Wildland Fire Management Plan

Craters of the Moon National Monument, Idaho

Craters of the Moon
NATIONAL MONUMENT - IDAHO

Wildland Fire Management Plan

October 2000

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List of Appendices

I. Introduction

A. Reasons for Developing This Plan

This plan outlines in as detailed a manner as possible those actions that will be taken by Craters of the Moon National Monument in meeting the fire management goals for the area. This meets the requirement in Director's Order-18 (DO-18) that all park units with vegetation capable of sustaining fire develop a Fire Management Plan. Until a fire management plan is approved, parks must aggressively suppress all wildland fires, taking into account the resources to be protected and firefighter and public safety. Parks lacking an approved fire management plan may not use resource benefits as a primary consideration influencing selection of a suppression strategy, but they must consider the resource impacts of suppression alternatives in their decision. Development of an approved fire management plan will facilitate the goal of managing wildland fires in portions of Craters of the Moon National Monument for resource benefits. As a secondary benefit the plan is intended to reduce suppression costs without compromising public or firefighter safety.

B. Resource Management Relationship

The General Management Plan and the Natural Resources Component of the Resource Management Plan (RMP) for Craters of the Moon National Monument address the issue of fire management in a general manner. This specific action plan implements fire related management actions from the RMP.

C. Compliance

An environmental assessment serves as the NEPA documentation for this plan and is included as Appendix C. National Historical Preservation Act compliance is documented in appendix D.

D. Authorities for Implementing this Plan

Authority for carrying out a fire management program at Craters of the Moon National Monument originates with the Organic Act of the National Park System, August 25, 1916. This Act states that the primary goal of the National Park Service is to preserve and protect the natural and cultural resources found on lands under its management in such manner as will leave them unimpaired for future generations.

The Management Authorities (Directors Order-18, November 1998 and Reference Manual RM-18, February 1999) are the guiding documents for fire management plan implementation.

Servicewide fire management policy is expressed in the current revisions of the Directors Orders and attendant Reference Manual for the National Park Service, and “The Wildland and Prescribed Fire Management Policy: Implementation and

Reference Guide" (1998), and is incorporated herein by reference. The monument's fire management objectives conform to the referenced documents.

II. Compliance with NPS Policy and Relation to Other Plans

A. NPS Management Policies Concerning Fire Management

It is the policy of the National Park Service to allow natural processes to occur to the extent practical while meeting park unit management objectives. NPS Management Policies (1988) state that "Fire is a powerful phenomenon with the potential to drastically alter the vegetative cover of any park. Fire may contribute to or hinder the achievement of park objectives. Park fire management programs will be designed around resource management objectives and the various management zones of the park". Specific guidance on wildland fire is contained in Directors Orders (DO-18) and attendant Reference Manual (RM-18) for the National Park Service, and "The Wildland and Prescribed Fire Management Policy: Implementation and Reference Guide" (1998).

B. Enabling Legislation and Purpose of Monument

1. Craters of the Moon National Monument was established in 1924 by Presidential Proclamation. Boundary adjustments were made in 1928, 1941 and 1962 by Presidential Proclamation and in 1996 by legislation. The presidential proclamations have been consistent in recognition of the area resources:

"...which contains a remarkable fissure eruption together with its associated volcanic cones, craters, rifts, lava flows, caves, natural bridges, and other phenomena characteristic of volcanic action which are of unusual scientific value and general interest; and ...this area contains many curious and unusual phenomena of great educational value and has a weird and scenic landscape peculiar to itself..." [Proclamation No. 1694 - May 2, 1924 - 43 Stat. 1947]

2. The NPS studied suitable areas for wilderness designation in the 1960's and recommended to Congress that 43,243 acres of the monument be designated as wilderness. The legislation passed Congress and the law designating the Craters of the Moon National Wilderness Area was signed in 1970. The wilderness area is managed in accord with the Wilderness Act of 1964 and suppression activities within wilderness are to be conducted in keeping with "minimum requirement" protocols identified in Director's Order #41, Wilderness Preservation and Management. The Wilderness Area is a mandatory "Class I" area under the Federal Clean Air Act. The Act created as

a national goal “the prevention of any future and the remedying of any existing impairment of visibility in mandatory class I Federal areas”.

C. General Management Plan Fire Objectives

The CRMO General Management Plan (1992) includes the following direction regarding fire management:

Page 10: “The present practice of suppressing all wildland fires in the monument presents problems because much of the monument is inaccessible. Fire suppression costs are high relative to the benefit, since there is very little to burn in most places and the policy of total suppression does not conform to the appropriate management response of the Bureau of Land Management (BLM) which manages adjacent lands.”

Page 24: “A coordinated fire management plan is also needed. Information from the rare plant survey can be used to identify rare plant locations that should be protected from fire and fire management planning can be carried out accordingly.”

Page 61: The following General Management Plan objectives are related to fire management:

“To perpetuate the natural ecosystems of the monument through active and effective resource management programs.”

“To preserve visibility and associated vistas and to prevent deterioration of the air-shed and all air quality related values.”

“To foster an understanding and appreciation of the environmental forces that formed the present day landscape of the Snake River Plain as well as an understanding of the plants and animals that have adapted to this harsh habitat.”

D. Resource Management Plan Objectives

National Park Service Management Policies (USDI 1988) define natural resource management as the concept of perpetuating a total natural environment or ecosystem, as compared with the protection of individual features or species. This concept is a distinguishing feature of the service’s management of natural lands. Accordingly, the primary goal outlined in the monument’s Resource Management Plan is the preservation of natural and cultural resources.

The Resource Management Plan objectives are to maintain or restore the natural resources of the monument, by allowing natural processes to operate unimpeded whenever feasible. This concept is not limited to impacts originating solely within the monument boundary. Both the monument’s Resource Management Plan and General Management Plan document the need for a Fire Management Plan which will emphasize the natural role of fire in the ecosystem. Once approved the Fire Management Plan will be considered a supplemental action plan in conjunction with the Resource

Management Plan. The Fire Management Plan will advance these objectives by allowing the fire to resume a role in determining the composition and development of vegetative communities within the monument.

E. Fire Management Plan Description

The Fire Management Plan (FMP) for Craters of the Moon National Monument is a detailed program of action to carry out fire management policies and objectives. Development of an approved fire management plan will facilitate the goal of managing wildland fires in portions of Craters of the Moon National Monument for resource benefits. As a secondary benefit the plan will reduce suppression costs without compromising public or firefighter safety.

III. Description of the Monument

A. Craters of the Moon National Monument is located on the northern edge of the semi-arid Snake River Plain in south-central Idaho. Established in 1924, the 53,440 acre monument protects a unique series of volcanic cinder cones, craters, lava flows, and caves located along the northern end of the Great Rift. The monument's north end extends into the foothills of the Pioneer Mountains. Elevations range from 5200 feet to 7730 feet. With the exception of the Pioneer Mountains, monument landforms resulted from a series of volcanic basalt eruptions which occurred over the past 15,000 years, with the most recent being about 2200 years ago (Kuntz et al. 1983).

Over half the monument consists of lava flows relatively barren of vegetation. Vegetated areas of the monument are dominated by sagebrush communities intermixed in areas with stands of limber pine. Douglas- fir and aspen occurs on the north-facing slopes of older cinder cones and in the Pioneer foothills. With the exception of the monument's "North End" (area north of Highway 93) and Little Prairie most continuously vegetated areas are only several hundred acres in size and are confined by lava flows lacking sufficient vegetation to carry a fire.

Aquatic resources are limited to two small perennial streams draining the Pioneer Mountains on the north end of the monument and year-round ice deposits in some lava tube caves and pit craters. Wildlife includes mule deer, elk, black bear, and moose; although the latter three species have generally been restricted to the Pioneer Mountains. A number of sagebrush obligate species (sage and Brewer's sparrows) are common within the monument, although sage grouse observations have been rare. Lava tube caves are used by a variety of bats, including the Townsend's big-eared bat, for hibernation and rearing of young.

Cultural resources are largely confined to surface or subsurface archeological sites. Only two 50+ year old structures remain within the monument and both are located within the area of the Visitor Center development complex. A section of the historic Oregon Trail's Goodale's Cutoff crosses the North End of the monument.

Developments within the monument are relatively limited; the Visitor Center complex (visitor center, maintenance shops, employee residences, and campground), a 5.6 mile scenic drive, and potable water system. The monument is transected by four miles of State Highway 93, 20/26 just north of the Visitor Center complex.

B. In terms of fire management the values to be protected include public safety, structures and other infrastructure, plant and animal communities, and air quality (particularly visibility) in the monument's Class I air-shed.

Craters of the Moon National Monument, Idaho

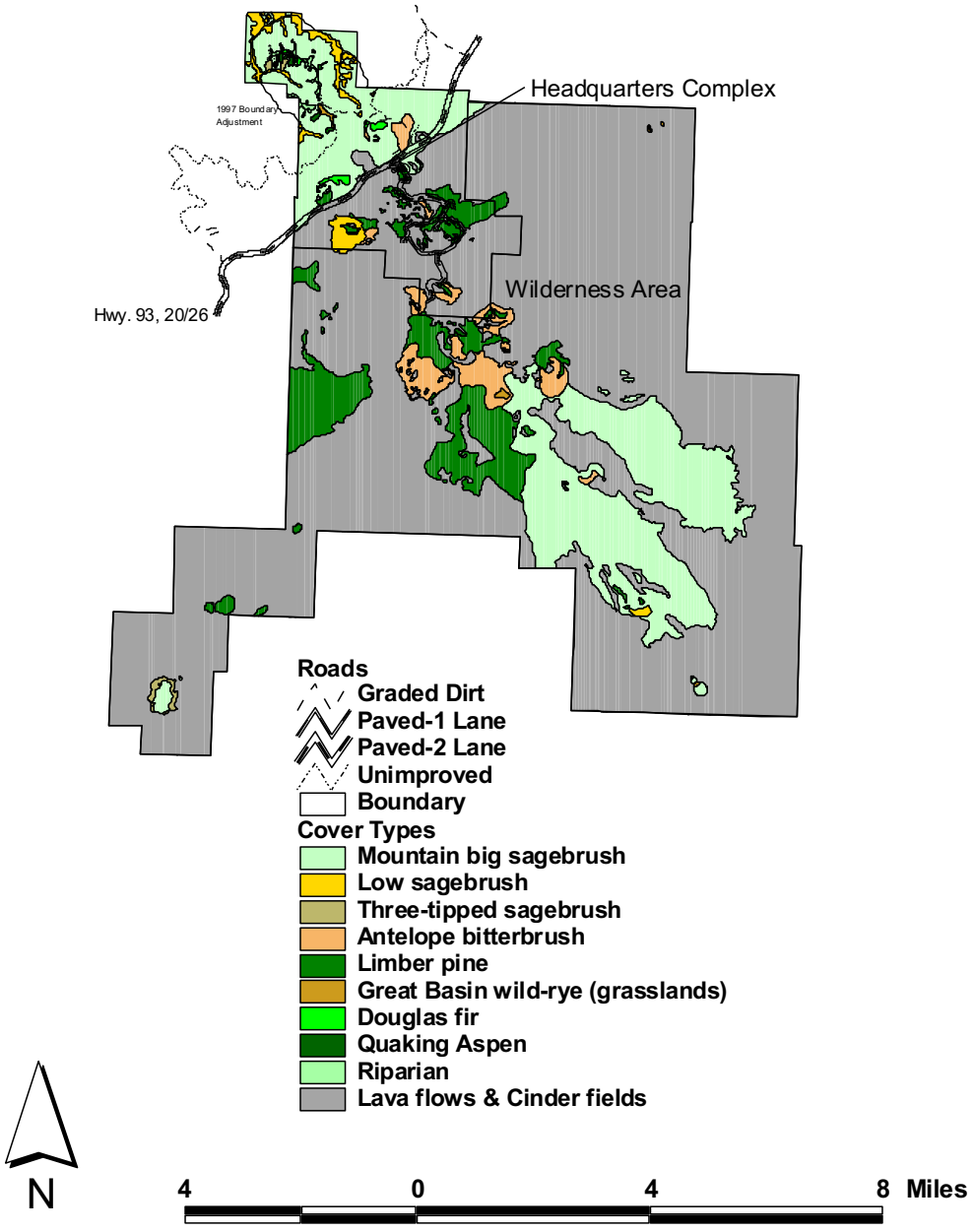

Figure 1. CRMO Cover Types

IV. Historic Role of Fire

The fire season at Craters of the Moon National Monument (CRMO) extends from mid-June through mid- September. Research indicates that vegetation similar to that on the monument has burned about every 25 to 75 years during pre-European conditions (Houston 1973, Wright and Bailey 1982). With the exception of areas in the northern portion of the monument, the vegetation is isolated into pockets by lava flows and cinder gardens. Fires burning in many of these small patches of vegetation would have little chance of spreading. The discontinuous fuels and low fuel loads on the monument have probably resulted in fire-free- intervals greater than those previously reported for similar vegetation types.

