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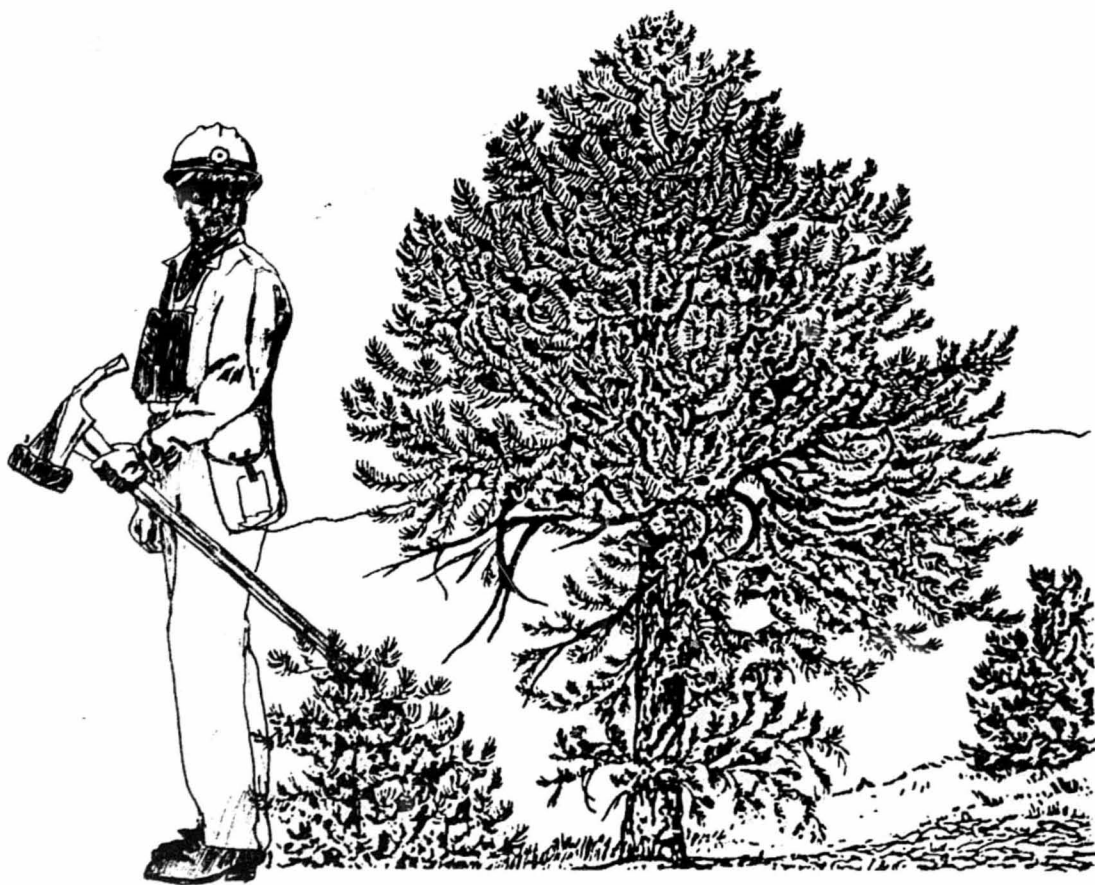


Ruby Canyon/Black Ridge

Guidebook

for Natural Ignition Fire

Planning and Implementation



98-035504



Bureau of Land Management
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July 6, 1994
South Canyon

GUIDEBOOK FOR NATURAL IGNITION FIRE PLANNING AND IMPLEMENTATION

GRAND JUNCTION RESOURCE AREA

RUBY CANYON/BLACK RIDGE
INTEGRATED RESOURCE MANAGEMENT PLAN


**RUBY CANYON/BLACK RIDGE INTEGRATED RESOURCE
MANAGEMENT PLAN
GUIDE BOOK FOR NATURAL IGNITION
FIRE PLANNING AND IMPLEMENTATION**

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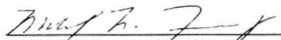
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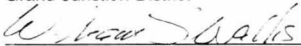
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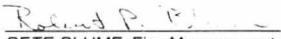
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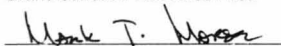
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Joe-Riley Epps
Ruby Canyon/Black Ridge Natural Ignition IDT Leader

GUIDEBOOK FOR NATURAL IGNITION FIRE PLANNING AND IMPLEMENTATION

The Grand Junction Resource Area has developed a Natural Ignition guide for the Ruby Canyon/Black Ridge (RCBR) Integrated Resource Management Plan.

The RCBR is an area which is inherently dynamic and constantly changing as a result of plant succession, insects, disease, drought, commodity use, human activity, windstorm and fire. While most of these processes have gone on relatively unchecked, fires in and around the RCBR have been aggressively suppressed since the early 1950's.

Fires are an integral component of the natural dynamics of an ecosystem such as the RCBR. The affects of modifying fire's role in an ecosystem through man's interference can, and may have, adversely impacted the flora and fauna of the RCBR area.

The RCBR NIF Guide has analyzed the conditions which would allow fire to be restored to its natural ecological role in the RCBR. This can be accomplished through allowing natural fires, generally those caused by lightning, to burn within certain prescribed parameters. Fires in locations that could potentially cause harm to human life, property and natural/cultural resources will be suppressed.

The Bureau of Land Management (BLM) realizes the risks and possible impacts of allowing fires to burn naturally and run their course. Some of the short term effects of this action could be the temporary displacement of certain activities including:

The general public engaging in recreational activities (such as hunting, fishing, sightseeing, backpacking), range permittees, special use permittees (such as outfitters), etc.

Other possible impacts could be:

Air quality in nearby towns and communities due to large amounts of smoke.

Effects on the vegetation, soils, visual quality, water quality, water quantity, wildlife and fisheries.

Some of these situations could require individuals, permittees and communities to cooperate or even make sacrifices for the long term benefits of making the RCBR a more natural and functional place for all. The BLM will work closely with any affected parties to try to mitigate any impacts or conflicts that could develop as a result of natural fires.

This guidebook is to be used to assist in the implementation of the natural ignition fire portions of the RCBR Plan.

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SECTION ONE

DESCRIPTION OF THE AREA AND FIRE HISTORY

INTRODUCTION

The RCBR Natural Ignition Fire (NIF) Guide establishes procedures for implementing fire management activities within the planning area. The RCBR NIF Guide follows direction established in the Ruby Canyon/Black Ridge Integrated Resource Management Plan and the Grand Junction Resource Area Resource Management Plan (RMP). This guide will be incorporated into the Grand Junction District's Fire Management Action Plan, which is the document that implements overall fire management based on direction derived from the RMP.

Fire, or its absence, has had a more profound effect on the natural life systems of fire-adapted ecosystems than any other single factor or combination of factors. Natural fire has been a part of the ecosystem since creation, and man's effort to eliminate this force may have resulted in significant ecological changes in the flora and fauna of this area.

This guide melds the principles of ecology and fire management techniques to produce a sound natural ignition fire program. In fire-dependent ecosystems, like the RCBR, vegetation will eventually burn and should burn to maintain ecosystem health. This fact is accepted by allowing some lightning caused fires to burn under certain parameters, or prescriptions.

Although this guide applies the latest fire research and technology, public land managers cannot guarantee they will be able to control the outcome of every fire. Fires in the planning area are, at times, large, high-intensity fires, and are considered within the natural range of variability in terms of intensity. This kind of fire is not without risk. There is always the possibility a natural ignition fire may burn beyond Maximum Manageable Area (MMA) boundaries because it is difficult to precisely predict a large fire's behavior or to suppress a fire in heavy fuels when the weather is severe. On the other hand, suppressing all fires may set the stage for future problems by allowing fuels to build or certain species to thrive, perhaps to unnatural levels, and produce catastrophic fire events of proportions which may severely impact the ecosystem and adjacent lands.

The overriding goal is to preserve the ecological integrity of the area and adjoining lands by allowing lightning-caused fires to burn that do not appear to jeopardize life and resources.

AREA DESCRIPTION

GEOGRAPHIC LOCATION: The Ruby Canyon Management Area is located about 15 miles west of Grand Junction, Colorado. The management area is divided into three management zones; the south zone (which includes Black Ridge Wilderness Study Area); the Ruby/Horsethief Canyon river corridor; and the north zone.

LANDFORM AND VEGETATION CHARACTERISTICS: The plant communities range from shrub/grasslands at the lower elevations to pinyon-juniper woodlands on the higher elevations. (Refer to the DPC section (Appendix A) of the RCBR Integrated Resource Management Plan.)

Soils in the Black Ridge Canyons area south of the Colorado River have developed on sandstone and interbedded sandstone and shale geologic materials. Much of the area also has an eolian deposition on the surface that ranges from a few inches in depth to over five feet deep.

Soils on the mesa tops are generally shallow over hard sandstone bedrock, with interspersed exposures of flat-lying sandstone. Deeper soils have developed on many of the terraces, footslopes, and alluvial fans. Textures are usually fine sandy loam to loamy fine sand, with low to high available water capacity and moderate to very high susceptibility to water erosion.

Soils on the benches and steeper sideslopes are underlain by sandstone and interbedded shale for the most part. These soils may be more clayey; they are very shallow to moderately deep and are often very stony on the surface. They are generally highly susceptible to water erosion.

Steep outcrops of sandstone and sandstone and shale are interspersed throughout the area, and help to give the Black Ridge Canyons its distinctive landscape characteristics.

CLIMATE: Refer to the RCBR Integrated Resource Management Plan.

FUELS

Fuels within the RCBR Area consist predominately of pinyon-juniper woodlands and sagebrush parks in the upland areas. The canyon bottoms contain grassy meadows and riparian vegetation (cottonwoods, willow, box elder). Within these fuels, there are broad modeling techniques used to analyze fire danger and fire behavior. The modeling systems consist of the National Fire Danger Rating System (NFDRS) and the Fire Behavior Prediction System (FBPS). The NFDRS system is utilized to

determine broad scale risks while the FBPS system illustrates actual fire behavior at a given point in time and at a particular location. The following classification illustrates the particular fuel models of both systems which are most common to RCBR and are used for strategic and tactical planning for both prescribed fire and wildland fire activities.

NFDRS Fuel Model Descriptions

Fuel Model A: This fuel model represents western grasslands vegetated by annual grasses and forbs. Brush or trees may be present, but occupy less than one third of the area. Examples of types where Fuel Model A should be used are cheatgrass and medusahead. Open pinyon-juniper, sagebrush-grass, and desert shrub associations may be assigned this fuel model if the woody plants meet the density criteria. The quantity and continuity of the ground fuels vary greatly with rainfall from year to year.

Fuel Model T: The sagebrush-grass types of the Great Basin and the Intermountain West are characteristic of T fuels. The shrubs burn easily and are not dense enough to shade out grass and other herbaceous plants. The shrubs must occupy at least one-third of the site or the A or L fuel models should be used. Fuel Model T might be used for immature scrub oak and desert shrub associations in the west, and the scrub oak-wire grass type in the southeast.

FBPS Fuel Model Descriptions

(Maps of the FBPS Fuel Models are in Appendix H.)

Fuel Model 1 - Very little shrub or timber is present, generally less than one-third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that met the above constraint. Annual and perennial grasses are included in this fuel model.

Fuel Model 2 - Open shrub lands and pine stands or scrub oak stands that cover one-third to two-thirds of the area may generally fit this model; such stands may include clumps of fuels that generate higher intensities and that may produce firebrands. Some pinyon-juniper may be in this model.

FIRE HISTORY: The majority of the fires occurring within the RCBR have been caused by lightning. Since 1980, 146 wildland fires have occurred in the RCBR. The majority of the fires in the area are small (less than .25 acre), however there have been six wildland fires that were greater than 100 acres (see Appendix I).

