complex will be the same as for individual fires. Periodic assessment will determine which fire(s) require Stage II or Stage III analysis or WFSA preparation. See Figure 7.4-6.

An MMA must be developed in conjunction with these fires at the time they are summarized as a complex and/or when any single fire in the complex requires Stage III analysis.

The WFIP will then be fully developed with specific management actions determined for each individual fire area. See Figure 7.4-7.

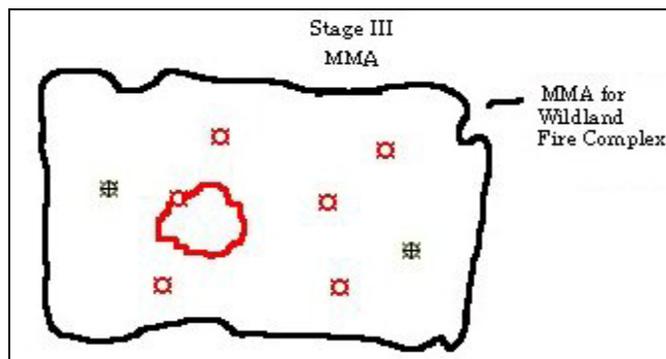


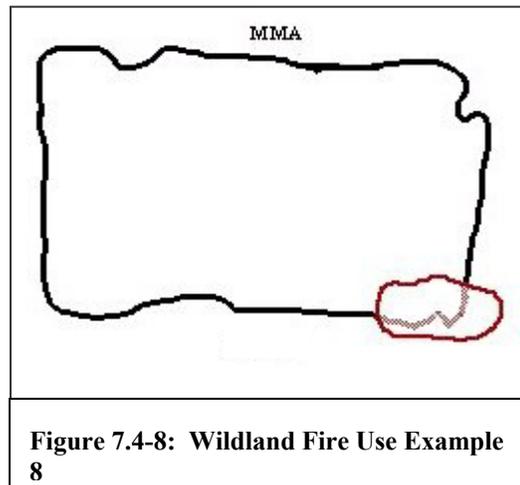
Figure 7.4-7: Wildland Fire Use Example 7

Determination 7:

Recent program analysis suggests that some unsuccessful wildland fire use management actions can be categorized by the following situations. In an effort to minimize unsuccessful wildland fire use decisions, the following situations should be closely evaluated and trade-offs identified in the Go / No Go phase of the Stage I analysis.

1. When a new wildland fire(s) is located in close proximity to an area not planned for wildland fire use.
2. When the designated MMA is defined to accommodate fire activity that is substantially below historic fire sizes documented in the affected fire regime(s).
 1. Analyze the risk of unsuccessful management actions and actions required for mitigation as well as costs and loss estimates.
 2. Develop and describe potential results of successful and unsuccessful actions.

The intent here is not to eliminate boundary fires from achieving resource benefits. The direction is to ensure that line officer recognition is clear and apparent regarding the risk of implementation. Refer to Figure 7.4-8.



7.5 Long-Term Risk Assessment

Decision-making associated with managing wildland fire for resource benefits may have critical impacts. It is important to make the highest quality informed decisions as possible. The importance of risk assessment is reinforced through the Guiding Principles from the Federal Wildland Fire Policy and Program Review Recommendations that state "*sound risk management is a foundation for all fire management activities,*" and "*Fire management plans are based on the best available science.*"

Arrays of decision-making support aids are available to address and assess wildland and prescribed fire risk. These technological tools are appropriate when a specific tool can clarify the uncertainty, reduce the risk of undesirable outcomes, and facilitate a reasoned decision. The choice of technique will depend on the information needed and the state of knowledge regarding the subject area. Techniques may range from a subjective, descriptive comparison to a very objective, in-depth analysis using sophisticated mathematical models.

Specific assessment products useful in evaluating risk include:

- Probability of the fire reaching the MMA perimeter.
- Probability of a season-ending weather event.
- Indications of where the fire may spread, or total area that may be burned by the fire.
- How fast the fire will spread.
- How soon the fire may reach critical sites or the MMA perimeter.
- Predictions of fire intensity and severity.
- Fuel conditions, moisture conditions, departure from average conditions.
- Fire dynamics - indicators of potential rapid escalation in fire behavior.
- Analysis of fire behavior indicators, comparison with 10 years statistics.
- Fire history reviews, records of past fires in terms of area burned and type of fires (i.e. low-moderate intensity, surface fire, stand replacement, etc.).
- Predictions of the range of potential fire effects on natural and cultural resources.
- Probability of adverse smoke effects and dispersal.

There are no mandatory requirements for risk assessment. However, an assessment must be completed that yields the above information ensuring an informed decision-making process. Units are encouraged to acquire and utilize available long-term risk assessment techniques, such as the Rare Event Risk Assessment Process (RERAP), and the Fire Area Simulator (FARSITE). As the quality of risk assessment increases, the quality of subsequent decisions and probability of achieving the desirable outcomes increases. Units should strive for an informed and reasoned decision making process.