There are some relatively large areas of contiguous vegetation. One of these is the Little Prairie area located in the southeast corner of the monument. In 1992, a wildland fire burned 2000 acres of Little Prairie over a span of three days.

There is clear evidence of recent fires in the Split Butte area. Many charred limber pine boles can be observed in vegetation now dominated by sagebrush or grass vegetation. These burns appear to be somewhat older than those pre-1992 fires in Little Prairie. In the immediate area of Split Butte there is heavy herbaceous cover, mainly bluebunch wheatgrass and arrowleaf balsamroot. Both species which are good indicators of past fire occurrence.

Small areas around Two Point Butte and Fissure Butte also show a history of recent fire. These burns, however, were much more localized due to surrounding younger lava flows and cinder. Farther north around Crescent Butte, the evidence of fire is also common and there are numerous charred boles of limber pine. There is evidence of low intensity fires in this area as reflected in surviving fire-scarred plants.

The Big Cinder Butte area has also burned, within the last 100 years. Most of the recent fire evidence on Big Cinder Butte is confined to the southwest slopes. The area west of the Tree Molds parking area has also burned in the same time interval. Vegetation has been set back by fire and a community dominated by rubber rabbitbrush has replaced the big sagebrush vegetation. Some charred limber pine boles and sagebrush stems are present here. A fire boundary can be observed on the hillside southwest of the trailhead.

There is less evidence of fire between Big Cinder Butte and Park headquarters than in any other area on the monument. This is probably due to the small amount of vegetated area which is separated by recent lava flows and cinder gardens. If ignitions occurred, the area burned would have been small.

The plant communities north of the highway seem to be more influenced by fire than those to the south. All vegetation types in this area show evidence

of burning, with the exception of the dwarf sagebrush types along ridgetops which apparently seldom burn (Gipe 1976, Bunting et al. 1987). In most locations, these types offer excellent fuel breaks, not only because of reduced fuel, but also due to their location. In most cases, fires initiated on lower slopes would not burn through these areas. In most years, herbaceous production will be too low to allow the fire to spread across the ridgetop to the slope on the other side and back into a community with higher fuel loadings. The remaining vegetation types in the northern portion, such as Great Basin wildrye, aspen, Douglas-fir, and other sagebrush types, show evidence of past fire occurrence. In many locations, charred sagebrush stumps are still rooted in the soil. On some of the older burns in the southern parts of the monument, sagebrush stumps have been dislodged and are disintegrating, indicating older burns.

Most aspen types in the north end show evidence of past fire occurrence. This is indicated by even-aged stands (all trees seem to be the same size and age), charcoal remnants in understory, reduced down woody fuels, and in some areas an increase in snowbrush. Increment cores of aspen and cross sections of sagebrush were collected in the vicinity of the CRMO Research camp. These data indicate that most of the woody plants have become established in the last 25 to 30 years. The increase of aspen on the perimeter of the individual clones in this portion may be a cumulative result of the absence of fire and not the result of plants resprouting following the last fire.

Fire scars were dated on several Douglas-firs in Little Cottonwood Canyon using the increment core technique (Barrett and Arno 1988). Based on work done by Barrett and Arno fire has occurred every 30 to 35 years prior to Euro-American influence. Fire reedgrass, a species enhanced by fire, is common as an understory species in the aspen and Douglas-fir types. There is little recent fire evidence in this area. Fire may have been actively controlled by man during the period between Euro-American settlement and monument creation. Fires were more probably reduced inadvertently, however, by reduction of fine fuel loading by grazing livestock. The east facing slopes of Little Cottonwood Creek show much evidence of fire, indicating that the road and Little Cottonwood Creek might have served as fuel breaks.

In general, the influence of fire at CRMO is consistent with other areas of the Snake River Plain. The effect of fire can be observed in almost all vegetation types. Fire has influenced the establishment of introduced cheat grass (Bromus tectorum) in much of the central and western portions of the Snake River Plain. Cheat grass has replaced native shrub species following fire and resulted in the loss of significant sagebrush steppe habitat. In the higher elevation areas of the upper Snake River Plain cheat grass has proven less competitive. Cheat grass is found throughout the monument but is not found in dominant stands.

V. Goals and Objectives

Goal: Make firefighter and public safety the highest priority of every fire management activity.
Objective: Ensure all wildland fire operations sustain no injuries to members of the public or firefighters.

Strategies:

- All personnel involved in fire management operations will receive a safety briefing describing known hazards and mitigating actions, current fire season conditions and current and predicted fire weather and behavior.
- Fire management operations will be carried out by qualified individuals that promote the safe and skillful application of fire management strategies and techniques.
- Monument neighbors, monument visitors and the local residents will be notified of all planned and unplanned fire management activities that have the potential to impact them.
- All or portions of the Monument will be closed to the public when fire activity poses a threat to human safety (at the discretion of the Superintendent).

Goal: Manage wildland fires in concert with federal, state and local air quality regulations.
Objective: Ensure air quality thresholds for National Ambient Air Quality Standards are not exceeded in adjacent air-sheds (any area outside of the monument) due to fire use activities.

Strategies:

- Impacts to air quality will be considered as a part of the go/no go decision in the Wildland Fire Implementation Plan, Stage I, and periodic assessment throughout the duration of any wildland fire.
- Air quality impacts will be addressed as a part of the alternative development and selection in the Wildland Fire Situation Analysis.
- Smoke impact mitigation measures will be developed implemented for all wildland fire actions.

Goal: Suppress all wildfires (an unwanted wildland fire) to protect the public, check fire spread onto private property and protect the natural, cultural and historic resources of the monument.
Objective: Contain 95% of unwanted wildfires at less than 10 acres in size.

Strategies:

- Prioritize suppression actions on fires or portions of fires that threaten to damage public or private property.
- Ensure sufficient monument staff are trained in wildland fire operations.
- Ensure monument engine is in a state of readiness during fire season.
- Ensure monument staff responsible for fire operations understand fire policy.
- Ensure mutual aid agreements are current and operational.

Goal: Manage wildland fires so that Monument resources (natural, cultural, and improvements) are protected from damage by suppression actions and fire.
Objective: Manage suppression actions so that rehabilitation costs are less than 10% of suppression costs.

Strategies:

- Ensure wildland fire suppression operations employ Minimum Impact Suppression Tactics (MIST).
- Ensure fire operations personnel are briefed on Monument resources and potential damage from fire and suppression actions.
- Ensure a resource advisor is assigned to wildland fires within the monument.

Goal: Facilitate reciprocal fire management activities through the development and maintenance of cooperative agreements and working relationships with pertinent fire management entities.
Objective: Annually review and modify as necessary agreements with the four agencies listed below.

Strategies:

Coordinate with the following entities:

- BLM East Idaho and South Central Idaho Fire Dispatch
- Arco, Idaho Rural Fire Protection District

Goal: Use wildland fire where and when appropriate as a tool to meet resource management objectives within the Monument. Maintain or restore, where possible, the primary natural resources of the Monument, and those ecological conditions that would prevail were it not for the advent of modern civilization.
Objective: Have (on CRMO staff) or be able to obtain sufficient qualified personnel to manage at least 75% of qualified wildland fires for resource benefits.

Strategies:

- Restore fire as an ecological process in the fire use management unit.
- Monitor the effects of fire on the ecosystem.
- Cooperatively manage wildland fires across the mutual boundary with the Upper Snake River District, BLM, Great Rift Wilderness Study Area, when and where possible.
- Maintain a qualified Prescribed Fire Behavior Specialist (RXFS) and Prescribed Fire Behavior Monitor on CRMO staff.
- Ensure that a Prescribed Fire Behavior Analyst (RXFA) is available to respond within 12 hours of a fire.

Goal: Reduce wildland fire hazard around developed areas and adjacent to cultural and historic sites.
Objective: Ensure fire does not destroy any administrative structure, nor incur costly damage (rehabilitation costs greater than $10,000) to any cultural or historic site.

Strategies:

- Apply mechanical hazard fuel reduction around suppression zones to reduce fire intensity and severity to lesser levels.
- Apply mechanical hazard fuel reduction around those cultural and historic sites vulnerable to fire damage.

VI. Wildland Fire Management Situation

A. Historic Weather Analysis

Craters of the Moon is located on the northern slope of the Snake River Plain. The area receives weather fronts from as far south as the Gulf of Mexico to Arctic fronts from the north; its primary weather pattern is to receive Pacific Ocean storms or high pressure systems that pass over the west coast between northern California and Washington. Annual precipitation averages 12” to 15”, much of it from winter snow.

Summer weather is generally mild to hot and windy with clear skies except for occasional thunderstorms. Summer thunderstorms associated with "dry" lightning are common, with rainfall amounts ranging from heavy to non-existent. Spring can be dry and warm or cold and rainy, thunderstorms are rare. It can stay hot, dry, and windy, with occasional thunderstorm activity, well into September.

Craters of the Moon NM, Idaho (102260) Monthly Climate Summary Period of Record 12/1/1958 to 10/31/1999						
	May	June	July	August	Sept.	Oct.
Ave. Max. Temp. (F)	64.5	74.3	84.3	82.6	71.6	59.1
Ave. Min. Temp. (F)	36.8	44.5	51.8	50.1	40.9	31.3
Ave. Precipitation (in.)	1.76	1.3	0.70	0.87	0.89	0.87
Max. Temp. Extreme (F)	88	98	100	97	92	85
Min. Temp. Extreme (F)	15	25	30	30	16	2

B. Fuel Characteristics

Detailed description of fuel types found within the monument is contained in Appendix E.

C. Fire Season

Fire season is strongly dependent on seasonal variation with climate. The "normal fire season" at Craters of the Moon is based on cumulative fire and weather records. Generally speaking, fire season begins about May 15 and ends September 15.

The typical fire weather pattern doesn't begin until June. The month of May can vary tremendously from wet and cold to warm, dry, and windy weather. June through August is generally sunny, windy, and dry with September being much like May. Snow has been recorded as late as early June and as early as the first week in September. Summer temperatures range from the 70's to a maximum high of 95-100^{o} with lows from the 30's to 50's. Isolated thunderstorm cells travel through rapidly bringing sometimes intense lightning activity associated with anywhere from zero rainfall to heavy, brief rains. Winds are commonly from the west or southwest with erratic changes during storm activity. Wind speed picks up with morning heat, commonly gusting 15-20 mph during the day, generally not slowing until early evening hours. High winds during storm activity of 30-40 mph are not uncommon.

VII. Scope of Wildland Fire Management Program

Wildland Fire Management Strategies to be Applied.

A. Wildland Fire

All wildland fires will have a Stage 1 Wildland Fire Implementation Plan (WFIP) completed in a timely manner. The WFIP Stage 1 serves as the

decision record for selection of the appropriate management response. All human-caused fires will be managed through a suppression response regardless of location.

1. Wildland Fire Suppression

All wildland fires in Fire Management Unit 1 will be suppressed using an appropriate management response. Management responses to specific wildland fires will be determined through evaluation of public and firefighter safety, fire behavior, values at risk, potential suppression damage, and availability of fire management resources. Management responses will vary from fire to fire and sometimes even along the perimeter of a fire. Appropriate management response options range from monitoring without on-the-ground suppression disturbance to intense suppression actions on all perimeters of the fire.

2. Wildland Fire Use

One of the strategies available to CRMO managers will be wildland fire managed for resource benefits (wildland fire use). This strategy may only be utilized in the Fire Management Units 2 and 3.