SECTION TWO

NATURAL IGNITION FIRE OBJECTIVES AND IDENTIFICATION OF ACCEPTABLE OUTCOMES

Fires are a primary, natural disturbance in the RCBR ecosystem. Therefore, the objective of the NIF program is to allow fire to play as natural a role as possible in maintaining the ecosystem. The decision to allow a NIF to burn cannot be based solely on benefits to wildlife, maintenance of certain vegetative types, improvements in forage, or enhancement of recreation. Instead, fire itself, not human values should define the landscape to the extent human life, property and natural/cultural resources are not threatened. Although the determination will not be based on the previously mentioned benefits, secondary benefits to these values may be experienced.

The effects of fire are expected to be an influencing factor in maintaining biological diversity in the RCBR ecosystem. Fire behavior will vary, ranging from low-intensity creeping ground fires to high-intensity stand replacement fires, any of which could encompass extensive areas. A successful program will permit fire to operate at all levels of the ecological spectrum. The desired future condition should be a landscape in which lightning fires are one of the naturally occurring processes influencing all plant community types. This would result in a diverse landscape displaying a highly dynamic mosaic of vegetation in various stages of succession, always subject to change from recurring natural processes. Natural disturbances, especially lightning fires, should be part of what defines the landscape.

Management's intent for use of fire is described in the Ruby Canyon/Black Ridge Integrated Resource Management Plan and the Grand Junction Resource Area RMP. NIF and management ignited prescribed fire may be used as tools to achieve the DPC within the area. All naturally occurring ignitions within the identified RCBR NIF FMU will be considered natural ignition fires until declared a wildland fire (see NIF Decision Process page 15).

The RCBR planning area is divided into four FMUs. FMU One covers the entire area north of the Colorado River, including the river corridor, and portions of the area south of the river (see map, page 4). FMU One has urban interface, recreation and private property issues present. Appropriate management response will be taken on all natural ignitions, this, in all probability, will be full suppression. FMUs Two, Three, and Four are south of the Colorado River and are the identified NIF units.

Based on management philosophy, the management of NIF(s) in RCBR should not be regulated to a target number of fires or acres burned per year. Rather, the NIF Program should be managed to maximize positive effects and minimize negative

Objectives: The major objectives of natural ignition fire in the identified RCBR FMUs (2, 3 and 4) are to:

1. Assist in achieving DPC goals and objectives; and
2. Permit lightning caused fires to play, as nearly as possible, their natural ecological role; and,
3. Reduce, to an acceptable level, the risks and consequences of wildland fire within the area or escaping from the area.

Achieving these objectives will result in a more varied vegetative mosaic, via plant succession, in the area. This will, in the long term, produce the following secondary benefits:

1. Fires of varying sizes and intensity.
2. Decreased risk of wildland fire escaping onto adjacent private lands.
3. Decreased potential threat of watershed damage and/or severe siltation from wildland fire.
4. Reduction of fire suppression costs, and eventually pre-suppression costs.
5. Restoration and maintenance of natural ecosystem functions.
6. Enhancement of wildlife habitat.
7. Increased opportunities for the public to observe natural processes occurring in an ecosystem.

This program is also expected to be implemented within the framework of the following objectives or management concerns:

1. Air Quality - The ambient air quality standards as outlined in the State's Air Quality Plan. Visibility within the area is expected to be at levels nearer to what would have been the case in the past under a more natural fire regime.
2. Wildland Fire Suppression - Should a NIF or Management Ignited Fire (MIF) be declared a wildland fire, the appropriate suppression response will include considerations to protect the natural, undeveloped integrity of the area, and not cause undue damage. The primary objective will be to utilize the appropriate suppression response, which results in the minimum cost plus loss. As part of this guidebook, the

resource area will develop and maintain a guide for minimum impact suppression tactics and firefighter safety procedures to be implemented during NIF activities as well as wildland fire suppression activities (Appendix M, Minimum Impact Suppression Tactics Guide - Grand Junction Version).

Long Term Acceptable Outcomes: Fire is one of the primary natural ecological processes, serving an integral role in the maintenance of the ecosystem. Within the RCBR, fire is one of the main factors that determine plant succession, which allows the ecosystem to be highly dynamic, evolving naturally over time. Additional outcomes may be described as follows:

Over time, the pattern of fire disturbance could be expected to resemble the historic range of variability present prior to European settlement (1400s through 1800s). All of the plant communities indigenous to the area are well represented and have evolved and been maintained with fire. However, the amount and location of various seral stages should be very dynamic, changing with each fire and other natural ecological processes.

Fires of various sizes, intensities, and durations occur over the landscape. Fires occur throughout the fire season, thus reflecting effects associated with seasonality. Fire regimes include frequent fires of low to moderate intensity, and infrequent fires of high intensity. Sizes of fires are expected to range from a few acres, to hundreds of acres, and sometimes up to several thousand acres. Fires can range from low intensity creeping ground fires which primarily consume the understory grasses, forbs and shrubs but leaves the overstory trees intact, to high intensity stand replacement fires which could consume most of the existing stand and return the site to an early seral stage starting the vegetative successional cycle over again.

Woody material accumulations would be at low levels so that lightning caused fires can play a more natural role without causing unacceptable resource damage. The cost of suppressing wildland fires and the effects of wildland fire suppression is low. Management ignited fires within the area could be used very infrequently as ecosystems approach more natural conditions.

Protection of human life, property and natural/cultural resources continues to be the highest of all considerations. Visitors encounter signs of fire, including smoke, and they are aware of the natural role of fire in the area. Visitor safety and education continue as primary considerations.

Smoke is part of the natural fire process and is seen in the area and in adjacent areas. The amount of smoke varies from day to day and year to year. However, because of the gradual improvement in the vegetation mosaic and reduction in fuel accumulations, overall smoke levels should be less than the levels emitted by the large wildland fires of the past.

Other resources can be expected to experience secondary benefits from a NIF Program. The presence of wildlife species and populations will be determined more by the forces of natural selection and survival rather than human interference. Steps are taken so that benefits to potential, endangered, threatened, and sensitive species are considered and can be achieved through the NIF program. Where necessary, measures to protect known endangered or threatened species in areas of previous habitation will be taken.

SECTION THREE
NATURAL IGNITION FIRE RISKS AND
IMPACTS OF IMPLEMENTATION

The following outline illustrates the risks and potential impacts that are possible due to implementation of the NIF program and the effects an escape can have on the public, facilities and the program itself.

It is recognized that fire has and always will be an influencing factor in ecosystems. One can visualize fires burning during relatively mild burning conditions existing primarily as low intensity ground surface fires or those burning during drier warmer conditions exhibiting various intensities. The size of area affected by each type of fire would also vary although the trend would be for larger areas to be affected during the warm drier conditions.

The implementation of any fire use program has some inherent risks. Listed below are the identified risks and potential adverse impacts associated with implementing a NIF Program for Ruby Canyon/Black Ridge Planning area. A brief outline of the identified risks and potential impacts are:

<u>RISK</u>	<u>POTENTIAL IMPACTS</u>
1. Fire damage to private property.	Claims for monetary loss.
2. Concentrations of smoke within and near the area.	Possible inconvenience and or complaints from recreation/adjacent land owners. Possible impact on expected experience.
3. Fire damage to structures.	Loss of facility and Capital Investment. Inconvenience to administration and recreational users.
4. Off-site air quality degradation.	Exceed National Ambient Air Quality Standards (PM-10).
5. NIF activities on recreation users.	Recreationists may be temporarily displaced or expected experience affected. Public safety could be jeopardized. Scenic vistas could be temporarily adversely affected.

6. NIF exceeds prescription and becomes wildland fire.	Fire threatens to or escapes MMA. Expenditure of EFFF funds would be required. Firefighting resources may be committed and would not be available for initial attack elsewhere. Possible threat to residential property, pending location of fire escape.
7. NIF burns habitat associated with potential, endangered, threatened, or sensitive species.	Various species could be affected.
8. NIF burns eligible historic sites.	Heritage resource lost without being fully evaluated or mitigated.
9. NIF burns signs and boundary markers.	Investment loss.

Specific explanation of these risk situations and suggested mitigation measures are as follows:

Private Property: Private land parcels adjacent to the Fire Management Area (FMA) are shown on the FMU maps. Should the fire escape or make an unexpected "run", primary emphasis will be to protect life and property.

Resource and Social Considerations (Smoke Management): Areas outside the RCBR FMA most likely to be affected by smoke are the I-70 Interstate corridor, the Colorado River corridor, the Grand Valley, Glade Park, and the towns of Mack, Loma, Fruita, and Grand Junction. Assessment of smoke impacts to the user and off-site public will be considered in the daily evaluation decision making process of the natural ignition fire burn plan (RxBP), using most current available technology as it becomes available. Each year during March, the Grand Junction District fire staff will submit applications to the Colorado Department of Public Health and Environment - Air Pollution Control Division for natural ignition fire smoke management permits (Appendix Q, Form APC-95b).

Recreation Consideration: There could be an inconvenience to some recreation users by geographic displacement from their intended area due to an active fire. Impacts in terms of numbers of trails, distance of mainline trails involved, or amount of heavily used areas affected at one time will be identified and addressed in each RxBP. To maximize visitor safety in areas affected, public safety items/concerns will be included in the RxBP, and reinforced through signing and public contacts at trailheads, trails or campsites (as conditions/needs warrant).

Rather than limit the area affected by fire at any one time, the resource area may consider other limitations they want in place. These could include the number of trails affected at one time, etc. No guidelines are written for these decisions because these will be determined on a case by case basis. Heavily used areas need and will have fire in them at some time but it is appropriate to consider how much should burn in any one year or decade. Signs warning of the hazards of fire, snags, smoke, trail conditions, and campsite availability will be considered as conditions warrant.

To maximize visitor safety and use in areas affected by a natural ignition fire, a public safety plan will be developed for all fires affecting public facilities such as trailheads, trails, and campsites.

Commercial Considerations: Any commercial users or operators (outfitters or grazing permittees) in the area will be informed of the start and progress of a NIF(s) in their respective areas. Those expected to operate within or near the projected MMA will be notified immediately and be given the best estimation/probabilities when the fire may impact them or their operation using the risk assessment analysis. Upon notification, it is the user's responsibility to remove their equipment, livestock, or evacuate their location.

Potential, Endangered, Threatened, and Sensitive Species: Most plants that are listed under any of the above classifications have evolved with a specific fire periodicity and corresponding fire intensity. By extending the period between fire visits to habitats, the potential increase in fire intensity is likely to be the most damaging effect to most plant species. Impacts of the NIF Program are not perceived as detrimental.

Likewise, any NIF effect on listed animal species is perceived as short term and not posing an adverse impact. The overall assessment is that the NIF Program would most likely have a beneficial effect whereas continued fire suppression could result in an increased fuel level and fire intensity that could cause long-term adverse effects.

Soil and Water Quality Considerations: NIF may or may not have a degrading effect on water quality within the area. The likelihood of soil displacement causing degradation of water quality is dependent on a fire's location in respect to the stream(s), the heat intensity, and/or amount of duff consumption that occurs. The overall assessment is that the threat of serious and/or long term water quality

degradation is minimal at most. Therefore it is not listed as a major risk, but will be considered during preparation of the RxBP.