7.5.1 Long-Term Implementation Actions Form

Form 7.5-1: Stage III: Long-Term Implementation Actions. Attach Stage I and Stage II information. Update and/or revise Stage I and Stage II as necessary.

<i>Objectives and Risk Assessment Considerations</i>	
<p>Natural and Cultural Resource Objectives and Constraints/ Considerations</p>	
<i>Maximum Manageable Area (MMA)</i>	
<p>Acres in MMA: (Attach Map of MMA)</p>	
<i>Fire Projections, Weather, and Map</i>	
<p>Projected Fire Area Under <u>Expected</u> Weather Conditions</p>	For date:
	Area:
<p>Projected Fire Area Under Experienced <u>Severe</u> Weather Conditions</p>	For date:
	Area:

<p>Weather Season/Drought: Discussion and Prognosis</p>	
<p><i>Long-Term Risk Assessment and Map (if applicable)</i></p>	
<p>Risk Assessment: (Describe techniques utilized and outputs, include maps as appropriate)</p>	
<p><i>Probability of Success</i></p>	
<p>Describe Probability of Success</p>	

<i>Threats</i>	
Threats to MMA	
Threats to Public Use and Firefighter Safety	
Smoke Dispersion and Effect	
Other	

<i>Monitoring Actions</i>	
<p>Describe Monitoring Actions, Frequency, Duration</p>	
<i>Holding Actions</i>	
<p>Describe Holding Actions, Management Action Points that initiate these actions, and Key to Map if necessary</p>	

<i>Resources Needed To Manage the Fire</i>	
Describe resources necessary to accomplish ignition, holding, and monitoring	
<i>Estimated Costs of Managing the Fire</i>	
Describe costs in terms of resources needed, projected duration, etc.	
<i>Contingency Plans</i>	
Describe Contingency actions, management action points that initiate them, resources needed, etc.	

Information Plan	
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<p style="text-align: center;">Describe Information Plan, Contacts, Responsibilities, etc.</p>	
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<i>Post-burn Evaluation</i>	
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<p style="text-align: center;">Describe post-burn evaluation procedures, resource requirements, costs, duration, etc.</p>	
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<i>Signatures</i>		
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<p style="text-align: center;">Include signatures/dates for preparing, approving, and any concurring individuals</p>	Signatures	Date

7.5.2 Wildland Fire Use Record Form

Form 7.5-2: Wildland Fire Use Record.

Fire Name:	Ignition Date:
District Name:	Ignition Location:
HQ #:	Cover Type at ignition point:
Fire Size:	Recorder/Report Date:
Fire Suppression action taken (none, confine, contain, control):	

<i>Acres Burned by Severity Class and Cover Type</i>					
Vegetative Cover Type	Crown Fire	Lethal Underburn	Nonlethal Underburn	Acres Unburned	Total Acres
Total acres burned in each severity class					

Give a narrative description of fire characteristics observed. For example, was the fire predominately a backing or head fire? What were the predominate surface fuels affecting fire growth? Did the fire leave patches of unburned vegetation? What weather factors accounted for most of fire growth? Indicate whether ground or aerial observations were the source of this information.

Map daily growth and final perimeter on a 7.5" topo. map. Quad Name

Photos of the following provide useful information: burning behavior in ground fuels, panoramic shots showing burning pattern, cover types burned. Please describe type, number, and location of available photos.

7.5.3 Wildland Fire Use Observation Form

Form 7.5-3: Wildland Fire Use Observation Record.

Fire Name:		Fire#:	
Date:		Time:	
Management Unit:			
Current Fire Size:			
Observation Location:			

*Attach current map indicating active fire perimeter, spread direction, and other significant information.

Vegetation type/fuel model (of area burned)
Fire Activity (narrative description of fire spread, perimeter growth, & relative intensity)
Projected fire activity (based on forecasted weather and changes in topography and fuels)
Smoke dispersal, including both plume trajectory and subsidence movement
Special concerns/threats and/or recommendations

*Attach weather observation/fire behavior observations with location/elevation - there are several tally sheets to record these observations. Units may prefer to use their own.

Prepared by: Name, title, qualification		Date	
Reviewed by: Name, title, qualification		Date	

VIII PERIODIC FIRE ASSESSMENT

(Completed on assigned frequency)

This step provides a process to evaluate the continued capability of the local unit to manage the fire for resource benefits, and to determine if the fire is escalating in complexity and operational needs. If the assessment shows inadequate capability to continue to manage the fire, an indication is given to proceed to development of a Wildland Fire Situation Analysis (WFSA). If complexity and operational needs are escalating, the assessment indicates the need to fully define an MMA, develop long-term fire behavior predictions, conduct long-term risk assessment procedures, and define detailed long-term implementation actions (WFIP-Stage III).

This assessment is completed as frequently as specified by the local unit (depending on fire activity and predicted weather conditions) but no longer than every 1-5 days in shrub/timber types and daily in grass fuel types

When multiple fires are being assessed daily, additive effects of all fires must be considered along with assessment of each individual fire. Management oversight during the Periodic Fire Assessment phase is maintained through dialog with SO and RO staff regarding resource availability and by forwarding copies of updated assessments and projections to the next higher level.