Wildland fire use is a strategy for allowing naturally ignited wildland fires, to burn as long as the fire meets pre-stated resource management objectives in the maximum manageable area (MMA) and prescriptive parameters are not exceeded. An ongoing or potential "wildland fire use" fire that does not meet predetermined prescriptive elements or fails to meet resource management objectives will be suppressed using an appropriate management response. Current policy allows management for resource benefits of portions of a fire perimeter, while other portions of the perimeter of the same fire are managed with an appropriate suppression response.

Managing wildland fires for resource benefits requires significant documentation to chronicle the decision process of agency administrators and fire managers. This documentation process is described in detail in Wildland and Prescribed Fire Management Policy; Implementation Procedures Reference Guide.

3. Prescribed Fire

Currently the goals and objectives for the use of prescribed fire have not been sufficiently developed at Craters of the Moon National Monument to incorporate it into this FMP. This does not rule out further consideration of its application in future revisions of this plan.

Prescribed fire could potentially be used in support of ecosystem management to maintain and/or restore plant communities, cycle

nutrients, reduce or remove exotic plants, and for a variety of other resource management objectives.

B. Fire Management Units (FMU)

The 1992 Craters of the Moon General Management Plan identified three management zones for the monument. Within those larger three zones there are sub-zones that more specifically define the management objectives of each area.

Natural Zone (53,309 acres or 98.9%)
- Wilderness Subzone
- Natural Environment Subzone
- Outstanding Natural Features Subzone
- Watershed Protection Subzone

Development Zone (142 acres or 1%)
- Park Development Subzone
- Interpretive Development Subzone

Special Use Zone (94.2 acres or 0.1%)

Based upon these management zones three fire management units are designated within CRMO. CRMO FMUs are differentiated by management objectives of the General Management Plan, boundaries and values-to-be-protected. The FMU are further sub-divided into 11 Fire Management Areas (FMA). The FMA are based upon fuel types and fire management characteristics.

Craters of the Moon National Monument Fire Management Units (FMU)

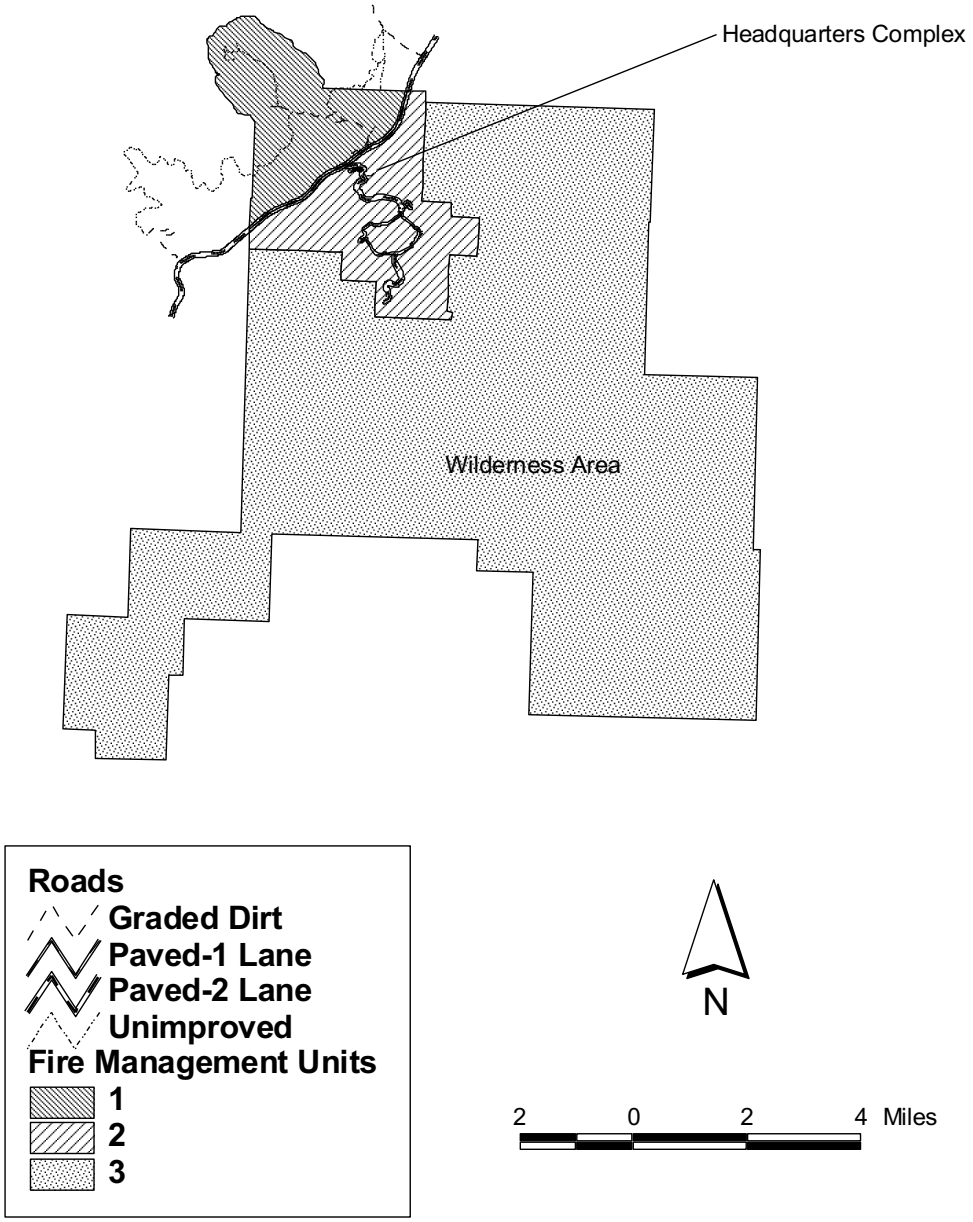

Figure 2.

1. North End / Watershed Protection FMU (FMU1)

a. North End / Watershed Protection FMU physical description

This FMU encompasses all areas of the monument north of State Highway 93,20/26 and includes the only surface water streams within the monument. Four of the perennial springs which feed these streams were developed in the 1930s to provide potable drinking water for the monument. Elevations within the unit range from just under 6000 feet along portions of the highway to 7,700 feet along the ridges in the foothills of the Pioneer Mountains. In addition to many of the vegetative communities found throughout the monument, the North End FMU also contains Douglas fir, aspen, and riparian forests.

The unit also includes lava flows with varied vegetative cover (primarily shrub species) as well as two major cinder cones. The monument boundary follows the watershed boundaries of Little Cottonwood and Leech Creeks. Highway 93 forms the southern boundary.

All areas within this FMU lie within one half mile of either Highway 93, Goodale's Cutoff, or the North End Road. The latter are single lane graded dirt roads. Facilities within this FMU include a group campsite, a research station, above and below ground electrical power lines, various structures (concrete valve boxes, treatment shed, and underground storage tank) associated with the water system.

All of this FMU is bordered by public lands administered by Upper Snake River District of the BLM. The east side by the Idaho Falls Field Office and the west side by the Shoshone Field Office.

b. North End / Watershed Protection FMU 1

Strategic Management Objectives

Within this FMU all wildland fires will be suppressed using an appropriate management response with the intent of minimizing loss of structures and property. The first priority during these suppression actions will be the safety of personnel and the public, including adjacent landowners.

Management of FMU 1 is designed to meet the following FMP objectives.

1) All fire management activities will have as the highest priority firefighter and public safety.
2) Appropriate management responses for all wildland fires (regardless of ignition source) will be rapid containment and suppression to

protect the public, check fire spread onto adjacent public lands and protect the natural, cultural and historic resources of the monument.
3) Minimize loss of sagebrush steppe habitat important to sagebrush obligates such as sage grouse.
4) Strong interagency fire and emergency services agency participation will be encouraged within this FMU. Interaction with adjacent land managers through CRMO participation in prevention programs will be encouraged.
5) Watershed protection, particularly of areas upslope from drinking water sources in Little Cottonwood Creek.

c. North End / Watershed Protection - FMU 1 Management Constraints

1) Smoke management reporting procedures for burning in Idaho will be followed for all fire operations.
2) Employ minimum impact suppression tactics.
3) No off road vehicle use unless approved by the Superintendent.*
4) No dozer or grader use unless approved by the Superintendent.
5) Low level aircraft use and retardant must be approved by the Superintendent.*
6) All fire management activities will consider safety of personnel and the public as the highest priority.
7) Monument neighbors, park visitors and the local residents will be notified of all fire management activities that have the potential to impact them.
8) All park closures are at the discretion of the Superintendent.
9) No fire management operations will be initiated until all personnel involved receive a safety briefing describing known hazards and mitigating actions, current fire season conditions and current and predicted fire weather and behavior.
10.) Fire management operations will be carried out by qualified individuals that promote the safe and skillful application of fire management strategies and techniques.
11.) Smoke impacts to visibility along Highway 93 and resulting traffic safety concerns must be factored into selection of suppression tactics.

* Unless an emergency situation exits and waiting for approval would risk life or serious injury.

d. FMU 1 - Historic Role of Fire

This FMU does not allow for wildland fire use. However, evidence indicates large fires have occurred in the past. The quaking aspen stands are likely to have originated following wildfires.

e. FMU 1 - Wildland Fire Management Situation

1) Historical weather

The annual fire weather cycles are similar to that for the entire Monument. Higher elevation ridges and north facing aspects generally green-up slower in the spring and dry out later in the summer. The Little Cottonwood and Leech Creek areas are subject to up-slope daytime winds and down-slope winds in the evening. Generally the fire season extends from May to October.

2) Fuel characteristics and Fire behavior

This FMU is dominated by Mountain big sagebrush and low sagebrush types. Low sagebrush is located primarily along the upper ridges of the Pioneers. This FMU includes nearly all of the dense stands of timber found within the monument. These Douglas fir and aspen stands are limited to north facing slopes of cinder cones and the drainage's of Little Cottonwood and Leech Creeks**.**

3) Control problems

The North End is the only FMU with a high potential for fire to spread beyond the monument boundary. The steep slopes of the Pioneer Mountains are conducive to rapid fire spread upslope with only a few scattered rock outcrops to serve as fire breaks between the creek bottom and ridge tops. The monument boundary with adjacent BLM land follows the ridge tops. Shrub density does decrease towards the ridge tops which could slow fire spread in all but extreme conditions. Specific areas include:

- Douglas fir stands on Grassy Cone and Little Cottonwood Canyon with high fuel loads and steep slopes.
- Great Basin wildrye stand at the confluence of Little Cottonwood and Leech Creek with high fuel loads of fine fuels.

4) North End / Watershed Protection FMU Values to be Protected and Special Concerns

- Watershed conditions above spring boxes for the potable water system.
- Research Camp.
- Water treatment structure adjacent to Group Campground.
- Above ground power line on east side.
- Structures associated with underground power line and water wells.
- Sagebrush steppe habitat

f. FMU 1 - Fire Management Areas

FMU I is further subdivided into four individual fire management areas in terms of tactical suppression.

Fire Management Area 1: Suppression: Includes areas in the drainage's of Little Cottonwood and Leech Creeks. Most areas in this zone have slopes in excess of 20%. The vegetation is comprised of primarily sagebrush-grass, upland aspen, Douglas-fir, and riparian communities. Vehicle access is moderate to poor and limited to the lower portions of the valleys. Fires in this unit will tend to spread up slope and out of NPS managed lands. The ridge above Little Cottonwood is dominated by low sagebrush and Sandberg bluegrass vegetation which will help contain the fires in that portion. All fires will be suppressed in this unit.

Fire Management Area 2: Suppression. Includes the Great Basin wildrye community at the base of Little Cottonwood Creek and is composed of that single vegetation type. The topographic position make a natural ignition unlikely. However, the abundant fine fuels (>15,000 kg/ha)(15 tpa) make fire spread likely if an ignition occurs. Vehicle access is good.

Fire Management Area 3: Suppression. All areas dominated by sagebrush-grass vegetation with slopes less than 20%. Vehicle access is moderate. Lava and cinder outcrops and other fuel breaks are common. All wildfires will be suppressed due to the high probability of fires crossing the boundaries of CRMO onto adjacent lands.