Ecological Considerations: It is estimated by professional judgment, by interpreting fire history, that a least 10 fires start within the RCBR area each fire season. Fires are integral in this part of the state of Colorado and the Rocky Mountain Region in that certain species require severe disturbance periodically in order that they may be rejuvenated and/or to compete against other successional species. Recognizing this is important to managers of the RCBR FMA. Certain risks may be presented to the manager by not implementing a NIF program for the area. Often these risks are not apparent because of subtle differences occurring in fire dependent ecosystems when fire suppression is implemented. The risks associated with not implementing a NIF Program are virtually the same as those identified with the implementation of a NIF Program, as a wildland fire can cause the same impacts. The challenge is to manage wildland fire and/or NIF carefully to minimize as many of the risks as possible, and to mitigate the impacts as much as practical.

If ignitions are continually suppressed, the potential associated with increased fuel buildup and damaging wildland fires could result in greater risks to resource management objectives, wildland fire escapes, and public safety.

Suppression of a majority of ignitions would provide the basis for the following:

1. Modify the GO/NO GO considerations.
2. Assess if increased treatment of fuels outside the area would significantly allow more NIF's.
3. Modify the risk assessment philosophy.
4. Request funds in RxBP to manage ignitions, i.e., holding actions.
5. Evaluate implementation of the appropriate suppression response policy for ignitions that are declared wildland fires. Is the full range of strategies displayed in the FSA or WFSA? Is emphasis placed on minimum cost and least detrimental resource impact from the suppression strategy and tactics?

SECTION FOUR
COORDINATION, JOINT PLANNING,
AND PROGRAM REVIEW OUTLINE

I. Preseason Planning and Review

Assure coordination in natural ignition fire program and action plans. The following agencies/units should be involved:

- A. Other Federal Agencies
 - 1. Bureau of Land Management - Utah
 - 2. Federal Aviation Administration
 - 3. National Park Service
 - 4. Natural Resource Conservation Service

- B. State of Colorado Agencies
 - 1. Division of Wildlife
 - 2. Department of Public Health and Environment, Air Pollution Control Division
 - 3. Department of Natural Resources
 - 4. State Forest Service

- C. City/County Governments
 - 1. Local County Commissioners

- D. Partners/Cooperators/Permittees

II. In the Event of a Natural Ignition Fire

As appropriate, keep the following agencies informed of fire status. This is especially critical if the fire has the potential to spread into the protection jurisdiction of another agency.

- A. Other Federal Agencies
 - 1. National Park Service
 - 2. Bureau of Land Management - Utah
 - 3. Federal Aviation Administration
 - 4. Natural Resource Conservation Service

- B. Colorado State Agencies
 - 1. Department of Public Health and Environment, Air Pollution Control Division
 - 2. Department of Natural Resources - State Office
 - 3. Division of Wildlife - Regional Office
 - 4. State Forest Service - District Forester
 - 5. Department of Transportation
 - 6. State Patrol
 - 7. Office of the Governor

- C. City/County Governments
 - 1. Local Airshed Coordinator
 - 2. County Board of Commissioners
 - 3. County Sheriff
 - 4. City/County Health Department, Air Pollution Control Officer
 - 5. Local Fire Protection District

- D. Partners/Cooperators/Permittees

III. For Natural Ignition Fires Projected to Burn Outside the RCBR FMA Boundary

Any natural ignition fire projected to cross the MMA boundary will be declared a wildland fire and must undergo an Wildland Fire Situation Analysis (WFSA) which will determine the appropriate suppression response.

SECTION FIVE

NATURAL IGNITION FIRE DECISION PROCESS (ACTION PROCESS)

This portion of the RCBR Fire Management Guidebook involves the steps and procedures to be implemented once an ignition is discovered and "MUST" consider each of the following:

- A. IDENTIFICATION OF LOCAL APPROVAL AUTHORITY.
- B. IDENTIFICATION OF EVALUATION CRITERIA FOR THE INITIAL "GO/NO GO" DECISION.
- C. RISK ASSESSMENT.
- D. PROVISION FOR DAILY REVALIDATION.
- E. TIMELY DECISION BY THE LINE OFFICER.

ACTION ANALYSIS AND DECISION PROCESS: (FIRE IS DETECTED)

STAGE I ANALYSIS: INITIAL DECISION ON NEW IGNITIONS (4 Hour Time Limit)

At this stage, the preliminary decision is made, following confirmation of a fire start. The objective of this analysis is to determine whether or not the start meets preliminary criteria to be declared a natural ignition fire. Limits of acceptable risk focus on the following variables identified in the GO/NO GO Decision and Stage I Risk Decision Matrices:

Most fires that occur in the RCBR FMA have some inherent risks. The most obvious risks are those associated with a fire that meets predetermined conditions and criteria and is allowed to burn for a period of time. However, there are also risks associated with suppression of all ignitions. Risks associated with both situations are discussed briefly in the sections below.

The risk considerations evaluated during this process include:

- Threat to life or property.
- Adequacy of funds.

- Smoke management concerns or the threat of violating air quality requirements.
- Local/regional/national fire situation and preparedness levels.
- Impacts on visitors, users, cooperators, or communities.
- Proximity to the fire management area boundary or predetermined fire defensible boundary.
- Amount of NIF that is manageable.
- Existing and predicted weather, fire behavior, and fuel conditions.
- Drought evaluation.

Collectively, these considerations are assessed to some degree during three distinct decision-making phases: (1) completing the Initial GO/NO GO Considerations, (2) development of the RxBP, and (3) during the daily revalidation of an on-going NIF.

The first phase of evaluating risk occurs prior to making the GO/NO GO considerations. One available process called "RERAP" or Rare Event Risk Assessment Process includes several computer programs and can be used to develop "risk probabilities" that a fire might develop fire behavior and would eventually cause its escape from the area. Based on a particular date of ignition and a particular location within the RCBR FMA, the program would utilize historic climatological observations modeled with fuel situations the fire will most likely encounter during the days ahead as it spreads toward an identified site of concern or the boundary. This long range "risk assessment" is another "decision support tool" that could be used in the GO/NO GO consideration phase. Future computer applications such as FARSITE, etc. will be incorporated into the risk assessment process as they are developed and refined.

The following page illustrates this first "key" step in the risk analysis process. This is the GO/NO GO checklist.

INITIAL "GO-NO GO" DECISION (4 Hour Time Limit)

Objective: Determine whether the fire meets preliminary criteria for natural ignition fire status.

	YES	NO
1. Is the fire lightning caused?	___	___
2. The fire is no immediate threat to life or property. (Within 72 hours)	___	___
3. The fire is no immediate threat to the FMA boundary. (Within 72 hours)	___	___
4. A Prescribed Fire Manager is available on District or one can be assigned through RMACC within 24 hours.	___	___
5. Is risk of escape, as displayed by the Risk Assessment Charts, acceptable to the appropriate line officer?	___	___
6. Fire suppression resources are adequate based on the fire's potential. Utilize Regional & National Preparedness Level Guidelines.	___	___
7. A natural ignition fire burn plan can be completed within 72 hours using pertinent specialists.*	___	___
8. Air quality impacts are acceptable.	___	___
9. There are sufficient funds available in the NIF fund.**	___	___
10. There are no other line officer issues that would preclude this ignition from being managed as a natural ignition fire.	___	___
11. Does the resource area have an approved State of Colorado Smoke Permit for NIF ignitions?	___	___

If "YES" to all of the above, Area Manager approves, informs the District Manager, and proceeds with the development of Prescribed Burn Plan.

If any of the above are "NO", and the Area Manager recommends management of the ignition as a NIF, contact the District Manager for approval.

If GO/NO GO considerations indicate the ignition cannot be managed as a NIF, document which considerations are unacceptable in a FSA, declare the ignition a wildland fire, and implement the appropriate suppression response strategy.

Approving Line Officer

Title

Date

* Pertinent specialists are those identified in the qualifications section of the guidebook and are specifically identified as the Impact Analysis Team.

** If insufficient funds exist in the NIF fund, defer approval of the ignition as a NIF to the District Manager or manage NIF with suppression funds.

STAGE ONE RISK ASSESSMENT

To develop the risk assessment charts (Appendix L), the RCBR FMA was divided into four FMU's (page 4). These FMU's were formed using natural barriers, roads and trails, and developed as close to existing administrative boundaries as was possible while providing a logical point or boundary which could be used as a MMA boundary. The following characteristics were used to delineate the FMU:

- A. DPC objectives/constraints.
- B. Orientation of major drainage in relation to prevailing winds.
- C. Proximity of barriers or boundaries in relation to prevailing winds.
- D. Values at risk outside boundaries.

The level of risk depends on the time of year and natural ignition fire variables described above.

The risk assessment charts were developed using several methods available. Primarily, the assumptions made in their development stemmed around average rates of spread for the time of year and that two significant wind events usually occur during the span of an average fire season. Several of the risk assessment charts involve the same FMU but differ in their assumption of risk due to abrupt changes in fuels, aspect, and/or topography. It is important to keep the risk assessment charts in perspective, and not to base all decisions solely on their outputs.

Of considerable importance to the risk assessment process is the Energy Release Component (ERC) of the National Fire Danger Rating System. In addition to the ERC, the Line Officer under advisement from the Fire Management Officer (FMO) or Prescribed Fire Manager, should take into consideration, the Keetch-Byram Drought Index. This index is found in Appendix J and should assist the decision maker in addressing long term drought conditions. The incorporation of drought conditions will result in tempering the risk decision derived from the risk assessment charts.

The risk assessment charts are used for the initial decision. This decision must be made by the appropriate line officer or designated acting within four hours from the time of detection. In the Fire Management Action Plans, the district will stratify ERC numbers for each of the adjective ratings. The following table illustrates the stratification based upon the cumulative frequency each of the adjective class range

during the normal or average 168 day fire season from May 1 to October 15 annually, based upon the historical weather information from the representative fuel model T&A and the Colorado National Monument Remote Automated Weather Station (RAWS) #052401:

Fuel Model T

<u>ERC % Distribution</u>	<u>ERC Value</u>	<u>Adjective Rating</u>
00-47	01-03	Low
48-58	04-06	Moderate
59-80	07-13	High
81-95	14-18	Very High
96-100	19+	Extreme

Fuel Model A

<u>ERC % Distribution</u>	<u>ERC Value</u>	<u>Adjective Rating</u>
00-57	0-1	Low/Moderate
58-78	2	High
79-97	3	Very High
98-100	4	Extreme

For any fuel model, ERC is the most conservative of the components. The ERC varies one-to-one with the loading-weighted fuel moisture and is a number relating to the available energy per unit area (BTU/SQ FT) within the flaming front at the head of a fire. The current equation for ERC multiplies the reaction intensity (heat released) and the resident time which gives the total heat output at a certain fuel moisture as a product. Wind is not an ERC-driving variable. The ERC should be used in situations where it is important to minimize the day to day and place by place variability of fire danger rating. Such is the case in prescribed fire planning. The ERC traces the seasonal trends of fire danger better than any other of the NFDRS indexes or components. It is least responsive to short-period fluctuations in fire danger (Appendix K).

The previous table delineating ERC Into % Distribution, ERC Value, and Adjective Rating enables the Line Officer and fire management specialist to interpret ERC into the context of fire danger and risk by the following:

1. ERC % Distribution equates to the percentage of time within the fire season when the area analyzed is at or below a certain adjective fire danger rating. For example, at the adjective rating of Extreme, 95% of the 168 day fire season is below the Extreme fire danger rating. In contrast, the remaining 5% (28 days of the 168 day fire season) are at the Extreme rating.

2. The ERC value for a given adjective rating is displayed so that a fire manager or Line Officer is made aware of the fire danger rating with little or no need for additional analysis and calculation.

When analyzing risk utilizing the associated risk assessment charts, RERAP, BEHAVE, and the Crown Fire Behavior Prediction system, the Prescribed Fire Manager and the Fire Behavior Analyst or Prescribed Fire Behavior Analyst should use caution in making determinations of rates or spread, etc. The fire behavior fuel models have a tendency to over-predict fire behavior. With the exception of crown fire behavior fires in the RCBR have a normal tendency to spread primarily by spotting.