8.1 Decision Authority

A Periodic Fire Assessment record is kept with each WFIP and is signed by the approving line officer or designee. The decision authority for the Periodic Fire Assessment lies with the Forest Supervisor. This responsibility may also be delegated in writing to an acting line officer, a deputy or assistant line officer, a primary staff individual with fire credentials, or fire use manager. If or when fire conditions or complexity levels escalate, Periodic Fire Assessment authority will automatically and immediately revert to the agency administrator who made the initial delegation of authority. Delegation of authority for Periodic Fire Assessment to an individual other than the line officer should be considered the exception rather than the rule. The delegation of authority letter will specifically state the validation criteria authority and when that authority will be re-delegated back to the line officer.

In the event that the MMA crosses administrative or jurisdictional boundaries, for efficiency of coordination, a single line officer or designee will be appointed as the responsible official for signing the Periodic Fire Assessment. This should be determined through consultation with all involved administrative units and/or agencies, and documented in the development of the WFIP.

The Periodic Fire Assessment consists of three components:

- Part 1: Re-Validation Checklist
- Part 2: Stage III Need Assessment Chart
- Part 3: Signature Table

8.2 Part 1: Re-Validation Checklist

The Re-Validation Checklist consists of the same decision elements present in the Decision Criteria Checklist. At this point in the implementation process, it is necessary to periodically review management capability. In order to accomplish this, an additional decision element has been added, “*Do expected management needs for this fire exceed known capabilities*”, for the Re-Validation Checklist. Refer to Form 8.5-1.

For Part 1, local fire staff review and complete the assessment checklist. Once this checklist is completed, it does not have to be redone, but it must be reviewed and documented on the signature table. The local unit must note the valid dates and the frequency of the assessment on the form. The valid dates include those dates where the assessment remains valid, as indicated by the dated signature. When any decision elements change from a "No" to a "Yes", a new checklist must be completed for documentation purposes. The assessment frequency is how often the assessment will be reviewed.

When completing Part 1 of the checklist, a "Yes" answer to one or more of the decision elements indicates inability to continue management of the fire within defined limits of the current response. This triggers preparation of the WFSA to guide selection of a different appropriate management response alternative.

8.3 Part 2: Stage III Need Assessment

The Stage III Need Assessment is a process that validates the level of implementation actions. It must be completed periodically for all wildland fires managed for resource benefits where Stage III has not yet been completed. This portion of the Periodic Fire Assessment utilizes the Stage III Need Assessment Chart (See Need Assessment Chart Figure 8.5-1). If the chart indicates that WFIP Stage III is needed, it must be prepared within 24 hours.

8.4 Part 3: Signature Table

Once completed, this assessment will be periodically reviewed for validity. The signature table provides documentation for this process. Refer to Form 8.5-2.

8.5 Periodic Fire Assessment Instructions

The Periodic Fire Assessment is a process to prevent the unchecked escalation of an individual fire situation or the total fire management situation without evaluation and adequate planning. Part 1 evaluates the capability to continue implementation of the appropriate management response to this fire for achieving resource benefits for a specified period following the assessment i.e., the next 24 hour period or longer, depending upon fire weather and fire behavior forecasts or other anticipated conditions. This assessment will be completed and periodically reviewed for validity. The *assessment frequency* box on Form 8.5-2 specifies the frequency of assessing the particular fire. Assessment frequencies will be set by the local unit but are recommended to range from every day to every ten days depending upon the fuel type and geographic location of the fire. Recommendations for minimum assessment frequency include the following: grass fuel types = daily; shrub and timber types = every 1-5 days; Alaska = every 1-10 days.

The *valid date(s)* box on Form 8.5-2 is inclusive of those dates where the assessment remains valid, as indicated by the dated signature. When any decision elements change from **no** to **yes**, a new checklist must be completed for documentation purposes. A **yes** response to any element of the Part 1 checklist indicates that the selected appropriate management response is not accomplishing or will not accomplish desired objectives and that a new strategic alternative should be developed immediately through the use of a Wildland Fire Situation Analysis (WFSA).

The Periodic Fire Assessment, Part 2 is a process that must be completed periodically for all wildland fires managed for resource benefits that do not have a completed WFIP Stage III. For isolated ignitions in fuel-limited situations, Part 2 does not have to be completed. When completing Part 2 of this checklist, if the chart indicates that WFIP Stage III is needed, it must be prepared within 24 hours.

When units establish monitoring and assessment frequency, it may be appropriate to develop a **step-up** system based on fire size or levels of fire activity. Then, as an individual fire gets larger or becomes more active, the monitoring and assessment frequency can correspondingly increase. Conversely, as fire activity lessens and fire size increases become less common, monitoring and assessment can **step-down** and become less frequent. Units must identify standards and rationale for establishing assessment frequency, especially **step-up** and **step-down** actions. If fire size is used as a determinant, then past burning rates should be used to formulate standards. If fire activity is used, then levels of burning (acres per day, ect.) must be definable and justifiable.