Fire Management Area 4. Suppression: Areas of Sunset and Grassy Cones with slopes greater than 20% are included in this unit of FMU I. The lower slopes of Fire Management Area 4 are dominated by a variety of perennial grasses intermixed with mountain big sagebrush vegetation types. The upper slopes are dominated by stands of Douglas-fir. There is vehicle access to the bottom of both cones. The possibility of natural ignition from lightning is high. The possibility of human caused ignitions are probably greatest in this unit of all in CRMO due to the slope, high loads of fine fuels, and the proximity of the highway and the group campground. All fires will be suppressed in this unit due to the high probability of fires burning onto adjacent lands beyond the CRMO boundary.

2. Outstanding Natural Features and Interpretive FMU (FMU 2)

This FMU will be managed under a conditional fire use strategy where management will have the option to implement an appropriate management response to suppress wildland fires in situations were fire use is precluded due to concerns regarding safety, public use or structure protection.

a. FMU 2 Physical Description

This FMU includes that portion of the monument south of Highway 93 but outside of the wilderness area. It encompasses the vast majority of the monument's facilities including the Visitor Center Complex, campground, trails and seven mile scenic drive.

This 4,547 acre area contains the large concentration of geologic features including lava flows, cinder cones and craters. Elevations range from 5,730 feet near Devil's Orchard to 6,357 feet atop Silent Cone. The area is characterized by sparsely vegetated lava flows and cinder gardens along with stands of limber pine and limited areas of sagebrush and antelope bitterbrush. All areas are within .6 of mile of a paved road.

This FMU is accessible from Highway 93,20/26 or portions of the scenic drive. The unit is bordered by FMU 1 on the north and FMU 3 on the south and east. FMU 2 only borders adjacent BLM land for a few hundred feet on the south side of the highway at either end of the monument.

b. FMU 2 Strategic Management Objectives

Within this FMU all wildland fires will be suppressed using an appropriate management response with the intent of minimizing loss of structures and property. The first priority during these suppression actions will be the safety of personnel and the public. A secondary priority will be achievement of resource benefits from wildland fire use where fires are ignited by natural means, are confined by adequate natural fire breaks and pose little risk to the public.

Management of FMU 2 is designed to meet the following FMP objectives.

1) All fire management activities will have as the highest priority firefighter and public safety.
2) Emphasis will be placed on managing naturally ignited fires for resource benefits unless safety, public use, or facility (including structures, utilities, and exhibits) protection concerns over-ride such use.
3) Apply mechanical hazard fuel reduction around vulnerable structures, utilities or cultural sites for protection from fire damage.
4) Strong interagency fire and emergency services agency participation will be encouraged within this FMU.
5) Minimize serious and prolonged (>24 hours) smoke impacts to public use of the scenic drive.

c. FMU 2 Management Constraints

1) Smoke management reporting procedures for burning in Idaho will be followed.
2) Employ minimum impact suppression tactics.
3) No off road vehicle use unless approved by the Superintendent.*
4) No dozer or grader use unless approved by the Superintendent.
5) Protection mitigation measures for known historic and cultural resource sites must be assured.
6) Chainsaw use should be minimized.
7) Low level aircraft use and retardant must be approved by the Superintendent.*
8) All fire management activities will consider safety of personnel and the public as the highest priority.
9) Monument neighbors, park visitors and area residents will be notified of all planned and unplanned fire management activities that have the potential to impact them.
10) All park closures are at the discretion of the Superintendent.
11) No fire management operations will be initiated until all personnel involved receive a safety briefing describing known hazards and mitigating actions, current fire season conditions and current and predicted fire weather and behavior.
12.) Fire management operations will be carried out by qualified individuals that promote the safe and skillful application of fire management strategies and techniques.
13.) Smoke impacts to visibility along Highway 93 and resulting traffic safety concerns must be factored into suppression tactics.
14.) Current or predicted (24 hours) burning indexes exceeding 60 will trigger a suppression response for all fires in FMU 2 using appropriate management response. Ensure MIST guidelines are used in efforts to contain wildland fires.

* Unless an emergency situation exits and waiting for approval would risk life or serious injury.

d. FMU 2 Historic Role of Fire

Fire has been a dominate factor in shaping vegetative patterns since the active periods of volcanic activity from 15,000 to 2,100 years before the present. Since then lightning ignited fires have continued to shape the vegetative composition and structure. The current landscape consists of pockets of vegetation surround by barren lava flows and cinder fields. These extensive fuel breaks have limited the spread of fires. The wide spread occurrence of limber pines, a fire sensitive tree, indicates many areas have been isolated from fires and that fire frequencies are fairly long on average.

e. Wildland Fire Management Situation

1). Fuel characteristics and Fire behavior

Limber pine, mountain big sagebrush and antelope bitterbrush are the only significant fuel types represented in FMU 2. Limber pines grow in sparse stands generally without continuous canopies but occasionally have a dense understory of antelope bitterbrush.

Many of the reported fires were single trees ignited by lightning. The area is subject to high winds from the southwest.

2) Control problems

Severe weather conditions are required to sustain ignition and cause spread of fires via spotting from isolated patches of vegetation. However, once fire has reached the crowns of denser stands of limber pines, it is much more difficult to control (much greater intensities/flame lengths). Specific areas with potential control problems include :

- Limber pine stands on the northeast slope of Inferno Cone
- Mountain big sagebrush northeast of the Visitor Center
- Limber pine stands on Broken Top

3) FMU 2 Values to be Protected and Special Concerns

- Visitor Center complex including the residences and campground.
- Utility lines, microwave tower, and interpretive wayside exhibits.
- Smoke impacts to the Visitor Center complex and highway traffic.

f. Fire Management Areas within FMU II

Fire Management Area 5: Suppression. This zone includes the Visitor Center, maintenance buildings, housing area, and campground including the small cinder cone to the east of the Visitor Center. The entire area is included within Fire Management Area 5 within Fire Management Unit II. This fire suppression unit is composed primarily of lava flows and cinder gardens. A small area of sagebrush grassland occurs northeast of the visitor center. This is the only portion that has a high potential of spread to the monument boundary. All fires will be suppressed in this FMA due to the proximity of structures and high visitor use areas.

Fire Management Area 6: Appropriate Management Response/Wildland Fire This area includes the area adjacent to the CRMO scenic drive and contains the volcanic features seen by most monument visitors. The area is of most recent volcanic origin and consequently is highly dissected by lava flows and cinder gardens and is only capable of sustaining a large fire under extreme weather conditions.

This unit is very accessible due to proximity of the loop drive and does have a number of plant communities which, while small in size, do contain adequate fuels to sustain fire spread. These are predominantly limber pine and

bitterbrush vegetation types. Charcoal evidence indicates that many of these communities have burned in the past. However, the fires were small due to the numerous natural fuel breaks. The presence of limber pine make natural ignition from lightning a likely source of fire. The region adjacent to the Tree Molds parking lot has the greatest likelihood of human-caused ignition. The fuels are dense and continuous. This area has burned in the recent past. Areas near the Tree Molds parking lot and on the south side of Silent Cone present the only possibility of a fire burning out of the FMA.

Due to the small area that a fire is likely to spread and the possible damage caused by suppression, the use of natural barriers and minimum impact suppression techniques (MIST) will be incorporated to mitigate suppression impacts. Wildfires with fire-line intensities greater than 400 Kcal/m/s (500 Btu/ft/sec.) are likely to present serious control problems related to spot fires and crowning (Rothermel 1983) so timeliness of initial attack in these circumstances is important. The limber pine stands on the east side of Inferno Cone are of major importance as a deer fawning area and alternate use areas are not readily available.

3. Wilderness\Wildland Fire Use FMU (FMU 3)

a. Wildland Fire Use Physical Description

The largest portion of the monument is included within this FMU which is designated as Wilderness. It contains a wide variety of vegetation types including: mountain big sagebrush, antelope bitterbrush and limber pine. The major vegetated portions are surrounded by sparsely vegetated lava flows and cinder gardens that are incapable of supporting a fire. This will result in containment of most fires in this FMU of the monument except those potential cases indicated in Fire Management Area 7. The Wilderness Subzone is further subdivided into 5 Fire Management Areas 7-11.

Access within FMU 3 can be very difficult. No roads and only a few trails exist internally and even most areas outside of the wilderness/monument boundary are inaccessible. The northern portion of the wilderness boundary lies as little as .2 mile from paved roads. Remote sections in the southern portion of the monument are up to 8.5 miles from the nearest paved road and 4.5 miles from the nearest vehicle access of any kind. Ground access to many areas requires walking across miles of rugged lava flows.

These factors and a lack of water, dictate significant staff or the use of helicopter support for fire fighters or fire monitors working in remote areas.

b. Wildland Fire Use FMU 3 Strategic Management Objectives

- The main objective for the Wildland Fire Use FMU is to ensure natural processes and native flora and fauna diversity are restored through fire use.
- Personnel and public safety are the highest priority for all fire management activities.
- All wildland fires which do not meet resource objectives will be suppressed using an appropriate management response..
- Wildland use fire will be used where and when appropriate as a tool to enhance wilderness resources, and where acceptable, across monument boundaries to attain resource management objectives.
- Fire restored as an ecological process.
- The effects of fire on the ecosystem identified.
- Monument neighbors, park visitors and the local residents will be notified of all planned and unplanned fire management activities that have the potential to impact them.
- Area closures will be implemented at the discretion of the Superintendent.
- Fire management operations will be carried out by qualified individuals that promote the safe and skillful application of fire management strategies and techniques.

c. Wildland Fire Use FMU 3 Management Constraints

- Wildland fire operations within the Wilderness Area will adhere to the requirements of the Wilderness Act, NPS Management Policies, and NPS Director's Orders 18 and 41 (Wilderness Preservation and Management).
- No fire management operations will be initiated until all personnel involved receive a safety briefing describing known hazards and mitigating actions, current fire season conditions, and current and predicted fire weather and behavior.
- Smoke management reporting procedures for burning in Idaho will be followed for all fire use operations.
- All fire management activities within FMU 3 will employ minimum impact tactics.
- Minimum requirement (tool) protocols (DO-41) will be applied in decisions regarding tactics and tools to employ within wilderness.
- No motorized equipment or mechanized transportation may be used unless approved by the Superintendent.
- No dozer or grader use.
- Use of low flying aircraft to make water or retardant drops or to land within the wilderness area must be approved by the Superintendent (expect in life-threatening emergency situations).
- Helispots will not be constructed.

d. Wildland Fire Management Situation

1) Control Problems - (See Fire Management Area descriptions below)

2) Wildland Fire Use FMU 3: Values to be Protected and Special Concerns -

The primary values in FMU 3 are wilderness related. These include maintaining natural conditions and an appearance of lands affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; and opportunities for solitude. In the case of wilderness, fire is a part of the natural condition and fire suppression is an imprint of man.

Fire Management Area 7: Wildland Fire Use. This unit is located in the vicinity of Big Cinder and Half Cone Buttes and is dominated by limber pine vegetation types with dense bitterbrush understory and bitterbrush vegetation types. While many communities contain relatively high fuel loads, the spatial continuity is low due to recent lava flows and cinder gardens. The potential spread of a fire is therefore limited. Fires have little potential to burn into FMU 2 (Outstanding Natural Feature Zone) with the exception of three locations: 1) southwest of Silent Cone, 2) north of Big Cinder Butte and 3) fires that occur adjacent to the Tree Molds parking area. These may possibly spread out of Fire Management Area 7 if ignited under severe burning conditions and winds from the south. If predicted fire behavior exceeds conditions of 1) flame lengths greater than 2.5 m (8.2 ft), 2) fire line intensities greater than 400 Kcal/m/s (500 Btu/ft/s), and 3) a southerly wind; the fires will be considered for suppression.
Fire Management Area 8: Wildland Fire Use. Limber pine communities which have developed on lava dominate this unit. The amount of fuel is very low and they are likely to spread only under extreme weather conditions. Fire Management Area 8 is subdivided into three discrete sections located near Echo Crater, Sheep Trail Butte, and west of Coyote Butte.
Fire Management Area 9: Wildland Fire Use. This unit is located in the sagebrush-dominated communities of Coyote Butte and Little Prairie. Fuel loads are relatively high in some locations and past fires have been of moderate size (50-100 ha/120-250 ac). Fires ignited in this unit could readily burn into Fire Management Areas 7 and 8.
Fire Management Area 10: Wildland Fire Use. This unit is composed of small isolated tracts of vegetation in southern portions of the monument between Fissure and Two Point Buttes. Since the areas are small, ignitions in these areas will be rare and the fires small when they do occur. Vegetation is composed primarily of low density limber pine communities.
Fire Management Area 11: Wildland Fire Use. Carey Kipuka, Round Knoll and other small kipukas on the monument comprise this FMA. The vegetation is primarily a mixture of sagebrush communities. If ignited the entire kipuka could burn due to the high fuel loads and limited access. In all but the most extreme conditions, fires would be unlikely to spread to another Fire Management Area or off the monument.