STAGE II ANALYSIS: FURTHER ANALYSIS (72 Hour Time Limit)

The second phase for evaluating risk (development of the prescribed fire burn plan or NIF RxBP) requires more site-specific information and a closer examination of the fire's potential and consequences associated with the long-term management of a NIF, including possible escape. It is accomplished within 72 hours of discovery.

This second phase provides the opportunity for the Line Officer to reassess the decision made in the GO/NO GO consideration phase. One of the critical items for the NIF RxBP is the fire's behavioral projection for both "expected" and "most severe" weather conditions. (One scenario to consider as "most severe" would be the occurrence of a cold front passage on the fire site.) The methodology normally used for this task will include state-of-the-art fire modeling (BEHAVE Program or similar technology), coupled with a close examination of fuel profiles, topographical maps and natural barriers, weather conditions and climatological history (as provided by FIREFAMILY, PCFIRDAT, PCSEASON, RERAP, FARSITE, etc.). Projection for the "most severe" scenario will use weather conditions from the most severe months per year on record. A qualified Prescribed Fire Behavior Analyst or Fire Behavior Analyst will perform these fire projections independently of the development of the MMA for each RxBP.

The following factors should be given consideration when determining the MMA:

1. The effects on other resources, including threatened, endangered, and sensitive species and heritage resources.
2. The socio-political factors (such as smoke dispersion).

3. The economic factors (such as the number of outfitters or livestock permittees that may be adversely affected).

4. The capability to manage a fire at the MMA size.

5. Whether the MMA is located along defensible boundaries. Where defensible boundaries are not available along the perimeter, the "holding plan" in the RxBP will make specific recommendations as how the fire will be managed in those areas.

6. The MMA is not a "last chance line." Holding actions may need to be taken long before the fire reaches this predetermined perimeter if it is to be kept inside the perimeter. Continuity in personnel managing the NIF, and taking advantage of effective, topographical control points become the foundations for success.

When comparing these fire growth projections with a possible MMA, consider the following guidelines:

1. Based on actual location of the fire with expected weather, fuel conditions and topography in vicinity of the fire, evaluate risk over a period of time using RERAP.

2. Assess the probability of fire remaining within the MMA associated benefits, consequences of failure, and expected losses. If the fire has a high probability to remain in the MMA over time, the wildland fire or prescribed fire behavior analyst should develop daily growth projections. The projections will form the basis for future daily revalidation considerations.

3. If the weather conditions can cause fire spread to exceed the MMA with a risk level unacceptable to the Line Officer, then an immediate wildland fire declaration should be made.

4. If additional ignitions occur, even within the existing MMA, they will be considered new NIFs and managed as such.

A suggested means to further assess the "risk" associated with managing an ignition within its determined MMA, is to condense the considerations listed earlier into the following questions and evaluate in terms of probability and consequences:

1. Will life, private property, or administrative sites be threatened within the MMA?

2. Will the MMA be threatened?

3. Will smoke cause an adverse affect either on or off-site?

4. Will T&E species, heritage resources, or other resources of concern be threatened?

5. Will fire suppression resources be needed on this NIF, and what if they are required elsewhere for wildland fire suppression?

6. Will appropriate funds be available to manage the NIF until it is out?

7. Could additional NIF's be managed?

Other state-of-the-art "tools" should also be consulted as they become available. All items of the RxBP should be addressed by the Impact Analysis Team before forwarding to the appropriate Line Officer for approval or disapproval. The following Complexity Level Flow Chart will assist in determining the appropriate Line Officer. Please note that if the items listed in each column address the situation for the individual NIF, that column then indicates the appropriate complexity level and appropriate Line Officer authority.

COMPLEXITY LEVEL FLOW CHART

Complexity Level II
Area Manager
.....

Complexity Level I
District Manager
.....

Likelihood of fire crossing MMA is minimal.

Long term closures expected (60+ days)

Long term closures affecting use of area not anticipated

Fire duration is expected to exceed NIF team's capabilities and on-site resources.

Fire duration not expected to exceed assigned NIF team's capabilities.

Multiple/Complex NIFs occurring on the district concurrently.

Numbers of NIFs are not exceeding assigned resource capabilities.

Resource area Line Officer's NIF skill level and experience insufficient.

NIF situation commensurate with skill level and experience of the Line Officer.

Complexity levels are based upon direction found in the National Wildland Fire Coordinating Group Executive Summary of January 1995.

STAGE III ANALYSIS: MANAGEMENT OF FIRE

The objective during the management stage is to determine whether or not fire activity matches fire projections and is an acceptable risk. A daily revalidation that assesses risk is required for any active NIF. A NIF which is inactive may utilize a scaled-down revalidation schedule of every three to five days.

As the fire increases in size, management options decrease. Management's ability to exercise expedient control actions, which keep the fire within the MMA, demands adequate planning. The MMA is not a "last chance line". Fire control actions may need to be taken before the fire reaches the perimeter if the fire is to be kept inside the perimeter. The impact analysis team will develop a series of "trigger points" within the MMA which initiate tactical actions designed to maintain the NIF within prescription.

The Prescribed Fire Manager will test the assumptions made by the Impact Analysis Team against the current activity and projections. If current fire activity and projections deviate from the original assumptions, the Impact Analysis Team will reconvene and update projections for the Line Officer. The Line Officer will use this information to affirm the NIF status or declare a wildland fire.

The level of analysis necessary for the daily revalidation will be commensurate to the fire activity and predicted weather conditions.

A. Daily Revalidation: On a daily basis, the Prescribed Fire Manager will analyze and document the following conditions:

1. Reaffirm that resources are available for the next three to five day period.
2. Reaffirm that allocated funds are sufficient to manage the fire for the next three to five day period.
3. Reaffirm that the fire behavior predictions for the next 24 hour period are valid.
4. Reaffirm that the fire growth predictions relative to the MMA are valid for the next 24 hour period.
5. Reaffirm that the weather conditions and forecasts for the next 24 hour period are within the original projections.

6. Reaffirm that the assumptions used in the risk assessment process are valid for the next 24 hour period.
7. Reaffirm that the smoke management assumptions and projections are valid for the next 24 hour period.

SECTION SIX

NATURAL IGNITION FIRE BURN PLAN DEVELOPMENT PROCESS (OUTLINE FORMAT AND FLOW CHART)

Stage I

- A. TIME FRAME - To be completed within four hours.
- B. APPROVAL AUTHORITY - Area Manager.
 1. Zone FMO will perform advisory role.
 2. Interagency dispatch personnel will provide information on Regional preparedness levels.
- C. IMPLEMENTATION STEPS
 1. Analyze the situation utilizing the Stage I flow chart.
 2. Document this analysis.
 3. Assign Prescribed Fire Manager and convene impact analysis team to conduct Stage II analysis or implement appropriate suppression response.

Stage II

- A. TIME FRAME - to be completed within 72 hours
- B. APPROVAL AUTHORITY
 1. COMPLEXITY LEVEL II - Area Manager
 2. COMPLEXITY LEVEL I - District Manager

C. IMPLEMENTATION STEPS

1. Description of fire potential and analysis.
 - a. Formulate Impact Analysis Team.
 - b. Analysis.
 1. Describe fire potential:
 - (a) Probable case
 - (b) Severe case
 2. Develop map of MMA.
 3. Describe impacts for MMA, and each scenario (probable and severe). Include subsequent ignition impacts within the MMA. A new start within an existing MMA will not be automatically classed as a natural ignition fire or a wildland fire. Each will be evaluated on its own merits as to its eventual classification. Firefighter and public safety must remain a paramount factor in this decision process.
 4. Designate and prioritize Values at Risk. Values at Risk are the elements that will be used to perform risk assessment; and evaluate the suppression alternatives in the WFSA.
 5. Utilize flow charts to determine the complexity level of the fire.
2. Develop the Natural Ignition Fire Management Plan.
 - a. This will be accomplished by the Prescribed Fire Manager.
 - b. Use prescribed format (Appendix D).
3. Line Officer decision .
 - a. Presentation to appropriate Line Officer.
 - b. Line Officer approval -----> Continue as natural ignition fire.

- c. Line Officer disapproval -----> Move to wildland fire status (Document).
4. Contingency Planning (Wildland fire Decision Procedures).
 - a. TIME FRAME - to be completed at the point in time when a change in status of the fire is being contemplated, or the natural ignition fire is predicted to exceed the MMA.
 - b. APPROVAL AUTHORITY - Area Manager.
 - c. IMPLEMENTATION STEPS:
 1. Reconvene Impact Analysis Team.
 2. WFSA development.

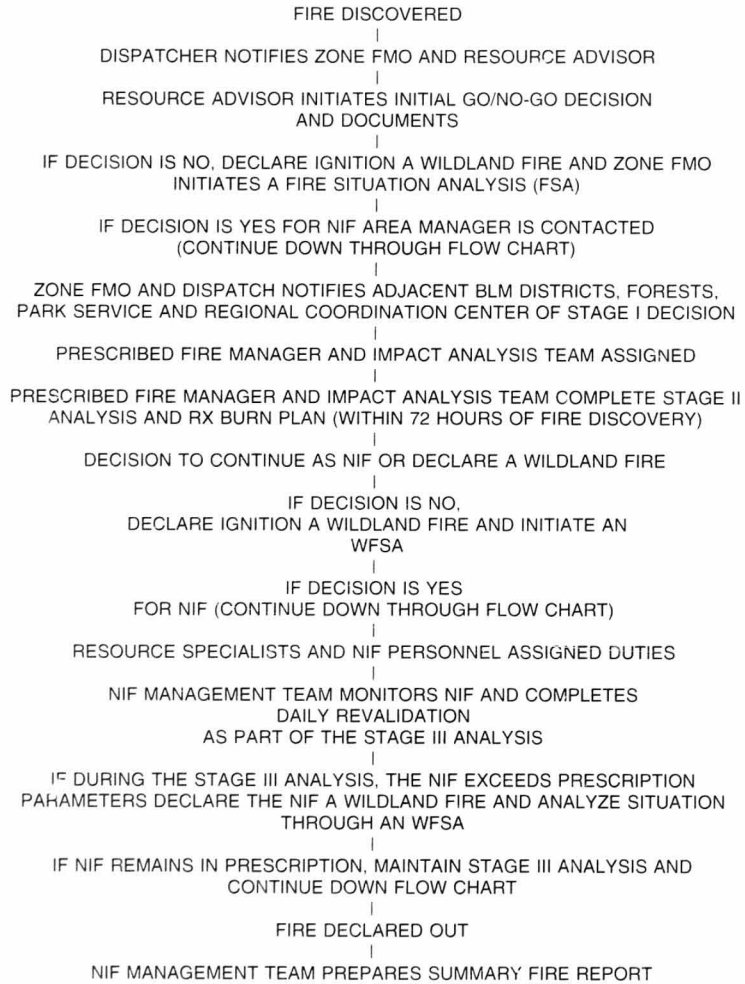
Land management direction was utilized in Stage II Analysis to identify and prioritize Values at Risk for the natural ignition fire event. The Values at Risk will be reaffirmed and reprioritized at this time to meet the existing and anticipated situation.

Values at Risk are the elements that will be used to evaluate the suppression alternatives in the WFSA.

The Impact Analysis Team will develop strategic alternatives that utilize tactics that are appropriate. The team will develop a map of the projected fire perimeter for each alternative and perform the WFSA analysis utilizing the Values at Risk as evaluation criteria.