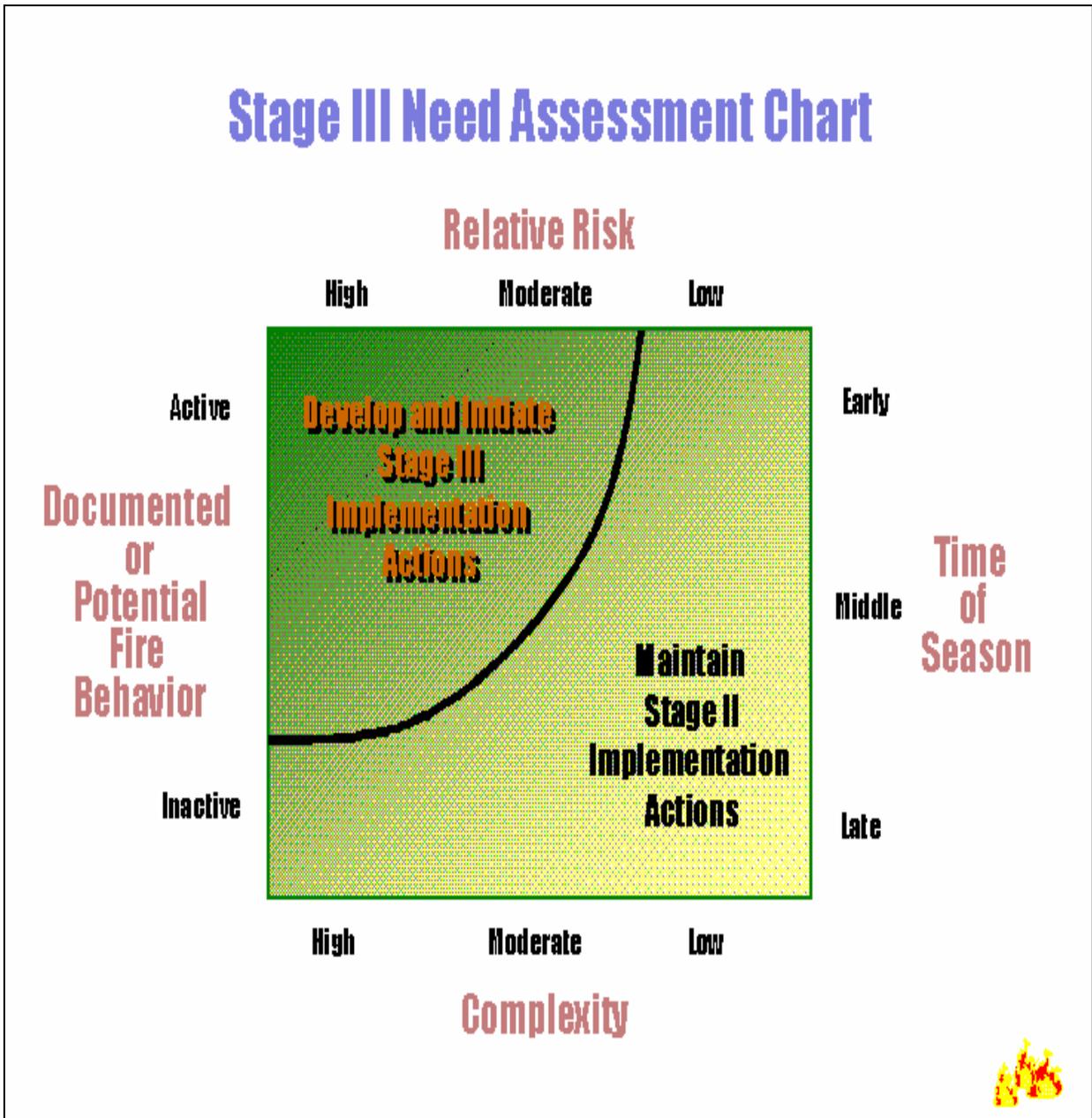
8.5.1 Re-Validation Checklist

Form 8.5-1: Periodic Fire Assessment - Part 1: Re-Validation Checklist. The Agency Administrator or delegated individual must sign the Signature Page on the specified assessment frequency.

<i>Decision Element</i>	<i>Yes</i>	<i>No</i>
Is there a threat to life, property, or that resources that cannot be mitigated?		
Are potential effects on cultural and natural resources outside the range of acceptable effects?		
Are relative risk indicators and/or risk assessment results unacceptable to the appropriate Agency Administrator?		
Is there other proximate fire activity that limits or precludes successful management of this fire?		
Are there other Agency Administrator issues that preclude wildland fire use?		
Do expected management needs for this fire exceed known capabilities?		