VII. Wildland Fire Management

Interagency recognition of risks and expenses associated with wildland fire management culminated in a December 1995 Final Report of the Federal Wildland Fire Management Policy and Program Review, issued by a team of fire management experts. The Secretary of the Interior has accepted and endorsed the principles, policies, and recommendations contained in the report, and has directed the NPS to implement them. NPS fire management activities will be performed in accordance with the principles, policies, and recommendations of the Final Report of the Federal Wildland Fire Management Policy and Program Reviews (DO-18).

The document, "Wildland and Prescribed Fire Management Policy, Implementation Procedures Reference Guide," represents an interagency effort designed to provide standardized procedures to guide immediate implementation of the policy described in the 1995 Federal Wildland Fire Management Policy and Program Review. The CRMO Fire Management Plan incorporates in the implementation procedures, including the use of Wildland Fire Implementation Plans and Wildland Fire Situation Analysis, from the Reference Guide.

Much of this section is based on The Wildland and Prescribed Fire Policy Implementation and Reference Guide 1998. It is imperative that the user of this fire management plan become familiar with that guide.

A. General Management Considerations

The Wildland Fire Implementation Plan, Stage I, provides the decision framework for selecting the appropriate management response. The Stage I analysis includes the initial fire assessment and the go/no go decision criteria checklist. It documents the current and predicted situation and all appropriate administrative information. It also provides the manager with decision criteria to make the initial decision of whether to manage the fire for resource benefits or to take suppression action. Refer to page 34, Chapter 4, Reference Guide.

1. General Management Plan (GMP) Review

Prior to determining the appropriate management response, it is important for the decision-maker to understand the (GMP) direction and how it can be applied to wildland fire.

Appropriate management responses do not seek to limit fire size as a primary objective. Rather, they should be based upon:

- public and firefighter safety

- protection of public health within the monument and other inhabited areas near CRMO and avoiding visibility impairment of air quality
- cost expenditures should be commensurate with values to be protected
- protection of cultural, historic and natural resources from fires
- limiting fire-line construction through use of existing barriers such as the existing roads or rock areas.
- protection of park improvements (buildings, roads, campgrounds, etc.)
- preventing fire spread from CRMO onto surrounding public lands unless accepted by BLM.

2. Decision criteria checklist for a go/no go decision

The initial fire assessment includes the Fire Situation and Decision Criteria Checklist included in the Wildland and Prescribed Fire Management Policy: Implementation Procedures Reference Guide (Chapter 4.C.). These and the criteria listed in Appendix O shall be considered and evaluated. GO decisions require the approval of the Superintendent (unless delegated in writing to others).

B. Wildland Fire Use

1. Rationale for Fire Management Strategies

Fire is an integral component of the CRMO ecosystem and is an appropriate tool for managing natural resources at the monument. Wildland fire managed for resource benefits will produce a wide range of fire intensities and severity, Diverse fire effects will result in mosaics of vegetation composition and age classes across the monument landscape. The diversity of plant and animal species will result in a more resilient ecosystem.

2. Objectives of Wildland Fire Use

The objective of the wildland fire use program is to allow natural ignitions to restore fire as an ecological process. Extensive lava flows create natural barriers to fire spread and will generally confine fires to areas less than 1,000 acres. However, a 1,000 acre limit to the size of these fires is not a fire management plan objective. The largest fire recorded within the fire use zone was a 1,900 acre fire on Little Prairie in 1992. Wildland fire use will only be considered for fires resulting from natural ignitions within Fire Management Units 2 or 3.

3. General Plan for Wildland Fire Use

The general plan for wildland fire use will prepare CRMO for effectively managing wildland fire use operations.

January-June (preseason):

- Update weather data for use in long-term fire spread projections to support fire use decisions (obtained from BLM).
- Review the FMP and Wildland and Prescribed Fire Implementation Policy Reference Guide process and track fire season severity to support fire use decisions.
- Ensure that fire use monitoring skills are available in the local area (Upper Snake River) to support fire use operations during the fire season.
- Review and update interagency agreements to ensure that resources are available to support fire use decisions.
- Contact the Idaho Department of Environmental Quality for updated status of the South Idaho Cooperative Smoke Management Plan.
- Minimum training targets should include an ICT3, RXFS and an RXFM.

May-October (fire season):

- Monitor daily fire weather using in-monument sources, fire weather stations maintained by BLM Shoshone and National Weather Service forecasts.
- Determine availability of wildland fire monitors during periods of favorable fire use conditions.
- Quantify and report wildland fire use emissions for the Southern Idaho Smoke Management Program coordinator during extended (>72 hours) events.
- Update local cooperators on wildland fire use options so that candidate fires are not suppressed until the superintendent has had an opportunity to make the go/no go decision.
- Evaluate areas with in FMU 2 & 3 where candidate fires would likely meet resource management objectives.
- Track fire season severity against historical averages.

4. Staff responsibilities

If wildland fire complexity escalates to Stage II of the Wildland Fire Implementation Plan (WFIP), or during multiple Stage I/II fires, the staff of CRMO will require assistance to complete fire spread modeling and Maximum Manageable Area (MMA) development. CRMO should resource order a Prescribed Fire Behavior Analyst (RXFA to assist in planning and documentation of wildland fires.

Superintendent
Responsible for making the Go/No Go Decision (unless delegated in writing to

others), signing the Wildland Fire Implementation Plan (WFIP) and periodic assessment to validate the WFIP decision. Declares park closures when needed. Will issue a written delegation of authority in the event a Fire Use Management Team is assigned to a wildland fire use project at CRMO. Ensures that fire information is managed as described in CRMO fire management plan.

Collateral-duty Fire Management Officer /Chief Ranger
Responsible for ensuring that the FMP fire preparedness and suppression programs are managed within RM-18 guidelines. Provides technical assistance in respect to WFIP planning, staffing assistance in respect to monitoring and advisory assistance in terms of escalating staffing due to increases in complexity and fire behavior. Evaluates fire activity in terms of public and employee safety and makes recommendations to the superintendent for closures. Patrols to ensure closures are enforced. Designs and implements the park evacuation plan at the discretion of the superintendent.

Chief of Resources Management
Ensures that a comprehensive fire management plan at the monument is developed and implemented. Responsible for analyzing fire weather and fire season severity to support fire use decisions, preparing WFIP stage I and the Relative Risk Rating Chart on all candidate wildland use fires. Establishes the review timeframes for periodic assessment on all declared wildland fire use projects. Completes or assists with WFIP Stage II, coordinates with state air quality, local wildland fire agencies and orders resources as needed, such as monitors, prescribed fire behavior analyst or a Fire Use Management Team. Provides input into Maximum Manageable Area (MMA) and long term risk assessment in accordance with Stage III.

Duty Officer(out of park resource until training targets are reached)
A duty officer will be available throughout the season for coordinating initial attack/extended attack on wildland fires within monument boundaries. The Duty Officer will be a qualified Division Group Supervisor or Type III IC as a minimum. If these skills are not available through monument personnel, assistance from outside sources will be solicited. The monument will seek to maintain at least one qualified duty officer.

Administrative Officer
Acts as comptroller for project. Tracks expenditures daily against the fire account, reports expenditures to the superintendent and prepares a final financial package as an official record of the project that will be reviewed during program audits.

Prescribed Fire Behavior Specialist- RXFS (out of park resource until training targets are reached)
Facilitates the information gathering, analysis, planning and implementation of WFIP. May be pre-positioned in the park when fire weather is conducive to wildland fire use. Must be on site within 12 hours of a WFIP Stage I “go”

decision.

Prescribed Fire Behavior Analyst - RXFA (out of park resource)
Performs long term risk assessment using advanced fire spread modeling technology. Models smoke emission and transport for documenting air quality impacts. Provides input into MMA and decision trigger point development. Should be ordered when complexity is anticipated to escalate beyond stage II.

Prescribed Fire Behavior Monitor (out of park resource until training targets are reached)
Monitors and documents fire weather, behavior, fuel consumption and map location. Provides feedback to the Chief of Resources Management in terms of fire use and resource management objectives. May be pre-positioned in the park when fire weather is conducive to wildland fire use. Must be on site within 12 hours of a WFIP Stage I "go" decision.

External Resources

- Support will be needed for CRMO to implement wildland fire.
- NPS Fire Use Modules: can provide both planning and operational assistance related to wildland fire use fires.
- Local BLM and Forest Service personnel can assist with implementing wildland fire use fires.
- BLM and Natural Resource Conservation Service can provide consultation related to site potential and restoration.

5. Factors to be Monitored for Decision-Making

Factors that must be monitored in order to make informed wildland fire use decisions are listed below. The application and source of each factor are also listed. These factors must be monitored daily when considering wildland fire use decisions.

Factor	Application	Source
NFDRS	Relative Fire Danger	RAWS - Arco/Potter Butte
Risk Assessment - RERAP	Historical Weather Data	CRMO Station 102260 or nearest available
Regional Fire Activity - Preparedness Level	Resource Availability	Southern Idaho Interagency Dispatch Center
Smoke emissions	Air Quality	ID Air Quality Division FOFEM, NPSPUFF, SASEM or equivalent model
KBDI	Drought Index	WMIS Station

Fire Weather	Fire Behavior/Danger	National Weather Service, Pocatello

The decision criteria used in the GO/NO GO decision (listed in Appendix O) shall be used in determining whether an ongoing fire shall continue to be managed for resource benefits. A Wildland Fire Situation Analysis is developed whenever a wildland use fire is shifted to a suppression response.

6. Relationship of WFU and Step-up Plan

The monument fire suppression preparedness step-up plan will also serve as a wildland fire use step-up plan, as both activities use the same data inputs and outputs.

7. Preplanned Implementation Procedures

All wildland fire use activities on the monument will follow procedures outlined in the Implementation Policy. There are no pre-planned activities, except staffing step-up, as outlined in the monument step-up plan and a fire exclusion strategy in all of Fire Management Unit 1.

8. Implementation Procedures not Preplanned

Those activities that are not pre-planned include established maximum manageable area (MMA), Decision Criteria Checklists, Risk Assessment, Complexity Analysis or Periodic Assessment interval. All of these planning items will be detailed at the onset of a wildland fire use project in the timeline established in the Implementation Policy.

9. Cost Tracking

Wildland fire use operations have the potential to be less intensely managed than suppression activities, and as a result be less costly. As such, a critical element of the wildland fire use program is to capture the data that proves this out. All costs associated with wildland fire use projects will be tracked by day. Costs will include all personnel services, service contracts, aircraft, supplies and equipment procurement. This should be captured on a spread sheet and included in the fire history record.

10. Outline for Project Records

It is critical that wildland fire use project records be maintained for future reference, especially if controversy surrounds the fire, such as air quality complaints. All wildland fires will be mapped with GPS and the coordinates archived as a GIS data layer. Other records should include:

- Wildland Fire Implementation Plan and all amendments and revisions.
- Wildland Fire Situation Analysis (if used).
- Monitoring reports and summaries of findings.
- Revalidation and certification documents.
- Fiscal reports.
- Project Maps.
- Daily weather records.
- Fire behavior predictions.
- Smoke emission and transport observations and modeling reports if required.
- DI-1202 Individual Fire Report (SACS entry required).
- Resource Orders used to mobilize resources.
- other information as appropriate for the situation such as photo points

11. Public Information on WFU

When Wildland Fire Use projects are implemented, information should be made available to the public to ensure understanding, acceptance, and support. Provide local media (newspapers, radio, and television) with briefings and photo/interview opportunities. Ensure staff are briefed and provide information concerning status of WFU. Coordinate with other agency public information specialists to ensure a consistent message is provided to the public. If WFU operation persists for extended periods and burns substantial area, consider ordering a public information specialist.