In the event that a wildland fire declaration must be made, the managing Line Officer has several important responsibilities. Suppression actions can be harmful to the resource, expensive to implement, and dangerous to the firefighter. Full participation in the WFSA process and close monitoring of suppression objectives become most critical during this phase. Continuity of management perspectives and full interaction with the Incident Management Team (Class 1, 2, or 3) are critical at this juncture.

DECISION MAKING AND NOTIFICATION FLOW CHART



SECTION SEVEN

MONITORING OF THE PRESCRIBED NATURAL FIRE PROGRAM

The following actions will be implemented to provide information on the progress and results of NIF implementation, as well as an assessment of the need for amending or revising the NIF Program and/or this guidebook.

This NIF Program monitoring does not replace individual (RxBP) project monitoring and management which is accomplished daily or more often as conditions change.

This program monitoring and evaluation will provide information to:

1. Compare planned versus applied management standards and procedures.
2. Quantitatively record program accomplishment over time.
3. Measure the effects of the program objectives and acceptable outcomes.
4. Determine planned versus actual costs.
5. Evaluate the effect of the NIF program on adjacent land, off-site resources (including air resources), and communities.
6. Identify research needs.
7. Provide validation of the information provided by the risk assessment process.

The results of monitoring and evaluation will be documented to varying degrees in the following report:

1. Annual Fire Report.

The results of monitoring and evaluation can lead to the following recommendations:

1. No changes needed as the goals, objectives, and implementation procedures have been achieved and/or are properly followed;

2. Referral to the line officer for improvement of administration and management to ensure proper application of the elements of the NIF plan; or
3. Modification or revision of the GO/NO GO considerations.
4. Modification or revision of any other guidelines.

Monitoring Levels: Three levels of monitoring and evaluation will be carried out: implementation monitoring, effectiveness monitoring and validation monitoring. The purpose of implementation monitoring is to determine if the individual NIF(s) are being carried out and managed in accordance with the elements of the NIF Program (as defined in this document) and the applicable RCBR objectives.

The purpose of effectiveness monitoring is to determine if the individual fires, and the program, are effective in meeting the objectives of the vegetation and wildlife communities of the RCBR plan.

The purpose of validation monitoring is to determine whether the initial assumptions used in developing the NIF Program are correct or if there is a better way to meet stated objectives.

The monitoring actions are displayed in the following tables.

IMPLEMENTATION MONITORING

Activity	Monitoring	Method(s)	Unit of Measure	Magnitude and Frequency Responsibility
Accomplishments	Document the number of fires, total acres of each and costs.	5124 24 Exhibit 01	Acres, dollars	100% annually Area Manager (ZFMO)
Project Monitoring	Document for future evaluation the specifics of each natural ignition fire	_____ in FMAP, Chapter 40	Number of fires.	100% annually Area Manager, ZFMO.
Implementation Practices	Determine if the elements of the NIF Plan are properly being carried out.	Review of the fire on site, burn plan, and all documentation. Written report of fire review.	Number of fires.	District Manager, Area Manager, and FMO.

EFFECTIVENESS MONITORING

Activity	Monitoring Objective	Method(s)	Unit of Measure	Magnitude and Frequency Responsibility
Smoke Management	Are the smoke modeling tools and implementation practices effective in minimizing the impacts of smoke and PM-10 objectives in the local communities?	Part of the written report for Implementation Practices monitoring from above	Number of Fires	100% annually District Manager, Area Manager and FMOs.
Smoke Management	Is the NIF Program effective in meeting public perceptions of the program and in addressing smoke management concerns of local and sub-regional communities?	Written report documenting results of public surveys and other methods of gathering public information on the effects of NIF smoke impacts	Reports, Annual Fire Management Report	Annually District Manager, Public Affairs Officers.
Program Objectives	Is the NIF Program effective in achieving the RCBR objectives, within the anticipated time frame?	Written report documenting fire effects of selected fires, changes in the ecosystem. Utilize existing and/or newly established photo points. Compare air photos of RCBR over time.	Reports, Photos	District Manager, Area Manager, FMOs, (Range, Wildlife, Water, Soil, Ecology and Air Quality Specialists) Once every five years

VALIDATION MONITORING

Activity	Assumptions in Plan Development	Responsibility	Method of Validation Monitoring
Fire Regimes	The fire regimes in the vegetation types of the fire management area are similar to the regimes in other areas of the Grand Junction District	District Manager, FMOs, Fire Ecologist	Fire periodicity, size, severity and vegetation response

In addition to the specifics outlined above and in the monitoring tables, the following items and concerns should be monitored and evaluated in order to have current data and information regarding overall fire management actions within RCBR and other natural ignition fire areas.

Current Fire Statistics - Document the following items annually:

- A. Document and categorize all fires within the RCBR and other natural ignition fire areas as follows:

FIRE CATEGORY	CURRENT YEAR DATA			AVERAGE FOR CURRENT 10 YEARS		
	Number	Ac.	Cost SxM	Number	Ac.	% of Total Cost/Acres
PRESC. NAT. FIRES	_____	_____	_____	_____	_____	____/____
WILDLAND FIRE (LIGHTNING)	_____	_____	_____	_____	_____	____/____
WILDLAND FIRE (HUMAN)	_____	_____	_____	_____	_____	____/____
MANAGED NIF DECLARED WILDLAND FIRE	_____	_____	_____	_____	_____	____/____
TOTAL OF ALL CLASSES	_____	_____	_____	_____	_____	____/____

- B. Compare the fires managed as natural ignition fires to the lightning ignited fires that were suppressed. Discuss the reasons lightning ignited fires were suppressed.
- C. Compare the current 10 year data with the historic role of fire in the area and the ecological goal for fire in the fire management area as stated in the guidebook.
- D. Describe all personal injuries resulting from natural ignition fires and wildland fires. Discuss the degree to which managing the natural ignition fires may have increased or reduced the personal injury risk associated with wildland fire suppression.
- E. Describe how and why access was limited by natural ignition fire.
- F. Document the number and percent of outfitters and permittees in the area affected by natural ignition fire at any one time. Evaluate the results.
- G. Document losses to life and property and public health resulting from the natural ignition fire program. Discuss why these losses occurred and recommend how the program can be modified to reduce the future risk of these losses.

Wildland Fire and/or Holding Actions/Impacts - Document and evaluate the following items annually:

- A. Document the disturbances caused by camps, heliports and other suppression related activities.
- B. Compare the amount of fireline constructed for prescribed fire management and the amount constructed for wildland fire management.
- C. Compare the number of aircraft landings for prescribed fire management and the number of landings for wildland fire management

SECTION EIGHT

NATURAL IGNITION FIRE INFORMATION AND PUBLIC INVOLVEMENT PROGRAM

It is essential that Natural Ignition Fire Program activities exhibit a high degree of continuity, consistent application, timely coordination, and open communications to establish credibility with local residents, public land users and other land managing agencies. This section outlines activities to notify and coordinate with other agencies in Inter/Intra-agency Notification and Coordination Process, and outlines activities recommended to provide consistent and current information in the Public Inform and Involve Process.

Inform and Involve Actions should occur during the following time frames:

- I. **Fire Planning and Significant Revisions:** These activities address fire plan revisions as well as general awareness of the natural ignition fire program.
- II. **Preseason Activities:** These activities prepare the Grand Junction District managers for the upcoming fire season and identify those individuals who will be involved throughout the season.
- III. **Natural Ignition Fire in Progress:** These activities keep the public and affected parties informed of NIF status and any safety considerations necessary.
- IV. **Post-Season Activities:** These activities provide for follow-up.

Inter/Intra-agency Notification and Coordination Process: The Inter/Intra-agency Contact List will be updated annually, prior to each fire season.

Federal and State Agencies that are not part of the BLM electronic information distribution process, will be contacted by telephone. Follow-up contacts of on-going status will depend on the activity of the NIF(s).

- 1. **Fire Planning and Significant Revisions:** Agencies with land or resource jurisdiction/responsibilities within or adjacent to the RCBR should be contacted during the initial planning efforts of the NIF Program and be notified of significant program revisions as they occur. Notification of other inter/intra agencies without direct involvement within or adjacent to these wilderness areas is expected to occur through the usual informational activities outlined for the general public. The Visitor Information Personnel will be given a brief summary pamphlet for public distribution which will briefly describe and explain the NIF program. A sample of such a document is located in Appendix P.

2. Pre-Fire Season Meetings or Annual Correspondence: Findings and recommendations from the previous post-fire season evaluation process, should be shared during the annual pre-fire season dispatch coordination meetings or included in annual mailings. This coordination is expected to occur with those listed on the Inter/Intra-agency Contact List.

3. Notification and Coordination During a NIF: As appropriate, the following notification and/or coordination tasks will occur:

Natural ignitions that are declared NIF will be reported immediately by the Grand Junction Interagency Dispatch Center to the Rocky Mountain Area Coordination Center. These fires will be included in the daily situation report, thereafter.

The on-going status of NIFs will be listed on the attached Natural Ignition Fire Status Report (see next page). It will be electronically distributed through Interagency Dispatch/Coordination Centers, and the resource area and district mailrooms and/or receptionist's channels. The frequency for distributing this report depends on the activity of the fire.

In addition, the overall fire situation throughout the western United States will continually be monitored and evaluated during daily revalidation of the RxBP.

When a NIF increases to a larger size and/or is a long duration fire, coordination with the National Park Service and/or the Moab District of the Bureau of Land Management may also directly include their agency's representative. These personnel may participate in periodic surveillance flights, be briefed on past and current fire behavior, or offer suggestions regarding future management decisions of the NIF(s).

4. Post-Fire Season NIF Program Evaluation: The agencies and groups listed should be informed of the annual post-fire season NIF evaluation meeting in the event they wish to attend. This will be scheduled prior to the next fire season. A hard copy of the NIF Program Annual Report will be sent to the Colorado Department of Natural Resources and the Colorado Department of Health/Air Pollution Control Division.

NATURAL IGNITION FIRE STATUS REPORT BLM - Grand Junction District

Fire Management Area _____ National Forest _____ Unit _____

Fire Name _____ Fire Number _____ Ignition Date _____ Discovery Date _____

Location (Legal & Landmark): T _____, R _____, Sec. _____, Lat. _____, Long. _____

Overview (Include existing activity and 3-10 day potential):

Date	Fuel Model(s)	Fire Size	Active	STATUS (Check One)	
				Inactive	Out

Remarks

I. Fire Planning and Significant Revisions

Action Item	Tools	Responsibility	When
A. Notify public of plan revisions	Information letter	District Manager, Area Manager	Upon completion of review
B. Notify media of plan revisions	News release	District Manager, Area Manager	Upon completion of review
C. Present plan revisions to Resource Area Districts	Staff meeting	Fire Staffs, Resource Area Staff, ZFMO	Upon completion of review
D. Increase understanding of natural ignition fire, and fire ecology. Target employees	Brochures, videos, training, staff meetings, field trips	Fire Staffs, Resource Area Staff, ZFMO	On-Going
E. Increase understanding of natural ignition fire, and fire ecology. Target the public	Brochures, videos, posters, field tours, school visits	Fire Staffs, Resource Area Staff, ZFMO	On-Going
F. Increase understanding of natural ignition fire, and fire ecology. Target elected officials	Briefing papers, field tours, phone calls	District Manager, Area Manager	On-Going
G. Increase understanding of natural ignition fire, and fire ecology. Target the media	Field tours, news releases	District Manager, Area Manager	On-Going
H. Monitoring of the natural ignition fire program and NIF fires managed under the program. Target the media	Fixed plots, photo points, air quality monitors	Fire Staffs, Resource Area Staff, ZFMO, Fire Ecologist	On-Going