8.5.2 Need Assessment Chart

Figure 8.5-1: Periodic Fire Assessment - Part 2: Stage III Need Assessment



IX REFERENCES and GLOSSARY

9.1 List of References

- Anderson, Hal E.
1982. Aids to Determining Fuel Models for estimating Fire Behavior. General Technical Report INT-122. Ogden, UT: USDA, Forest Service, Intermountain Forest and Range Experiment Station.
- Barrett, S. W. 1994. [Unpublished report]. "Fire regimes of the Caribou National Forest, southeastern Idaho." On file at: Caribou National Forest, Pocatello, ID.
- Bradley, Anne F.; Fischer, William C.; Noste, Nonan V. 1992 Fire Ecology of Forest Habitat Types of Western Wyoming and Southeast Idaho. General Technical Report INT 290. Ogden UT.; USDA, Forest Service, Intermountain Forest and Range Experiment Station. 92p.
- Deeming, John E.; Burgan, Robert, E.; Cohen, Jack, D. 1978. The National Fire Danger Rating System; General Technical Report INT-39. Ogden UT. USDA, Forest Service, Intermountain Forest and Range Experiment Station.
- Federal Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide. 2001. http://www.fs.fed.us/fire/fireuse/wildland_fire_use/ref_guide/index.html
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- Greater Yellowstone Coordinating Committee, 2000. The Greater Yellowstone Area Interagency Fire Management Planning and Coordination Guide
- Kilgore, B.M. 1981. Fire in Ecosystem Distribution and Structure; Western Forest and Shrublands. In: Mooney, H.A.; (and others), eds. Proceedings of the Conference Fire Regimes and Ecosystem Properties; 1978 Dec 11-15; Honolulu, HI. Gen. Tech Report WO-26. Washington D.C.; USDA, Forest Service; 58-59.
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- Steele, R., Cooper, S.V., Ondov, D.M., Roberts, D.W., and Pfister, R.D. 1983. "Forest habitat types of eastern Idaho-western Wyoming." USDA Forest Service, Intermountain Research Station, General Technical Report INT-144. Ogden, UT.
- USDA, Forest Service 1990. Soil Survey of the Caribou National Forest Idaho.
- USDA, Forest Service 1997. Caribou National Forest and Surrounding Area Sub-regional Assessment Properly Functioning Condition (PFC). Forest Service, Caribou National Forest
- USDA, Forest Service 2003 Final Environmental Impact Statement 2003 Revised Forest Plan Caribou National Forest.
- USDA, Forest Service 2003 Revised Forest Plan Caribou National Forest.
- Winward, Al H. Special Report 880, Management in the Sagebrush Steppe, Agriculture Experiment Station, Oregon State University.

9.2 Useful Websites

Federal Wildland Fire Policy - <http://www.fs.fed.us/land/wdfire.htm>

Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide
http://www.fs.fed.us/fire/fireuse/wildland_fire_use/ref_guide/index.html

Revised 5140 - <http://www.fs.fed.us/fire/fireuse/rxfire/5140/index.html>

Eastern Great Basin Predictive Services - <http://www.blm.gov/utah/egbcc/>

National Wildfire Coordinating Group - <http://www.nwcg.gov>

WFAS Wildland Fire Assessment System - <http://www.fs.fed.us/land/wfas>

Western Regional Climate Center - <http://www.wrcc.sage.dri.edu/>

National Weather Service Western Region Headquarters - <http://www.wrh.noaa.gov/>

National Weather Service Forecast Office Pocatello (Fire Weather Forecast) -
<http://www.wrh.noaa.gov/cgi-bin/getproduct.pl?PIHBOIFWFPIH>

Diamond Flat RAWS - http://raws.boi.noaa.gov/obs2/ID_DIAMOND_FLAT.html

Moody RAWS -
<http://www.wrh.noaa.gov/cgibin/Missoula/msoobs?site=MYF11&type=2&fmt=dec&src=rgl&hh=48&gh=48&gy=1>

RAWS Links - <http://www.fs.fed.us/raws/links.shtml>

Montana/Idaho Airshed Group - <http://www.smokemu.org/>

Ventilation Climate Information System - <http://www.fs.fed.us/pnw/fera/vent/>

Fire Effects Information System - <http://www.fs.fed.us/database/feis/welcome.htm>

TerraServer - <http://terraserver.microsoft.com/>

Topozone - <http://www.topozone.com/map.asp?lat=43.4316&lon=-111.347&s=25&size=m>

9.3 Glossary

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

Appropriate Suppression Response - Specific actions taken in response to a wildland fire, with priority consideration given to firefighter and public safety.

Burning Period - That part of each day when fires spread most rapidly.

Confine - Confinement is the strategy employed in appropriate management responses where a fire perimeter is managed by a combination of direct and indirect actions

(burnout, helicopter water drops, etc.) and use of natural topographic features, fuel, and weather factors.

Contain/Control - These terms, when used in the context of suppression strategies, are confusing since they also have tactical meanings. Containment and Control will continue to be used to represent the status of a particular fire for reporting purposes (e.g., a controlled fire, date of control, date of containment, etc.) and not to represent a type of management strategy.