12. Potential Impacts of Plan Implementation

The potential external impacts of implementing a wildland fire use program at the Monument should be minimal. The topography and fuels of the area will not normally support large fire growth or long term extreme fire behavior. Extensive natural barriers to fire spread exists over much of the monument. As such, the threat of fires breaching well thought out MMA's is not great.

The Upper Snake River air-shed may be impacted during short or long term events. Other ongoing wildland fires and/or agricultural burning as well as forecasted weather conditions will be factored in WFU go/no go decisions. Emission and dispersal modeling will be very important to defend wildland fire use decisions. Air quality monitoring in real-time may become necessary if emission models predict NAAQS PM 10 or PM 2.5 standards could be exceeded for short time periods as a result of fires in the monument.

Road closures for public safety may also generate impacts on public use. As a result, the monument must be prepared to deal with public information requests.

Wildland fire use projects will also result in internal impacts to the monument. Supporting these projects will require a substantial commitment of staff time. While non-local resources can be mobilized to assist with these fires, local staff will certainly be required to participate in data acquisition, analysis, decision support, plan implementation and evaluation. However, as the program evolves and becomes productive, it will generate a statistical database in the FIREPRO budget allocation process where positions and funding is awarded. As such, fire management staff could be expected to increase and lessen the impacts of fires over time.

13. Exceeding existing WFIP - Selecting a New Strategy

a. Situations requiring a new strategy

A new strategy must be developed if a wildland fire use project exceeds the periodic assessment or the fire leaves the MMA boundary. A new strategy may need to be developed if the regional or national fire situation escalates and fire management resources are in short supply.

b. Information used to set incident priorities

Priorities for action if a fire requires a new strategy should be based first on safety of the public and firefighters. Secondary priorities include protection of private property and monument resources and improvements, and smoke sensitive areas, including the human health at the monument headquarters complex, the communities of Arco or Carey , the Idaho National Engineering and Environmental Laboratory or visibility impairment of highways or the Class I area (wilderness). Locations of sensitive resources (archaeological sites and sensitive plants and animals) can be identified from Resource Management staff and/or maps. Safety hazards should be identified by Ranger and Maintenance staff.

c. Implementation plan requirements

Use the incident action plan to develop organization. Use strategy and tactics that have been successful in the past. Take care to ensure MIST is not forgotten in the efforts to return the fire use action to prescription.

C. Wildland Fire Suppression

1. Range of Potential Fire Behavior

Fire behavior in the monument can range from fast moving surface fires in light fuels to stand replacement fires in small but dense stands of trees. For more detailed discussion refer to the fire behavior descriptions in Section IV.

2. Preparedness Actions

a) Prevention/Wildland Fire Use Educational Activities

Fire prevention includes all activities designed to reduce the number of human-caused wildfires that occur in the monument. The objective of the program will be to minimize preventable fires.

Prevention activities for CRMO may include prevention signing, prevention messages through interpreters and staff and prevention patrols during periods of very high fire danger (Staffing Classes IV-VI). Associated with prevention messages will be wildland fire use educational and project awareness messages tailored for the public.

Fire prevention and wildland fire use will be discussed at selected staff safety meetings in the early spring to make sure all members are aware of concerns and procedures regarding response to wildfires and actions related to prescribed and wildland use fires.

The monument may participate in fire prevention and safety fairs at local schools so that the general public is aware of the importance of fire prevention.

During periods of high fire danger (SC IV-VI), the general public and park visitors will be informed of conditions through press releases, interpretive media and, if necessary, the posting of signs at monument entrances, the visitor center, and the campground. The prohibition on open fires will be extended to the Group Campsite, Research Camp and amphitheater. Fuels along the section of Goodale's Cutoff west of the North End Road should be assessed to determine whether vehicle traffic should be curtailed due to the danger of accidental ignition from vehicle exhaust systems.

The first week of July is historically a high fire danger period. During this week, the visiting public will be reminded of the 36 CFR regulations regarding the use of fireworks in the monument, and the policy regarding contained fires. Patrols will be alert to fireworks use and illegal fires in the campground or wilderness.

b) Annual Training

Annual training will consist of annual fire fighter safety refresher training, first aid and other safety training for appropriate individuals. As an IC Type III should be on site (or available within two hours) throughout the fire season, this should be a training priority for CRMO.

c) Annual Preparedness Activities

January

- perform fire physical exams triennially (every three years) as per standards in RM-18, Fire Management Guidelines.

April

- pack test fire personnel annually, as per standards in RM-18 and
- update and submit fire qualifications to NIFC computer.
- Inventory fire equipment, order needed supplies and update equipment list. Includes both fire cache and personal equipment.
- Obtain or prepare signs for wilderness fire use fire interpretation.
- Review Step-Up Plan.
- Inspect fire cache and ensure that equipment is ready.
- Check the established Regional procedure for utilizing suppression and emergency preparedness accounts.
- Meet and coordinate dispatch procedures with BLM and other agencies.

May

- Check operation of light engine and all on board equipment.
- Carded fire-fighters check fire packs.

Mid-May to Mid-October (fire season)

- Operate light engine pump weekly

1st Week of July

- Post warnings regarding fireworks regulations
- Increase patrols during 4th of July weekend

November

- Critique fire season including all fire management activities (i.e. wildland fire suppression, use fires and mechanical fuel treatment, prevention, etc.).
- Winterize light engine and other equipment.
- Evaluate individual performance of monument staff to correct deficiencies and recommend personnel for training.
- Review and revise Fire Management Plan, if necessary.

d) Step-up Plan

The Superintendent or FMO has the ability to bump up one preparedness staffing class for unusual monument events that would increase the potential for wildland fire.

Preparedness activities during the fire season are based on the National Fire Danger Rating System (NFDRS). Fire days are broadly divided into five staffing classes according to the intensity of danger factors as indicated by the Burning Index (BI). The BI integrates the effects of weather, fuels, and topography to estimate potential fire behavior and the corresponding amount of effort required to contain a fire. The staffing classes relate to the expected severity of fire conditions.

Staffing class levels are based on the cumulative frequency distribution of the BI. Class IV and V represent the 90th and 97th percentile, respectively , of historic BI's. CRMO utilizes the BI and other fire weather observations from the BLM RAWS stations at Arco, Rock Lake (4250', 42.9° ,114.0°) and Potter Butte (4940', 43.2°, 113.5°).

Preparedness actions are based on the predicted fire weather before 1400 hours and on actual fire weather after 1400 hours for all staffing classes.

Table 1. Burning Index and Staffing Class	
0-20	I
21-40	II
41-60	III
61-80	IV
81-120	V
121+	VI

Fire conditions that typify each staffing class and the corresponding preparedness actions required are as follows:

Staffing Classes I and II (BI 0-40)

Conditions

Fires will present a low to moderate level of control difficulty. Fires occurring at this level may be controlled with existing forces. Wind speed and direction will determine severity of fire spread. Fine fuels will be drying.

Preparedness Actions

- Fire weather reviewed daily.

- Engine, hand tools and portable equipment in a state of readiness.
- If the LAL is between 4 and 6 for the next day automatically bump up to a staffing class 4

Suppression Actions

- One qualified employee will depart within five minutes for the fire location.
- Additional attack forces will be dispatched after size-up and upon request of the first firefighter to arrive.
- If necessary, cooperator assistance will be requested as described under the dispatch section.
- If the fire location is near a road, the monument's light engine will be dispatched.

Staffing Class III (BI 41-60)

Conditions

Fires will present a moderate level of control difficulty. Light fuels are becoming dry. Heavy fuels are drying. Mop-up will be more difficult and time-consuming.

Preparedness Actions

- All actions specified for Staffing Class I and II days will be conducted.
- Ensure that a minimum of two qualified fire personnel (one engine operator) are available for initial attack.
- Open fires prohibited in Group Campsite and Research Camp.
- If the LAL is between 4 and 6 for the next day automatically bump up to a staffing class 5

Suppression Actions

All suppression actions indicated for Staffing Classes I and II will be taken.

Staffing Classes IV and V (BI 60-120)

Conditions

Fire will present a moderate to high level of control difficulty. Initial attack and reinforcing crews may have difficulty controlling a fire at this level. All fuels are dry. Air temperature is high and humidity is low. Strong gusty winds are possible. Spotting may occur.

Preparedness Actions

- All actions specified for Staffing Class III days will be conducted.
- Notice of fire situation to all monument staff.
- Detection patrols will be increased.
- Fire Situation reports will be entered into the NIFC computer daily before 9:30 A.M.
- Visitor Center personnel will alert the public to fire hazards.
- Interpretive activities will include a fire safety message.

- Emergency preparedness funds (PWE 343) may be used to bring staff to required levels. However, regularly scheduled personnel will be used to the extent possible. It is recognized that both nonessential routine activities and project work may be postponed on Class IV and V days.
- Fire danger notices will be posted.
- Available wildland fire use monitors will be identified and ordered upon reports of ignitions.
- Open fires prohibited in Campground, Group Campsite Research Camp and Amphitheater.

Suppression Actions
All actions specified for Staffing Class III days will be taken.

3. Pre-attack Plan

Due to the small size and scope of the fire program at Craters of the Moon National Monument, no formal pre-attack plan has been written. Certain preparations and procedures are however established prior to and during the fire season. Some are mentioned in the Annual Preparedness Activities section, other pre-attack plans are informally discussed among the five person fire crew during practice or equipment maintenance assemblies. The value of a written pre-attack plan, or checklist, is however recognized. Such preparation will inevitable emerge as the fire program evolves into a more complex and operationally committed program.

4. Initial Attack

a) Priority setting during multiple fire occurrence.

Fires occurring in FMU 1 will be considered of higher priority than fires occurring in FMU 2 or 3 (unless the latter fires pose a threat to structures or public safety). Fires occurring FMU 2 will be of higher priority than fires occurring in FMU 3. The following will be used to set priorities elsewhere.

- Vegetative cover map; any fire with continuous fuels up to and across the monument boundary or structures.
- Cultural and historic site map
- Park facility map

b) Criteria for appropriate initial attack response consistent with GMP/RMP objectives:

- Public and firefighter safety
- Protection of cultural, historic, and natural resources
- Protection of improvements and private property

- Minimum fire-line construction
- Available suppression resources and response times
- Fire danger as determined by fuels, weather, and topography
- Use aircraft and mechanized equipment only where necessary to support above-listed criteria
- A confinement strategy may be selected for initial attack as long as it is not being used solely to meet resource management objectives.
- Resource benefits may be a by-product, but the strategy must be based upon the criteria listed above.
- A confinement strategy may also be selected in the WFSA process when initial attack has failed to contain a wildland fire. When confinement is selected as the initial action, the same management process applies as for wildland fire use decisions. A WFIP will be prepared in stages as the fire management conditions change and associated considerations require additional attention.

Typical fire response times at CRMO vary depending on the staffing at the monument, other fire management activity in the local area, and time of day. During fire season when no other fire activity is occurring, and staffing is available, the CRMO light engine can respond to the nearest road access for fires within the monument within one hour in FMU 1 or 2 and up to three hours in FMU 3. Support from other agencies within BLM's Upper Snake River District area can respond to closest road access to a fire within three hours. Air tanker and helicopter attack can reach a fire within 1 hour. Support from outside the Upper Snake River dispatch area cannot be counted on arriving any sooner than eight hours after request.

c) Restrictions and special concerns by management area (FMU).
See Section IV of this plan for description of FMUs.

FMU 1 - Take care to ensure MIST is used while containing wildland fires.

Several lava tube caves located within the older lava flows between Goodale's Cutoff and Grassy Cone are utilized as maternity roosts by Townsend's big-eared bats. Physical disturbance of the entrances and heavy smoke within the caves are concerns.

A concrete block shed housing the water treatment facility for the monument is located at the Group Campsite. The main electrical power line for the monument enters the monument from the east (¼ mile north of Hwy. 93) and crosses the highway 200 yards east of the Visitor Center. Above ground electrical boxes for an underground power line are located parallel to the North End Road from the Group Campsite to the water wells at the mouth of Little Cottonwood Canyon. All of these facilities should be given a high priority for protection.