II. Preseason Activities

Action Item	Tools	Responsibility	When
A. Review procedures for restricting areas and trails during a fire	Meetings	Area Manager	By May of each year
B. Maintain contact with outfitters, permittee, and private in-holders affected by NIF. Develop a plan that provides direction in the event fire threatens improvements.	Meetings, telephone calls	Area Manager	By May of each year
C. Maintain a contact list of potentially affected outfitters, permittee, and private landowners within and immediately adjacent to the NIF area.	Meetings, telephone calls	Area Manager	By May of each year
D. Prepare annual preseason news article on NIF fire policy/ecology.	News release	ZFMO, Fire Ecologist, Area Manager	By April of each year
E. Present NIF fire policy and procedures to permanent/seasonal employees.	Staff meeting	Fire Staffs, Resource Area Staff, ZFMO	By field season of each year
F. Post NIF information signs and safety messages at appropriate trailheads.	Posters, signs, Appendix P	Rec. Staff	As needed
G. Identify personnel to be invited in the Program Info. Officer, etc.	Meetings	Area Manager	By April of each year

III. Natural Ignition Fire in Progress

Action Item	Tools	Responsibility	When
A. Brief appropriate line officer(s) on fire status	Meetings, telephone calls, briefing papers, E-mail updates	Prescribed Fire Mgrs., Impact Analysis Team	When fire starts, daily, and when significant changes occur.
B. Post "fire caution" signs and safety messages at appropriate trailheads	Posters, signs, Appendix P	Area Manager, F.I.O.s	When a natural ignition fire is burning in the area
C. Determine the need for fire closure. Coordinate with affected and/or adjoining agencies, landowners, and permittee	Meetings, telephone calls	Prescribed Fire Mgrs., District Manager, Area Manager, ZFMO	Determined by current and expected fire status
D. Post "fire closure" signs and safety messages at appropriate trailheads. Inform permittee, public, and the media	Posters, signs, telephone calls, Appendix P	Area Manager, F.I.O.s	When closure is put into effect for area, trail, and/or road
E. Establish a public information organization, as appropriate, and commit organization to support of fire(s) until no longer needed	Support organization	Prescribed Fire Mgrs., District Manager, Area Manager	Determined by current and expected fire status
F. Brief interested and affected parties (outfitters, permittee, and private landowners) on natural ignition fire status. Implement the plan of action identified, preseason, if appropriate	Meetings, telephone calls, field tours, weekly newsletters, letters to the public from RCBR mailing list	Prescribed Fire Mgrs., District Manager, Area Manager	When fire starts and significant changes occur
G. Keep resource area and district staffs and receptionists informed about natural ignition fire status	Meetings, field tours, briefing papers, E-mail updates	Prescribed Fire Mgrs., District Manager, Area Manager	When fire starts and significant changes occur
H. Brief the appropriate elected officials and their staff on natural ignition fire status	Meetings, field tours, telephone calls, briefing papers	District Manager, Area Manager	When fire starts and significant changes occur
I. Keep the media informed of natural ignition fire status	Interviews, field tours, telephone calls, meetings, news releases	District Manager, Area Manager	When fire starts and significant changes occur
J. Brief general public on prescribed natural fire status	Media, weekly newsletters, community bulletin boards	District Manager, Area Manager	When fire starts and significant changes occur
K. Document fire ecology effects for future training courses and/or presentations	Photos, slides, videos, fixed plots	Prescribed Fire Mgrs., District Manager, Area Manager	On-going

IV. Post-Season Activities

Action Item	Tools	Responsibility	When
A. Review past season's information effort.	Meetings	District Manager, Area Manager	Fall/Winter Fire Meeting
B. Consider follow-up contacts with affected outfitters, permittees, and private landowners contacted during the past season's fires.	Meetings, phone calls	Area Manager	Within 3 months of the end of the fire season.
C. Prepare article on the past season's fire activity.	News releases, letters to the public from RCB's mailing list	District Manager, Area Manager	By November of each year, if appropriate
D. Distribute post season finding.	Reports	Interagency Coordinating Groups	By January of each year.

APPENDIX A

GLOSSARY OF TERMS AND ACRONYMS

GLOSSARY OF TERMS & ACRONYMS

GLOSSARY OF TERMS

There are a number of fire terms that are frequently used that may not be understood. This glossary should help explain some of the common Federal-ese used with the media. **If at any time you do not understand a term or acronym, please ask for clarification.**

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

Burning period--The time of the day when fires spread most rapidly. Typically this is from 10:00 am. to sundown.

Burn Plan--A comprehensive plan developed by fire and resource specialists for each individual natural ignition fire describing the conditions associated with a fire, predicted fire behavior and weather and the risks associated with allowing a fire to burn. A burn plan must be approved by the Area Manager responsible for that particular fire.

Chain--66 feet. Eighty chains equal one mile. Firelines length or the forward rate of spread of fires are often measured in chains.

Contingency plan--A part of the natural ignition fire burn plan developed by resource and fire specialists to ensure additional protection of life, property, and natural resources in the event of unforeseen weather events contributing to extreme fire behavior that may cause the fire to exceed expectations.

Crown fire--A fire which burns in tree tops (going from tree top to tree top), and which burns all of a large part of the upper branches and foliage of trees.

Creeping fire--A fire burning on the ground with small flames and spreading slowly.

Diversity--Variety of plant and animal life within an area, as well as the variety of visual and geographic features.

Drought Index--Refers to any number of known drought indexes that are currently used by fire and resource specialists to determine dryness of large 3+ inch forest fuels and duff over a long period of time.

Ecosystem--A unit of land that supports certain plant and animal communities along with physical features associated with that land.

Energy Release Component--This is a National Fire Danger Rating System term used by resource managers to assess the potential fire behavior in fuels.

Escaped fire--A fire that continues to spread when the initial attack fire suppression effort was not able to contain or control the fire. Also a prescribed fire that exceeds its prescription.

Fire Behavior Forecast--Predicted burning conditions associated with a fire, developed and documented by an expert in the field of fire behavior.

Fire danger--The probability based on weather, fuel moisture, and other factors of a fire occurring and the likelihood of it spreading. The danger is described as being low, moderate, high, or extreme.

Fire Dependant Species--Certain plant and animal species are dependant on fire to survive or perpetuate their species. An example would be lodgepole pine; heat from fire is needed, in most cases, to open cones so seed can be made available to naturally reforest an area.

Fire Effects--Refers to what influences a fire has on an area, changes in vegetation, animal life and other landscape factors.

Fire Intensity--How hot a fire burns, as indicated by the length of the flames.

Fireline--To break up fire fuels, a fireline is scraped or dug, by hand or mechanically, into the soil.

Fire perimeter--The entire outer edge of the fire or the length if the outer circumference or edge of the fire.

Fire season--The time of year during which fires are likely to occur, spread and do sufficient damage to warrant fire control. In Colorado, the season has been defined as May 1 - October 31.

Fire Severity--A term used to describe how damaging a fire is to a certain site. Severity is measured by amount of soil damage received from a passing fire.

Fire-spotting--A fire is described as "spotting" when it is spreading as a result of sparks or embers carried ahead of the main fire by the wind and starting new fires.

Fuel Type--Refers to the type of vegetation in which a fire is burning. Used in predicting fire behavior and determining effects a fire may have in an area.

Holdover fire--Usually an undetected fire that remains "dormant" for a considerable time. Also referred to as a "sleeper."

Hot spot--A particularly active part of the fire.

"Let Burn"--A term given to natural ignition fires by the general public and media implying fires being allowed to burn without any management or no controls.

Maximum Manageable Area (MMA)--A technical term associated with natural ignition fire. This is the perimeter drawn around a fire area by resource specialists to show the total area a fire can influence before effects and impacts could be determined negative. This is not a prediction as to how large the fire might become. If the fire approaches the MMA line in any direction, managers need to look at what actions should be taken to keep the fire within the MMA line. If the fire crosses this line at any point it must then be declared a wildland fire and an appropriate suppression action must take place.

Monitor--Actions taken during a fire by managers to follow and document fire activity.

Mosaic--The patchwork pattern left by a fire on a landscape, usually a combination of stand replacement fire, underburning and unburned islands within a fire perimeter.

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

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

RAWS--Acronym for Remote Automated Weather System. These are weather stations set up at predetermined locations that take and record weather readings every hour.

Risk Assessment--This is a process used on prescribed fires to determine what level of risk is associated with having a prescribed fire. The risk assessment is documented and made available to an approving Official in Order to make informed decisions. A risk assessment will take factors into consideration, such as: weather/fuel conditions, threat to human life and property/natural and cultural resources, smoke management concerns, impacts fire may have on local communities and public land users.

Red flag warning--Indicates there is a very high risk for new fire starts. This term is often used if fuels are very dry and severe weather (such as a dry lightning storm with heavy winds) is predicted for the area. It could also be used in the case of a high risk of person-caused fires.

Resources--People and equipment needed to manage a fire.

Spot fire--Usually a small fire less than 1/10 acre. Could also be used to describe a fire set outside the perimeter of the main fire by flying sparks or embers.

Stand Replacement fire--A fire that consumes (kills) most of the standing trees in an area. This term refers to trees that will be replaced at some point in time by new tree growth as a result of the fire.

Thousand Hour Fuels--This refers to fuels greater than three inches in diameter. These fuels take thousands of hours to dry to critical levels before contributing significantly to fire danger of an area.

Torching--A tree that suddenly erupts into flames from the base clear to the top of the tree.

Wildland fire--Any non-structure fire, other than prescribed fire, that occurs in the wildland.

GLOSSARY OF ACRONYMS

A&FM	Aviation and Fire Management
BLM	Bureau of Land Management
BTU/FT/S	British Thermal Units/Foot/Second (Fireline Intensity)
BTU/SQ FT	British Thermal Units/Square Foot (Heat per Unit Area)
EFFS	Emergency Fire Fighting Funds
WFSA	Wildland Fire Situation Analysis
ERC	Energy Release Component
FFFP	Fire Fighting Funds Account
FBAN	Fire Behavior Analyst (Incident Command System)
FBPS	Fire Behavior Prediction System
FIO	Fire Information Officer (Incident Command System)
FMAP	Fire Management Action Plan
FMO	Fire Management Officer
FMU	Fire Management Unit
FSA	Fire Situation Analysis
GJRA	Grand Junction Resource Area
GPS	Global Positioning System
IDT	Interdisciplinary Team
IR Flight	Infra-red Imaging Monitoring Flight
JHA	Job Hazard Analysis

MIF	Management Ignited Fire
MIST	Minimum Impact Suppression Tactics
MMA	Maximum Manageable Area
NFDRS	National Fire Danger Rating System
NIFC	National Interagency Fire Center (Boise, ID)
NWCG	National Wildland fire Coordinating Group
PAO	Public Affairs Officer
PFBA	Prescribed Fire Behavior Analyst
PM10	Particulate Matter (<10 microns)
NIF	Natural Ignition Fire
RAWS	Remote Automated Weather Station
RERAP	Rare Event Risk Assessment Process
RCBR	Ruby Canyon/Black Ridge
RxBP	Prescribed Fire Burn Plan
RMP	Resource Management Plan
TE&S	Threatened, Endangered, and Sensitive Species
TSP	Total Suspended Particulates
VQO	Visual Quality Objective

APPENDIX B

NATURAL IGNITION FIRE ORGANIZATION CHART

ORGANIZATION CHART FOR NATURAL IGNITION FIRE

COMPLEXITY LEVEL II (LEAST COMPLEX)

Fire Management Area: _____ District: _____

Area: _____ Fire: _____ Date: _____

LINE OFFICER NIF MANAGER

COMPLEXITY LEVEL I (COMPLEX)

Fire Management Area: _____ District: _____

Area: _____ Fire: _____ Date: _____

LINE OFFICER NIF MANAGER

RES. ADVISOR SPECIALIST SKILL/EXPERTISE

_____	_____ -->	_____
_____	_____ -->	_____
_____	_____ -->	_____
_____	_____ -->	_____
_____	_____ -->	_____
_____	_____ -->	_____
_____	_____ -->	_____
_____	_____ -->	_____
_____	_____ -->	_____
_____	_____ -->	_____

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APPENDIX C

NATURAL IGNITION FIRE SKILLS, QUALIFICATIONS, AND ORGANIZATIONAL REQUIREMENTS

NATURAL IGNITION FIRE SKILLS, QUALIFICATIONS, AND ORGANIZATIONAL REQUIREMENTS

I. Line Officers (District Managers and Area Managers)

It is recommended that all Line Officers receive the following training:

- A. Attend a State or National level prescribed fire course.
- B. Participate in at least one post-season natural ignition fire evaluation.
- C. Attend the Fire Management for Line Officers course.