Contingency Plan - A back up plan of action for implementation when actions described in the primary plan are no longer appropriate. On prescribed fires these are the actions to be taken if the fire is declared out of prescription and is designated a wildfire.

Drought Index - A number representing net effect of evaporation, transpiration, and precipitation in producing cumulative moisture depletion in deep duff or upper soil layers.

Energy Release Component - A number related to the rate of heat release (BTU's per second) per unit area (square foot) within the flaming zone of the fire. This component of the National Fire Danger Rating System is used by fire managers to assess fire potential in forest fuels.

Escaped Fire - A fire which has exceeded, or is anticipated to exceed, initial action capabilities or the fire management direction or prescription.

Expected Weather Conditions - Those weather conditions indicated as common, likely, or highly probable based on current and expected trends and their comparison to historical weather records. These are the most probable weather conditions for this location and time. These conditions are used in making fire behavior forecasts for different scenarios (one necessary scenario involves fire behavior prediction under "expected weather conditions").

Experienced Severe Weather Conditions - Those weather conditions that occur infrequently, but have been experienced on the fire site area during the period of weather records. For example, rare event weather conditions that significantly influence fires may have occurred only once, but their record can be used to establish a baseline for a worst-case scenario. These are the most severe conditions that can be expected. These conditions are used in making fire behavior forecasts for different scenarios (one necessary scenario involves fire behavior prediction under "experienced severe weather conditions").

Fire Group - A collection of similar habitat types and their associated fire ecology.

Fireline Intensity - The amount of heat released in BTU's per foot of fire front per second. It related to the difficulty of containment of a fire.

Fire Management Area (FMA) - A sub-geographic area within an FMU that represents a predefined ultimate acceptable management area for a fire managed for resource benefits. This predefined area can constitute a Maximum Manageable Area (MMA) and is useful for those units having light fuel types conducive to very rapid fire spread rates. Predefinition of these areas removes the time-lag in defining an MMA after ignition and permits preplanning of the fire area; identification of threats to life, property, resources, and boundaries; and identification on initial actions.

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

Fire Management Unit (FMU) - Any land management area definable by objectives, topographic features, access, values to be protected, political boundaries, fuel types, or major fire regimes, etc., that set it apart from management characteristics of an adjacent unit. FMUs are delineated in FMP's. These units may have dominant management objectives and preselected strategies assigned to accomplish these objectives.

Fire Use - The combination of wildland fire use and prescribed fire application to meet resource objectives.

Fuel Management - The practice of evaluating, planning, and treating wildland fuels to reduce flammability and to reduce its resistance to control. Through mechanical, chemical, biological, or manual means, including prescribed fire and wildland fire use in support of land management objectives.

Fuel Model - A simulated fuel complex for which all fuel descriptors required for the solution of a mathematical fire spread model have been specified.

Fuel Profile - The mosaic of fuel as it occurs on an area of land over time and space.

Fuel Treatment - The manipulation of wildland fuel, such as lopping, chipping, crushing, piling and burning, or removal for the purpose of reducing its flammability or resistance to control.

Hazard - The measure of ease of ignition, fire spread potential, and fire suppression difficulty as influenced by the type, volume, size, distribution, condition, arrangement, and location of the fuel profile.

Holding Actions - Planned actions required to achieve wildland and prescribed fire management objectives. These actions have specific implementation timeframes for fire use actions but can have less sensitive implementation demands for suppression actions. For wildland fires managed for resource benefits, an MMA may not be totally naturally defensible. Specific holding actions are developed to preclude fire from exceeding the

MMA. For prescribed fires, these actions are developed to restrict the fire inside the planned burn unit. For suppression actions, holding actions may be implemented to prohibit the fire from crossing containment boundaries. These actions may be implemented as firelines are established to limit the spread of fire.

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

Keetch-Byrum Drought Index (KBDI) - This index attempts to measure the amount of precipitation necessary to return the soil to full field capacity. It is a closed system ranging from 0-800 units, and represents a moisture regime from 0-8 inches of water through the

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

Maximum Manageable Area (MMA) - The firm limits of management capability to accommodate the social, political, and resource impacts of a wildland fire. Once established as part of an approved plan, the general impact area is fixed and not subject to change. MMAs can be developed as part of the FMP and described as an FMA. They can also be developed as part of the planning and implementation of management actions after a fire has ignited. If they are developed after the ignition, their definition will occur during the Wildland Fire Implementation Plan Stage III process. In the event a fire occurs in a preplanned MMA or FMA and the local unit determines that this MMA is not the best-suited alternative for the present conditions, a new MMA can be developed as part of the Stage III process. Once this occurs, the Stage III MMA becomes the firm limits of the fire and is fixed.

Mitigation Actions - Those on-the-ground activities that will serve to increase the defensibility of the MMA; check, direct, or delay the spread of fire; and minimize threats to life, property, and resources. Mitigation actions may include mechanical and physical nonfire tasks, specific fire applications, and limited suppression actions. These actions will be used to construct firelines, reduce excessive fuel concentrations, reduce vertical fuel continuity, create fuel breaks or barriers around critical or sensitive sites or resources, create "blacklines" through controlled burnouts, and to limit fire spread and behavior.