FMU 2 - The proximity of fires to visitor use areas, visitor numbers and the size of the area of having continuos fuel allowing for fire spread should be considered. Fires burning in the sagebrush fuel type along Highway 93 (northeast of the headquarters complex) will be suppressed.

Should current or predicted (24 hours) burning indexes exceed 60 all fires in FMU 2 should be suppressed using appropriate management response. Ensure MIST guidelines are used in efforts to contain wildland fires.

FMU 3 - For Stage I "No Go" fire use decisions, initial attack should utilize an appropriate management response which considers the full range of available strategies. All of FMU 3 is designated Wilderness and suppression activities must conform with DO-41 and RM-41.

d) Escaped wildland fires

Information that should be used to used to set incident priorities:

- Objectives for each FMU involved in the fire
- Restrictions in areas of special concern
- Implementation plan requirements
- Social and political concerns
- Decision criteria matrix or flowchart including the risk assessment process
- Complexity decision process for transition from IA to extended action
- Park delegation of authority

5. Extended Attack and Large Fire Suppression

a) determining extended attack needs

Extended attack needs will be determined by considering the following:

Threats to life, property, and Monument resources
Availability of suppression forces
Current and expected fire behavior

b) Implementation plan requirements - WFSA development

Follow guidance in Wildland and Prescribed Fire Policy, Implementation Procedures Reference Guide and RM-18, Chapter 9.

c) complexity decision process from initial attack to extended attack

Follow guidance in RM-18, Chapter 9, Initial and Extended Attack.

6. Minimum Impact Suppression Tactics

- All fire management activities in CRMO will rely on tactics which do a minimum amount of resource damage while maintaining the safety of firefighters, personnel and the public as the highest priority.
- Superintendent approval is needed for off road use of vehicles and bulldozers, mechanized equipment and low flying aircraft in wilderness.
- Complete minimum impact guidelines are listed in Appendix J.

7. Rehabilitation

All suppression activities will be carried out in such a manner as to cause the least amount of resource damage. After the fire is declared out, all litter and trash will be removed. Dug fire-lines will be refilled and erosion control devices installed if necessary. Stumps will be flush cut. Logs and brush will be chopped and scattered or removed. The severity of the burn and its resultant impact will be considered in determining the need to seed or otherwise re-establish native plant species. Such efforts regarding landscaping and plants will be in full compliance with NPS Management Policies and given prior approval of the Regional Director. A rehabilitation plan, outlining what species are to be planted, techniques to be used, locations and cost estimates will be prepared before any action is taken.

8. Records/Reports

The Chief Ranger (or collateral duty FMO) is responsible for all fire related records and reports except the WFIP. This responsibility may be delegated in an incoming Incident Management Team for any fire escaping initial attack (extending beyond the first burning period).

Wildland Fire Implementation Plan (WFIP)

Stage I of a wildland fire implementation plan will be prepared for every wildland fire and will be the responsibility of the Chief of Resources. Should the Stage I "Go/No Go" lead to a fire use (Go) decision, development of stage II and III of the WFIP will be assigned to a Fire Behavior Analyst.

Individual Fire Reports (DI-1202)

The basic report for documenting a wildland fire is the Individual Fire Report (DI-1202). The report is valuable as it provides an historical record of the fire regime for the monument. As such, it is important that all fires that occur within the boundaries be documented using, at a minimum, this form. This includes fires that go out on their own when the location can be documented.

The DI-1202 is the basic document used by the National Interagency Fire Center (NIFC) to document a fire occurrence. Incidents known as Support Actions where monument personnel respond to fires outside the monument (including out of state) are reported on this form. It is impossible for an individual to receive credit for jobs performed on any fire unless NIFC has a record of that fire from the monument in the form of a DI-1202 and its attached Fire Number.

The Incident Commander for the fire is the person responsible for preparation of the Individual Fire Report. In most cases, this is the individual who put the fire out. That person may also want to complete a Case Incident Report (Form 10-343) for the fire but that would be in addition to the DI-1202. Fires will be sequentially assigned a fire number by calendar year, i.e. fires in 1989 are numbered 8901, 8902,etc.

A complete fire report will include the following attachments, if applicable:

- Any written policies, guidelines or authority statements signed by the Superintendent.
- Copy of the WFIP
- Copies of equipment purchased or personnel request orders.
- All situation maps.
- Personnel lists (including Emergency Time slips.)
- Press clippings.
- Accident reports.
- All weather data reports and records.
- Documentation of financial charges made against the assigned PMP.
- Rehabilitation plan.

The report is then submitted, in draft, to the Chief Ranger. Instructions for filling out the report are found in RM-18. That person will review the report for completeness. He/she will then enter the data into the monument database for permanent record keeping. That procedure also prepares a final draft of the form for the files. The information will also be entered into the Wildland Fire Management Computer System. Finally, a copy of the DI-1202 will be sent to the Regional Fire Management Officer for that person's records.

Fire Experience and Qualifications

The Wildland Fire Management Computer System at NIFC is the central repository for all individual fire experience and training records. The Chief Ranger/Collateral Duty FMO is the person responsible for entering all training and experience into the computer and ensuring the information is up to date.

Daily Situation Reports

Daily Situation Reports are required on those days when the Burning Index reaches the 90th percentile and the monument moves into Staffing Class IV and V or when a fire has occurred or is on-going. The Chief Ranger is responsible for the preparation of the report and entering it into the Wildland Fire Management Computer System by 9:30 a.m.

Smoke Management Reports

Smoke Management reports will be made by the Chief of Resources as agreed to with the State of Idaho Department of Environmental Quality and any Federal Agencies.

Report of Fire

When a report of a fire is received, the following information should be collected from the reporting party:

- Name of reporting party
- Address
- Phone number
- Location of fire and extent
- If fire is reported in person, ask if the reporting party is willing to show the investigating ranger the location, otherwise, determine if the person can be re-contacted if there are additional questions.

Resource Order Form, NFES 1470

All assistance requests must be documented on the Resource Order Form, NFES 1470. These forms are designed to be transmitted verbally over the telephone. The order form is, in essence, an obligating procurement document.

Whenever an out-of-park incident management team is ordered, the Superintendent must provide a written limited delegation of authority (Appendix L) and a briefing package to the incoming Incident Commander.

Year-end Accomplishment

Completion of year-end accomplishment reports are the responsibility of the collateral FMO or FMO.

IIX. Prescribed Fire Management

The use of prescribed fire within Craters of the Moon National Monument is not contemplated in this plan for two reasons; 1) the potential resource objectives of a prescribed fire program have not been sufficiently documented as yet; 2) the monument currently lacks qualified staff to develop and implement such a program. This does not indicate a decision regarding the appropriateness of prescribe fire at CRMO nor does it preclude incorporation of a prescribed fire program in future revisions of this plan. Any revision to include prescribed fire would require additional NEPA compliance.

IX. Fire Management Organization and Responsibilities

A. Organizational Structure of Park Fire Management Program

Craters of the Moon National Monument does not have a fire management organization. The Columbia Cascades Support Office FMO provides oversight and assistance as needed.

B. FIREPRO funding

Currently, all FIREPRO funding for CRMO is managed by the Columbia Cascades Support Office (CCSO) FMO. Funding is available for engine maintenance, personal protective gear for firefighters, and training funds (on an as-needed and available basis).

C. Fire Management Organization in Relation to Park Organization

The Chief Ranger at CRMO is responsible for wildland fire preparedness, suppression operations, and coordination on suppression operations with mutual aid organizations. The Chief of Resources Management is responsible for fire planning, wildland fire use implementation, wildland fire use monitoring, post fire site assessment and restoration. Both positions coordinate with one another, the Superintendent, the CCSO FMO and cooperating fire organizations on fire and resource management objectives, and all wildland fire implementation actions.

D. Superintendent's Responsibility for Periodic Assessment Signature

Periodic assessments for continued wildland fire use must be approved (signed) by the superintendent. For additional information see Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide and RM-18, Chapter Nine.

E. Interagency Coordination

Interagency coordination and cooperation is integral to successful implementation of the fire management program at CRMO. Only small, slow-moving wildland fires can be managed within the current capabilities of CRMO. All other wildland fires will require external support by interagency cooperators. Annual review of cooperative agreements will ensure successful coordination.

F. Key Interagency Contacts

See Appendix B for a listing of all interagency contacts.

G. Fire Related Agreements.

See Appendix K for interagency and cooperative agreements.

X. Fire Research

Information regarding fire effects in some specific ecosystems is incomplete. This absence of information should not constrain fire program implementation. Rather, as new information becomes available fire related resource management objectives can be refined in an adaptive management style.

A. Previous and Ongoing Fire Research at CRMO

In the development of this plan fire research was conducted by the Cooperative Park Studies Unit at the University of Idaho under the direction of Dr. Gerald Wright. These studies document past fire occurrence, vegetation and fuel components, and made estimates of fire behavior. This information has been incorporated into this plan.

There are currently no ongoing fire research projects at CRMO.

B. Fire Research Needs and Opportunities

Fire research has limited funding within the National Park Service. However, if it is determined that significant information is needed concerning the effects of fire or fire exclusion park managers may submit requests through the annual FIREPRO budget call. Additionally, requests for research funding may be made through the Joint Fire Sciences Group.

As research opportunities become available, studies should be undertaken to determine effects of fire use within CRMO on exotic weeds, water quality, aspen regeneration, riparian vegetation, erosion rates, and wildlife habitat.

Implementation of the CRMO FMP should not be contingent on completion of research of the local fire regime and fire effects on vegetation. A large body of scientific information already exists regarding effects of fire and fire exclusion for the plant associations of CRMO. Although this research was accomplished in other geographic areas, the results may be applied to CRMO (taking care to identify site differences and any subtle differences in effects that those differences might cause).

XI. Monitoring

A. Monitoring Requirements

All NPS units applying wildland fire use and/or prescribed fire to accomplish resource benefits must prepare a Fire Monitoring Plan (RM-18). Four monitoring levels are recognized and parks must identify each of these in the plan. These levels include environmental planning, fire observations, immediate post-fire effects, and long-term change. These four levels are cumulative and must be linked to each other. This plan should be appended to the Fire Management Plan.

B. CRMO Fire Monitoring Plan

The CRMO Fire Monitoring Plan for Wildland Fire Use will be prepared independent of the Fire Management Plan and attached as an Appendix at a later time. Refer to Appendix M for the CRMO Fire Monitoring Plan. The focus of this monitoring program will be to study big sagebrush plant associations and cheatgrass response. The reason for monitoring is to verify current fire ecology research throughout the monument, and to monitor the invasion of exotic species.

The level of monitoring will be determined by current and predicted fire behavior. Large active fires will require qualified fire monitors recording fire weather readings onsite, estimating fire behavior parameters, noting fire effects, determining fuel moisture levels, and documenting fuel type fire behavior with photographs. Wildland use fires which are inactive or predicted to remain less than 10 acres may only require daily observation from lookouts or aircraft.

Reconnaissance monitoring provides a basic overview of the fire event. The data to be collected is as follows:

Fire Cause (ignition system)
Fire Location (origin)
Fire Size
Fuels and Vegetation Description
Relative Fire Activity
Potential for Further Spread
Current and Forecasted Weather
Resource or Safety Threats and Constraints
Smoke Volume and Movement

Fire Conditions monitoring will be dynamic over the management period of the fire. Fire and/or resource management staff assess and determine the level of monitoring of these variables. We measure the following fire conditions:

Fire Monitoring Period – to be determined by the fire or resource manager.

Topographic Variables
Fire Behavior
Smoke Characteristics
Fuel & Vegetation Type
Current & Forecasted Fire

XII. Public Safety

The 1995 Federal Wildland Fire Management Policy mandates that "Public and firefighter is the first priority in every fire management activity."

A. Public Safety Issues

Wildland fires can present a hazard to firefighters and to the public visiting the monument. The safety of all people in the area is the primary concern of the Incident Commander. In most cases, the small fires encountered within the monument make this a fairly simple concern.