It is required that all Line Officers attend annual (eight hour) NIF training which entails a "dry-run" of the procedures and process for initiating a NIF. These annual training sessions will be held at the resource area level.

II. Prescribed Fire Manager (identified for each incident)

Training and Certification

In addition to being "red-carded" and task book certified, Prescribed Fire Managers will possess the following qualifications and meet the following conditions:

- A. Knowledge and experience with the Colorado Plateau Pinyon/Juniper ecosystems and their associated fire behavior.
- B. Knowledge and experience with smoke management theories, techniques, and computer modeling methods.
- C. Meet standards identified in PMS 310-1 (Part 2).
- D. Attend a National or State level prescribed fire course.
- E. Participate in at least one post-season natural ignition fire evaluation.
- F. Be able to perform in this assignment for the duration of the natural ignition fire event, i.e., would become unavailable for concurrent fire suppression assignments.

C-1

- G. Attend annual (eight hour) NIF training which entails a "dry-run" of the procedures and process for initiating a NIF. These annual training sessions will be held at the resource area level.

Responsibilities

The Prescribed Fire Manager is responsible directly to the designated Line Officer, for implementation, coordination and on-going management of the assigned natural ignition fire(s).

The Prescribed Fire Manager is responsible for:

- A. Managing single or multiple natural ignition fires.
- B. Developing and implementing Natural Ignition Fire Burn Plans.
- C. Coordinating personnel and equipment requirements, including resources ordered for holding and contingency action.
- D. Monitoring natural ignition fires to ensure all plan requirements are being met.
- E. Recording and reporting costs and accomplishments and recommending improvements to the appropriate Line Officer.
- F. Daily revalidation of prescription criteria.
- G. Ensuring safety of personnel.

The Prescribed Fire Manager may select a Prescribed Fire Project Manager to supervise holding or contingency actions. This individual will at a minimum be Division/Group Supervisor qualified.

The Prescribed Fire Manager will select at least one Prescribed Fire Behavior Analyst or Wildland Fire Behavior Analyst to supervise fire behavior data collection and to provide the Prescribed Fire Manager with detailed analysis and probability data. This individual(s) must meet the appropriate qualifications requirements.

The Prescribed Fire Manager may select any resource specialist required for adequately planning or implementing a NIF in coordination with the responsible Line Officer.

C-2

III. Natural Ignition Fire Teams

The Grand Junction Resource Area Manager and the Grand Junction District Manager will recommend qualified members for the local NIF Teams. Units outside the BLM may recommend qualified people to participate on the NIF Team. Members will be certified by the managers prior to performing on the NIF Team. Other agencies may be considered for team membership when a natural ignition fire is likely to impact another agencies' jurisdiction. NIF Team members will be selected annually and placed on an availability list for the RCBR NIF program. National NIF Teams can be used, as determined by Line Officers, as long as national qualifications are met by team members.

Training and Certification

NIF Team members should possess the following skills and knowledge:

- A. Familiarity with the Colorado Plateau pinyon/juniper ecosystem.
- B. Familiarity with DOI regulations and BLM management philosophy.
- C. Have attended a prescribed fire course.
- D. Participated in at least one post-season natural ignition fire evaluation.
- E. Attend annual (eight hour) NIF training which entails a "dry-run" of the procedures and process for initiating a NIF. These annual training sessions will be held at the Resource area level.

Responsibilities and Duties

The NIF team's responsibilities and duties center around their specific resource backgrounds. They are responsible for timely and adequate resource input into the Stage II analysis of an on-going natural ignition fire. Some members of the team may be requested to remain assigned to the fire for specific reasons to be specified by the Prescribed Fire Manager or the Line Officer. The following illustrates the recommended make-up of the NIF Team. Those identified with an asterisk (*) are required on all NIF Teams.

C-3

Position Title

Function

Prescribed Fire Manager*

Describes area, state and proximate fire situation, potential smoke effects, ERC, severity index, responsible for burn plan preparation.

Resource Advisor*

Describes impacts on resources for each scenario

Fire Behavior (PFBA) or (FBAN)*

Predict extent and intensity of fire at various severity levels and projects final fire perimeter for each scenario.

Note: In most cases with regard to the assignment of fire behavior specialists to the NIF teams, only qualified prescribed fire behavior analysts (PFBA) should be utilized. Because this skill is limited in the Rocky Mountain Region, qualified wildland fire behavior analysts (FBAN) may be utilized.

IV. Tactical Teams

Tactical teams are groups of individuals specified and supervised by the Prescribed Fire Manager to carry out specified tactical actions to maintain a natural ignition fire in prescription or provide protection to resources that may be threatened by a NIF. This team is essentially the operations branch of the natural ignition fire organization. Team members must be red card qualified to perform the functions they are assigned.

V. Prescribed Fire Monitors

Prescribed Fire Monitors will provide the Prescribed Fire Manager with accurate, timely information regarding the status of an on-going NIF. Although these individuals may carry out duties similar to the planning section or situation unit of a wildland fire, they may also act in concert with or make up the cadre of a tactical team. Monitoring personnel will be designated prior to the fire season. These individuals should meet the red card qualifications for Field Observer, and furthermore, it is also recommended that they be Single Resource Boss qualified and successfully completed S-290 (Intermediate Fire Behavior). Suggested equipment to be issued and carried into the field for monitoring NIFs is described in Appendix O.

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VI. NIF Organizational Chart

The suggested organization chart for the management of a natural ignition fire is shown in Appendix B. Complexity levels of a fire may require modifications to this chart.

VII. Training Opportunities

Trainees for various positions will be used as appropriate in order to establish a fully qualified cadre of natural ignition fire specialists. In addition, interested personnel are encouraged to seek training opportunities where natural ignition fire programs are in effect to further broaden their experience and skill base.

APPENDIX D

NATURAL IGNITION FIRE BURN PLAN

NATURAL IGNITION FIRE BURN PLAN - BLM (Page 1)

1.	FIRE NAME:	AREA NAME AND DESIGNATOR:	
2.	APPROVAL LEVEL BASED UPON COMPLEXITY ANALYSIS (APPROPRIATE LINE OFFICER)		
	COMPLEXITY LEVEL I II	_____ Line Officer Approval Date	_____ Line Officer Approval Date
	See Attached Organization Chart		
3.	GENERAL INFORMATION ON IGNITION		
	A. Location (See Attached Map(s))		
	Fire Management Area:	Fire Management Unit (FMU):	
	Resource Area:	District:	
	Legal Location:		
	Latitude and Longitude:		
	B. Features at Ignition Point (See Attached Fuel Model Map(s))		
	Fuel Type:	FBPS Model #:	NFDRS Model #:
	Aspect (Most prevalent):		
	Slope:	Highest:	Lowest: Avg:
	Elevation:	Top:	Bottom: Avg:
	C. Conditions (Attach Forecasted Weather)		
	ERC/Adjective Rating:		
	Drought Severity Index:		
	Date of Start:		
4.	MAP OF MAXIMUM MANAGEABLE AREA (MMA) BASED UPON RESOURCE, SOCIAL, POLITICAL, OR ORGANIZATIONAL CAPABILITY CONSTRAINTS. (Attach to the plan.)		
5.	MAP OF FIRE PROJECTIONS FOR:		
	A. Normal fire behavior and seasonal duration - include estimate of date fire should become inactive. (Attach to the plan, Include Fire Behavior Forecast)		
	B. Severe fire behavior and/or seasonal duration - include estimate of date fire should become inactive. (Attach to the plan, Include Long-Range Fire Behavior Forecast, RERAP Runs and/or FARSITE Runs)		
6.	HOLDING PLAN:		
	A. Expected actions needed to maintain fire within the MMA and the timing of their implementation. (Use supplement sheet if necessary and attach to the plan. Specify individual actions proposed, their locations and include maps. Attach action plan with clear/detailed instructions.)		

PRESCRIBED FIRE BEHAVIOR FORECAST

NAME OF PROJECT: _____ FORECAST NO: _____ FIRE TYPE (CIRCLE): NIF MIF

ADMINISTRATIVE UNIT: _____ AGENCY: _____ OPERATIONAL PERIOD: _____

DATE & TIME FORECAST ISSUED: _____ SIGNED: _____

INPUTS

MANAGEMENT OBJECTIVES: _____

PRESCRIPTIONS/ASSUMPTIONS: _____

WEATHER SUMMARY: _____

OUTPUTS

FIRE BEHAVIOR

SHORT RANGE (0-5 DAYS):

MID-RANGE (6-10 DAYS):

LONG RANGE (11+ DAYS)

SAFETY

E-1

APPENDIX F

NATURAL IGNITION FIRE JOB HAZARD ANALYSIS

USDI Bureau of Land Management	1. Identify Job or Project to be Analyzed Natural Ignition Fire		
	2. Location RCBR	3. Unit GJRA	4. Date Prepared 01/10/97
	Name of Analyst PETE BLUME		6. Job Title of Analyst FIRE MANAGEMENT OFFICER
7. Hazards		8. Actions to Eliminate Hazards Specify safe work procedures and personal protective equipment	
VEHICLE TRAVEL: Travel will be on narrow roads. Hazards include other traffic, wildlife, rocks, debris in road, soft or abrupt shoulders.		Follow all Health & Safety guidelines. Use good defensive driving techniques.	
FOOT TRAVEL: Walking to or in the vicinity of a fire. Hazards include unexpected fire behavior, rolling or falling material, uneven footing.		When walking to or in the vicinity of a fire, follow safety procedure in the Fireline HB. Know what fire is doing at all times.	
AIRCRAFT TRAVEL: Aircraft exposure. Working in the vicinity of and flying in helicopters and fixed wing aircraft.		Follow all established Natl., Regional, & Local Air Safety guidelines when flying. Contact State Aviation Office if there are any questions. Ensure rules are followed!	
BOAT TRAVEL: Traveling or working with any sort of boat.		Following all Natl., Regional, and Local level safety requirements. Life preservers to be worn at all times.	
ON SITE MONITORING OF THE FIRE:		<p>Treat a natural ignition fire as a wildland fire with no control lines. All firefighting procedures for a wildland fire shall apply including the use of fire shelters. All required personal protective equipment shall be used, refer to Fireline HB. Make sure overnight campsites are located in a safe manner so the fire or falling snags will not threaten them.</p> <p>Ground crews will have communications with lookouts, dispatch, and overhead. The Presc. Fire Mgr. shall keep the monitoring crew updated on fire situation. Fire Orders and Watch-Out Situations will be followed at all times. Avoid prolonged exposure to smoke, stay out of inversion layers as much as possible.</p> <p>Escape routes and safety zones will be known by all personnel assigned to the natural ignition fire.</p> <p>All ground personnel will be familiar with the NIF burn plan. Only qualified NIF personnel will be assigned to the NIF project. All personnel will receive a briefing of the burn plan this JHA prior to assignment to the NIF project. All will fully understand their assignment.</p>	
3. PUBLIC SAFETY		<p>Post all trailheads and other portals informing the public and other users that they are entering an area where fires are allowed to burn under natural certain criteria.</p> <p>When a NIF is burning, post signs at trailheads and portals giving locations of fires that are burning.</p> <p>Follow the inform and involve plan in the RCBR NIF guidebook.</p>	
4. USE OF STOCK: Riding, packing or working in the vicinity of animals.		Only persons trained in the use of stock or under the direct supervision of the packer shall work with animals.	
5. Natural Ignition Fire going to WILDLAND FIRE STATUS.		All safety procedures required for wildland fire shall be followed. All agency, public, and other users shall be notified of the status of the escape and warned to stay out of the areas that threaten their safety.	
6. ALL ACCIDENTS AND INCIDENTS SHALL BE REPORTED		Ensure all accidents are reported. Attitude is a key to prevention of accidents. Most accidents can be prevented by having a positive safety attitude and appropriate skill level.	
9. Approved By	10. Title	11. Date	

F-1

WORK SUPERVISORS TAILGATE MEETINGS

Instructions

To be completed by first line supervisor or work leader at the work site prior to beginning the job and when the hazards change due to a change in work site location or other condition.