Most Cost-Efficient Fuel Profile - The fuel profile that minimizes the sum of presuppression costs, including fuel treatment, suppression cost, and net value change.

Most Efficient Level - The fire management program budget level that results in the minimum cost plus net value change (C+NVC).

National Fire Management Analysis System (NFMAS) - The fire management analysis process providing input for Forest planning and Forest and Regional fire program development and budgeting

Natural Fuel - Fuel comprised of combustible wildland vegetation resulting from natural processes and not directly generated or altered by management practices, including fuel that has accumulated as a result of fire exclusion.

Natural Ignition - An ignition resulting from any natural cause.

Net Value Change - The sum of the changes in resource values on a land area that results from increases (benefits) and decreased (damages) in resource outputs as a consequence of fire

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

Preparedness Plan - A plan providing for timely recognition of approaching critical fire situations, priority setting, deployment of forces, and other actions to respond to those situations.

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

Prescribed Fire Plan - A plan required for each fire application ignited by managers. The plan is prepared by qualified personnel and approved by the appropriate agency administrator prior to implementation. Each plan follows specific agency direction and includes critical elements described in agency manuals.

Prescribed Natural Fire (PNF) - This term no longer represents a type of fire and has no further use other than in historical descriptions. This term is replaced by wildland fire use.

Prescription - Measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Risk Assessment - Process used in prescribed fires or wildland fire use planning to determine the level of risk. The risk assessment is documented and used by the approving official to make informed decisions. The risk assessment is completed in the Stage III Long-Term Implementation Action Plan.

Supplemental Protection - The increased resources assigned to protect activity fuel from wildfire in lieu of fuel treatment.

Trigger Points - See Management Action Points.

Wildfire - An unwanted wildland fire.

Wildland Fire - Any nonstructural fire, other than prescribed fire, that occurs in the wildland. This term encompasses fires previously called both wildfires and prescribed natural fires.

Wildland Fire Implementation Plan (WFIP) - A progressively developed assessment and operational management plan that documents the analysis and selection of strategies and describes the appropriate management response for a wildland fire being managed for resource benefits. A full WFIP consists of three stages. Different levels of completion may occur for differing management strategies (i.e., fires managed for resource benefits will have two-three stages of the WFIP completed while some fires that receive a suppression response may only have a portion of Stage I completed.

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

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

Wildland Fire Suppression - 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.

Wildland Fire Use - The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in predefined geographic areas outlined in FMPs. Operational management is described in the WFIP. Wildland fire use is not to be confused with "fire use" which is a broader term encompassing more than just wildland fires.

APPENDIX A

Fire Groups

Historic fire regimes are generally based on the habitat type or potential natural vegetation. Historic fire regimes are assigned to fire groups, based on the response of the dominant species to fire, the potential frequency of fire, and the similarity of post-fire succession (Bradley, et al, 1992). A fire regime is intended to characterize the features of historic, natural fires that have been typical for a particular ecosystem. In general terms, fire regimes give us a description of the fire frequency, or expected fire free interval between fire events. This information also tells us what type of fire effects can be expected for different layers of forest and non-forest vegetation. Each fire regime entails three descriptors, fire type and severity (i.e. lethal, non-lethal, mixed-severity), frequency or return interval (frequent, non-frequent), and burn pattern (mosaic, uniform). Descriptions of fire regimes are general and broad because of the enormous variability of fire over time and space, so each of the major regimes is addressed briefly in the following discussion.

Rangeland Habitat Types; Fire Group 1

Those rangeland habitat types that occupy the drier portions of the Subsection generally have similar basic characteristics. They include the basin big sagebrush, mountain big sagebrush, and low sagebrush. Because of these similarities they are categorized as a dry shrub group. This group can be characterized by a lethal fire regime with a 10 to 40 year fire return interval (Winward 1991). It is important to note that given the wide range of fuel situations and our understanding of yearly climatic variation in the sagebrush ecosystem, a naturally wide variation in fire frequency in this system should be expected.

Other rangeland types that occupy more mesic positions include subalpine big sagebrush, spiked big sagebrush, threetip sagebrush, snowbrush, bigtooth maple, and chokecherry-serviceberry-rose. Because these species have similar basic characteristics they are categorized as a cool shrub group. This group can be characterized by a lethal fire regime with a fire interval ranging from 25 to 75 years.

Historical fires naturally burned spotty leaving islands and stringers unburned during any one fire. Those areas that did burn received various intensities of fire. The overall result was an ever-changing mosaic of different densities and ages of crowns. In any specific geographic area, a mosaic of ecological settings existed ranging from open temporary prairie types where fires were most recent, to relatively dense stands where considerable time had elapsed since the last fire (Winward 1991).