B. Procedures for Mitigating Safety Issues

Usually the entire perimeter of the fire is easily monitored and there is little likelihood it will spread far. In these cases, the concern will be to keep the public out of the immediate fire area, far enough away that they will not hinder the suppression activities. Under no circumstance will anyone be permitted near a fire without the appropriate training and personal protective equipment.

In the case of a wildland fire that has potential for rapid spread, there will be a possibility that park visitors will be in areas of danger. Visitors will be informed at the entrance station and the visitor center regarding the fire and the area where caution should be exercised. Efforts will be made to inform backcountry hikers and campers of fire activity that may threaten them and what measures to take to stay safe.

In extreme situations where the rate of spread constitutes an immediate threat, all efforts should be made to alert backcountry hikers and campers of the danger. Signs will be placed at each trailhead warning hikers and backcountry users when wildland fires are being managed for resource benefits. Signs warning of possible smoke on the road will be placed on the park's roads if smoke produced

during wildland fires create a safety concern. Roads may be closed or ranger escorted convoys established if visibility on Highway 93 or park roads is significantly impaired. Any closures or actions related to Highway 93 must be approved and implemented by the Idaho Department of Transportation and/or State Police.

Temporary closure of the monument or a portion may be needed when fire behavior has potential to endanger visitor and employee safety. When a fire threatens to escape from the park or has the potential to do so, adjacent authorities will be given as much advance notice as possible in order to take appropriate action.

XIII. Public Information and Education

A. Public Fire Information; Capabilities and Needs

As with all park activities, the presence of an informed public can go far in providing support for the fire management program at Craters of the Moon National Monument and fostering its goals. A concerted effort will be made to make the public aware of fire concerns at the monument including fire prevention messages, fire danger indices when they are high or extreme and the presence of on-going fires. Fire management messages will be introduced into interpretive programs where appropriate. The monument will participate in fire prevention activities in the community. Park visitors will be made aware of regulations regarding the use of fire within the monument. High fire danger notices will be posted in the campground, at the visitor center and at the monument entrances when needed. The local media will be informed of fire prevention concerns through news releases. Media access to fire scenes will be facilitated when it is safe to do so. When interest is warranted, a staff member will be designated as the contact person for all information requests.

B. Step-up Plan Information Actions

Refer to Step-Up Plan in Section IV, C, 2.d.

XIV. PROTECTION OF SENSITIVE RESOURCES

A. Cultural Resource Sites

1. Craters of the Moon National Monument lacks a cultural resource base map

indicating the location of archeological and historic sites. The availability of such a map is invaluable is preventing damage to such sites from emergency suppression operations or rehabilitation projects. A GIS compatible map of these resources should be developed and maintained in a secure location at the monument. Only a small percentage of the monument has been surveyed (contemporary survey standards) for cultural resources. The lack of a recorded site in any given area does not necessarily indicate that no sites are present.

2. Areas where ground disturbance activities are planned will be assessed by a cultural resource specialist and Sec. 106 compliance completed prior to initiation of such action. Suppression operations are generally considered emergencies exempt from Sec. 106 requirements.

B. Protection of Sensitive Natural Resources

There are no federally listed endangered species known to occur in the park. There are several species of special concern within the monument. A detailed discussion of these is the attached Environmental Assessment (Appendix C). An inventory of where these species occur in the park would be ideal for management purposes. Species locations and or habitat requirements would be helpful when planning fire activities. Some species may benefit from fire and others may not. For more information reference the environmental assessment of the Fire Management Plan.

Sage grouse are a species of special concern which are particularly influenced by fire. A fire that creates a mosaic of habitat with open areas supporting grasses and forbs adjacent to mature sagebrush improves brood-rearing habitat quality; however, the overall habitat quality for breeding sage grouse is improved only if adequate amounts of sagebrush remain for nesting. At the population level, sage grouse are more limited by nesting habitat (quantity and quality) than by brood habitat. The sage grouse breeding season is comprised of nesting and brood-rearing periods. Nesting and early brood habitat should have 15 to 25 percent sagebrush canopy coverage and about 7 inches or more of grass and forb understory. Late summer brood habitat consists of a variety of habitats including meadows and riparian areas. One third of the sagebrush habitat within the monument occurs in Fire Management Unit I, a fire suppression unit.

All paleontological remains will be protected and preserved during all fire activities and all newly discovered sites will be reported to park managers.

C. Modern Infrastructure and Developments

Urban-interface mitigation techniques should be applied to prevent or reduce negative impacts to modern developments within the monument's boundaries. Few other developments exist within a five mile radius of the monument boundaries.

XV. Air Quality/Smoke Management

A. Issues

The Craters of the Moon Wilderness Area is a mandatory Class I air-shed under the Federal Clean Air (CAA). Sections 160-169 of the Act establish a program to Prevent Significant Deterioration (PSD) of air quality in "clean air areas" of the country (i.e., attainment areas), which include Class I areas. Among the purposes of the PSD program are "to preserve, protect and enhance air quality in national parks, monuments, national seashores, and other areas of special national or regional natural, recreational, scenic or historic value." Congress provided additional protection for Class I areas in Section 169A of the Clean Air Act, which specifies a national goal of "remedying any existing and preventing any future manmade visibility impairment" in these areas.

The Federal Government has granted responsibility and authority to establish air quality standards and regulations to States. All NPS units are required to comply with the National Ambient Air Quality Standards (NAAQS) both inside and outside unit boundaries, and protect visibility in Congressionally-mandated Class I unit areas.

NPS fire management activities which result in the discharge of air pollutants (e.g., smoke, carbon monoxide, and other pollutants from fires) are subject to, and must comply with, all applicable Federal, state, interstate, and local air pollution control requirements, as specified by Section 118 of the Clean Air Act, as amended (42 USC 7418). These requirements are the same substantive, procedural, and administrative requirements that apply to a private person or other non-governmental entity. The U.S. Environmental Protection Agency issued Interim Air Quality Policy on Wildland and Prescribed Fires in 1998. Fires that occur in the wildlands (generally undeveloped areas such as forests, grasslands,etc.) fall into two categories, (1) planned or prescribed fires which are purposely started to meet specific land management objectives, and (2) wildland fires which are all other non-structural fires in the wildlands, including unwanted wildfires. EPA's interim policy applies to both wildland and prescribed fires that are managed to benefit resources or the environment. Under EPA's Policy, Federal prescribed fire projects would be considered to conform with the state implementation plan if they are managed under a certified basic smoke management program. The program must require regional coordination (cooperation of all jurisdictions in an airshed) when authorizing fires and real-time air quality monitoring at sensitive receptors, when warranted, in addition to the basic program components.

As this plan was prepared a number of air quality monitoring programs have been in place at CRMO. Those that relate to wildland fire emissions include, particulates (PM10 and PM 2.5), and ozone. Particulate samplers (part of the IMPROVE Network) do not provide "real-time" output of particulate levels but can be referenced post-fire to determine levels reached during particular fire events.

The ozone monitor can provide "real-time" information on ozone concentrations (preliminary non-validated data).

Predictive models of smoke emissions and dispersion are run in Stage III of the individual Wildland Fire Implementation Plan (Implementation Procedures and Reference Guide for the *Wildland and Prescribed Fire Management Policy*). Stage III is usually developed within 48 hours of fire detection. In some small fire situations Stage II implementation actions are determined to be adequate. This determination is made through a Stage III Needs Assessment based upon relative risk (fire size, season, fire danger indicators, and potential complexity). Air quality values are one complexity element factored into the needs assessment. Results of smoke model predictions will be shared with the Idaho Department of Environmental Quality.

Smoke sensitive areas include; the monument headquarters complex, the communities of Arco or Carey , the Idaho National Engineering and Environmental Laboratory or visibility impairment of highways or the Class I area (wilderness).

B. Coordination with the State

CRMO will coordinate on smoke management issues with the Idaho Department of Environmental Quality and conform with the requirements of the South Idaho Cooperative Smoke Management Plan. The South Idaho Cooperative Smoke Management Plan is currently a voluntary program which emphasizes spring and fall prescribed burning. The program is being expanded to include smoke emissions from wildland fire use. The NPS will stay informed on the program's development to comply with its recommended actions.

C. Air Quality Management Objectives

When wildland fires are managed as Wildland Use Fires the following objectives will apply;

1. Smoke levels along Highway 93 should not decrease visibility below one mile.
2. Smoke levels in the immediate area of the Headquarters complex should not cause visibility to drop below 5 miles for more than 24 consecutive hours.
3. Visibility from Big Craters should not obscure a vista of Big Southern Butte or Echo Crater for more than 7 consecutive days. During any fire season there should be no more than two seven day periods in which this visibility threshold is exceeded.
4. NAAQS should not be exceeded and the South Idaho Cooperative Smoke Management Plan guidelines should be followed.
5. Following any wildland fire managed as WFU, data on particulate levels will be obtained for those fire days if available.

If these objectives are not met (or are predicted to be exceeded) a wildland use fire will no longer meet air quality objectives and appropriate management response will be initiated to achieve the objectives. These responses may vary but can include full suppression actions.

XVI. Fire Critiques and Annual Plan Reviews

All fire management plans are subject to informal review annually with formal review every five years.

A. Critiques

All fires occurring within the monument will receive at a minimum a review by those involved to evaluate such topics as: the initial response, “hotline” (on-going fire incident) review, control methods used, safety concerns, and the need for new and replacement equipment. This review will be conducted by one of the following: the Incident Commander, the Fire Management Officer, or the official who has designated fire program responsibilities. The purpose of this review is to recognize and document actions that were successful and identify and rectify actions that were unsafe or ineffective.

The superintendent will conduct closeout meetings with Incident Management Teams (IMT) to ensure a successful transition of the incident back to the Monument and to identify and evaluate incomplete fire business. Refer to Chapter 13, Exhibit 1 of RM-18 for a sample IMT closeout.

A regional or national level fire review may be conducted if one of the following occurs:

- Fire crosses the Monument boundary into another jurisdiction without the approval of landowner or agency.
- Fire resulted in adverse media attention.
- Fire involved serious injury or death, significant property damage, or has the potential to do so.
- Fire results in controversy involving another agency.

Refer to Chapter 13, Exhibits 2 & 3 of RM-18.

All entrapments and fire shelter deployments will be reported and investigated as soon as possible after the deployment incident. Refer to Chapter 13, Exhibit 4 & 5 of RM-18 for review directions and written outline format.

B. Plan Reviews

An informal fire management program review will be conducted annually to evaluate current procedures and identify any needed changes to the Monument FMP. A formal fire management review will be conducted every five years. The Monument Superintendent must approve significant changes to the body of this plan. The only exceptions to this procedure will include: grammatical corrections, minor procedural changes, deletions, corrections, and additions to the appendices. Copies of all changes will be promptly forwarded to the Fire Management Program Center. Changes requiring the approval and concurrence will be submitted with a new cover sheet for signature and dates, which will replace the original cover sheet upon receipt by the Superintendent.

XVII. Consultation and Coordination

A. Agencies consulted:

Bureau of Land Management, Shoshone and Idaho Falls Field Offices
Idaho Department of Environmental Quality
Idaho Department of Fish and Game
Idaho State Historic Preservation Officer

B. Persons consulted:

Diane Riley, Air Quality Analyst, Air Quality Management Unit, Division of Environmental Quality, State of Idaho.

Tom Nichols, Fire Management Officer, Pacific West Region, National Park Service, San Francisco CA

Don Wright, Regional Supervisor, Upper Snake Region, Idaho Fish and Game, Idaho Falls, Idaho.

Fire Management Officer, Shoshone Field Office, Upper Snake River District, Bureau of Land Management, Shoshone ID.

C. Plan Preparation

John Apel, Chief of Resources Management, Craters of the Moon National Monument, National Park Service, Arco ID

Rick Smedley, Fire Planner, Columbia Cascades Support Office, Pacific West Region, National Park Service, Portland OR

Ken Till, Fire Management Officer, Columbia Cascades Support Office, Pacific West Region, National Park Service, Seattle WA

Portions of this plan, particularly those related to vegetation and fire behavior estimations were prepared by Mack Barrington, Stephen Bunting, and Gerald Wright from the Cooperative Park Studies Unit (now the Idaho Cooperative Fish and Wildlife Research Unit, US Geologic Survey, Biological Resources Division), University of Idaho, Moscow, Idaho.