Woodland Habitat Types; Fire Group 1

This group is composed of curlleaf mountain-mahogany. This community type typically forms the transition zone between shrubland communities at lower elevations and closed forest communities at higher elevations. Mountain mahogany can form open stands by itself, or in combination with limber pine or Douglas-fir. The majority of mountain-mahogany communities generally avoid fire by inhabiting rocky sites or sites on shallow soils with sparse undergrowth that normally will not sustain fire. Mountain-mahogany that has developed on sites with deeper soils with an understory that can sustain fire is easily killed by fire. The woodland habitat type is characterized by a mixed severity fire regime, with a 50-70 year fire return interval (USDA 1997).

Xeric Douglas-Fir Habitat Types; Fire Group 2

This group is composed of cool, dry, relatively unproductive Douglas-fir habitat types. Douglas-fir is often the climax species, and lodgepole pine is occasionally present on some noncalcerous soils. These sites do not develop dense overstories, but support a scattered to open forest. Because of severe microsite drought and light flashy fuels, these communities likely had the most frequent fires of any forest type in the area. The cool, dry Douglas fir fire regime is characterized by a low intensity, non-lethal underburning fire pattern which favors mature open canopy stands. Barrett's fire history research on the Caribou National Forest indicated the mean fire interval was 19 years, and the mean fire interval ranged from 7 to 39 years.

Mesic Douglas-Fir Habitat Types; Fire Group 3

This group consists of relatively moist Douglas-fir habitat types where lodgepole pine, aspen, or Douglas-fir are the major seral species. These habitat types occur on cooler or moist exposures between 5,700 and 8,500 feet in elevation. Limber pine may occur in small amounts on drier microsites within these habitat types.

Fire regimes of Douglas-fir and lodgepole pine are variable over their distribution (Kilgore 1981). Topography, weather, stand structure, and fuel loading all contribute to different patterns of fire intensity and frequency. A complete range of fire behavior is represented in this type, from light surface fires to stand-replacement fires. A mosaic of fire effects probably occurred across the historical landscape, with much variability also existing within a single fire. Stands are thinned or replaced, and the potential dominance of one species over another is altered. Thinning fires favor Douglas-fir because mature trees are relatively fire resistant. Stand-replacement fires favor seral lodgepole pine or aspen on sites where seeds or suckering roots are available. The success of aspen regeneration depends partly on the severity of the fire.

Fire interval variability in this habitat type was relatively high, ranging from as little as 5 years to as long as 100 years. However, the average range for this type was 26 to 71 years, and comparatively long fire intervals (e.g. 100-125 yr) are uncommon (Barrett 1994).

Quaking Aspen-Dominated Community Types; Fire Group 4

This fire group is composed of community types where aspen appears to be the long-term seral dominant. Aspen is able to tolerate a wide range of environmental conditions and is associated with a diverse number of understory shrub and herbaceous species. Stands bordering forest are the most successional perplexing. The aspen here are often quite vigorous and will quickly occupy adjacent sites when the conifers are removed. These stands often contain an occasional conifer that is usually healthy but shows little sign of increasing in the stand. Within the zone of coniferous forest, aspen stands tend to become more clearly seral. Here aspen occupies sites where fire or logging has removed the conifers or where landslides have provided a fresh substrate. Conifers may reclaim these sites fairly rapidly but in some areas conifer establishment appears retarded by a lush development of seral forbs and graminoids.

Aspen has a paradoxical relationship with fire. Individual aspen stems (suckers) have very thin bark that contains a green photosynthetic layer, and thus are very heat sensitive and easily killed by fire. Conversely, aspen clones are very fire resistant in that the clones are very long-lived, aggressively sending up suckers after fires. Since quaking aspen is fire-sensitive, the fires burned in a mosaic pattern with varying severities, from high intensity stand replacement (aspen-conifer) to low severity fires (aspen). Barrett (1994) reported a mean fire interval of 69 years in aspen-conifer sites, and much longer fire interval in aspen with a dense forb understories lacking a conifer component on the Caribou National Forest.

Xeric Subalpine fir and Engelmann Spruce Habitat Types; Fire Group 6

This fire group contains the bulk of subalpine fir and Engelmann spruce habitat types found in the analysis area. Lodgepole pine is the dominant seral species in these forests. Douglas-fir is important in warmer exposures. Engelmann spruce may be a long-lived seral species, or a climax/co-climax dominate with subalpine fir. Aspen often persists on the periphery of older stands, or it may exist with conifer species in the early to mid stages of succession. While aspen is retained on a site, it has the potential to become seral dominant after fire (Steele, et al, 1983). The understory makeup is variable. Some habitat types may be dominated by shrub growth; in others shrubs may contribute only minor amounts of cover.

Barrett (1994) characterized these habitat types as having a mixed-severity fire regime with a moderately long fire return interval. He reported a mean fire interval range of 25 to 113 years (weighted mean of 97 years) in southeastern Idaho. In general, sites with aspen or Douglas-fir are represented by the short end of reported fire return intervals for xeric subalpine forests (Barrett 1994), while sites with lodgepole pine typically report longer fire return intervals (Bradley, et al, 1992).