Project/Job _____ Work Leader/Supervisor _____

Describe Work: _____

IDENTIFY & LIST HAZARDS: Then document hazard reducing work procedures discussed with personnel.

Protective Equipment
Required by
JHA: _____

Additional Protective
Equipment Needed: _____

To be filed at end of project with other project documents.

Signature of Work Supervisor _____ Date _____

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APPENDIX G

NATURAL IGNITION FIRE PROGRAM MANAGEMENT AND FUNDING REQUIREMENTS

NATURAL IGNITION FIRE PROGRAM MANAGEMENT AND FUNDING REQUIREMENTS

Funding Sources and Management of the NIF Fund:

The annual amounts and sources of funds needed to manage the natural ignition fire program will be determined by the Grand Junction Resource Area Manager. The five principle contributors identified at this time are: Aviation and Fire Management; Range; Riparian; Soil Water and Air; and Wildlife. Any funds remaining at the end of a fiscal year may be carried over to the next year's reserve account. In addition, other organizations, agencies, and/or individuals may contribute financial assistance through cooperative or partnership agreements.

Before any natural ignition fire can be allowed to burn, there must be adequate funds available to cover the anticipated costs developed in the holding section of the natural ignition fire burn plan. Once all available project funds have been committed to existing natural ignition fire burn plans, subsequent starts will be ineligible for prescribed fire status without further analysis and determination by the Area Manager.

Normally, fires will be financed on a "first come, first served" basis. In the case of multiple starts, fires will be prioritized for which fires best meet the RCBR objectives considering firefighter safety, public safety, and effective use of the existing funds.

Specific Funding Requirements and Guidelines:

Detection: The initial sighting or detection of all fires will be financed with FFFP funds, the same as any other fire reported by the public or cooperator, or seen during a routine aerial fire detection flight. A determination must be made after detection whether the fire will be managed as a NIF or wildland fire.

Initial Analysis: The initial Stage I and Stage II analysis processes incorporate individuals and specialists from a myriad of resource functions dictated by each individual start. Because the decision to declare an ignition a NIF or a wildland fire is still pending at Stage I, the individuals participating in the analysis will charge all time and costs to their appropriate functional management codes.

Managing a NIF: Managing a NIF that is either inactive, small in size (generally less than 10 acres), or has a low probability of developing into a large fire, may only require occasional surveillance. Managing a NIF having a more active fire behavior (minimal surface spread, some individual tree torching, etc.) will generally be conducted more frequently via aerial reconnaissance platforms or by ground-based personnel.

Monitoring a NIF: If on-site observations are required (as could be expected for a large and/or very active prescribed fire), the entire cost would be borne by the NIF Management Fund.

Fire Managers (FFFP) and Resource Specialists involved occasionally with NIF management activities will not charge their base hours to the NIF Management Fund. However, any overtime and/or per diem will be financed from this fund.

All management activities, and any specialized equipment costs for managing NIF (helicopters, IR flights, m and development, etc.) will be charged to the NIF Fund.

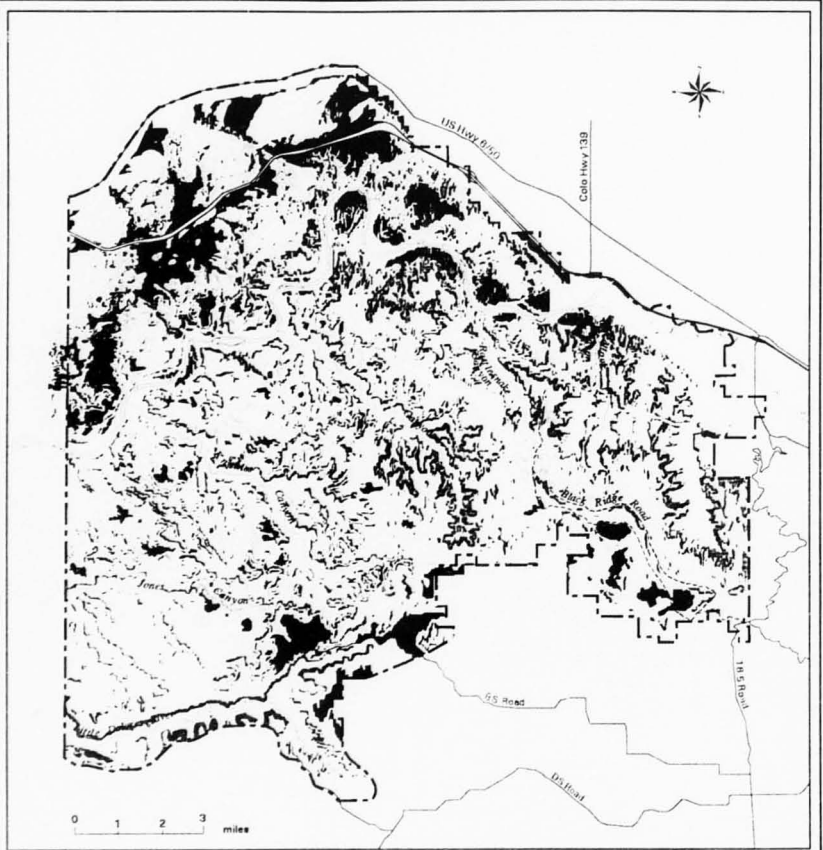
Suppression: When prescription criteria are exceeded and the fire cannot be brought back into prescription with project funds, the fire will be declared a wildland fire and appropriate suppression action will be taken following determinations from the WFSA. All activities, equipment, tools, and personnel needed to perform the appropriate suppression response will be financed as any wildland fire suppression (EFFS) activity.

Management Ignited Fires: Following individual project analysis and decision procedures for management ignited fire (prescribed fire), such projects will be funded by appropriated funds derived from the benefitting resource function or an account established by pooling funds for this purpose.

NIF Program Accounting Procedure The resource area will specify a management code for the charging of all costs attributed to a NIF. These costs will also indicate the acres of NIF per year. If a NIF is later determined to be a wildland fire, all acres of the fire which burned before the declaration as a wildland fire will count as NIF acreage. Acres burned after wildland fire designation will be tracked as wildland fire acreage.

APPENDIX H

FUEL MODEL MAP



Mapscale 1:170000

Fuel Models for The Ruby Canyon Planning Area

- | | |
|--|--|
| 0 to 15 Percent Slopes
Fuel Model 2 | 0 to 15 Percent Slopes
Fuel Model 1 |
| 16 to 30 Percent Slopes
Fuel Model 2 | 16 to 30 Percent Slopes
Fuel Model 1 |
| Greater Than 30 Percent Slopes
Fuel Model 2 | Greater Than 30 Percent Slopes
Fuel Model 1 |

APPENDIX I

FIRE OCCURRENCE TABLES

FIRE OCCURRENCE BY FIRE MANAGEMENT UNIT

Size Class	Acres
A	0.0 - 0.2
B	0.3 - 9.9
C	10.0 - 99.9
D	100.0 - 299.9
E	300.0 - 999.9
F	1000.0 - 4999.9
G	5000.0 +

The following tables show the number of fires, by year and size (SC) for each fire management unit.

Unit 1

SC	Year															
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
A						2	2			2		1	1	2	1	2
B	1				1	1	1	2			1			1	1	8
C		3				1	1						2	2		2
D																
E	1														1	
F																
G																
*			2		1					1	1				2	1

Unit 2

SC	Year															
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
A						1	5								4	
B	1									1		1			2	1
C	1				1					1		1				
D							1									
E								1								
F																
G																
*	4	4		2			1									

Unit 3

SC	Year															
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
A									1			1		1		1
B				2							2					
C		1														1
D		1	1													
E																
F																
G																
*		1					2						1			

Unit 4

SC	Year															
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
A							4				3	1		1		5
B					1	1				1					1	5
C					1					1				1		1
D																
E																
F																
G																
*	2	2		4	2	1	1	2								

* Fires without an associated Size Class. Possibly a False Alarm.

APPENDIX J

DROUGHT ASSESSMENT

**DROUGHT ASSESSMENT FOR
COLORADO NATIONAL MONUMENT RAWS STATION**

1964 - 1995

The need for a systematic method of estimating drought has been identified as a critical component in the natural ignition fire planning process. Several methods of assessing drought are available and can provide the Natural Ignition Fire Manager with appropriate information upon which fire management decisions can be based. The Keech-Byram Drought Index (KBDI) has been selected to aid in the assessment of drought conditions. This method was selected because it can be developed from site specific information available via the Colorado National Monument Remote-Automated-Weather-Station, Station Number 052401 (RAWS) maintained by the National Park Service.

Data from the Colorado National Monument RAWs Station is available from the years 1964 through 1995 (32 years). In the spring of 1996, a more modern automated station was installed that replaced the old manual station. The new Little Dolores RAWs (Station Number 052410) is not used for this drought assessment since it has less than one year's data at the time of this writing.

John Keech and George Byram emphasized that their drought index "is not in any way a substitute for the moisture parameters used in the spread phase of the National Fire Danger Rating System. A drought condition is not the prerequisite for the occurrence and spread of fire in any area. The drought index does not replace the buildup index Energy Release Component (ERC), because it represents an entirely different moisture regime in which the response to weather changes is much slower than with the buildup index. The purpose of the drought index is to provide fire managers with a continuous scale of reference for estimating deep-drying conditions in areas where such information may be useful in planning fire management operations."

Keech-Byram Drought Index is a mathematically calculated drought indicator relating to the amount of moisture in the top seven inches of soil or duff/soil. It is based on ambient air temperature and recent precipitation in relation to the mean annual rainfall for the specific RAWs site. KBDI has a maximum range of 0 to 800 (0 is saturated soil; 800 is maximum possible drought). The maximum KBDI value ever calculated at the Colorado National Monument RAWs station in its 32 year existence was 541 on September 13, 1994. During periods of significant summer monsoon rains, KBDI values have been as low as the single digits. The average annual precipitation for the Colorado National Monument RAWs station is 11 inches, as determined from the National Weather Service statewide mean precipitation chart. The monthly mean KBDI values break down as follows:

April:	97.9
August:	319.9
May:	103.3
September:	344.9
June:	140.9
October:	343.0
July:	250.9
November:	Not Available

The available range of drought has been divided into stages, or adjective ratings, based upon historical weather data for the RAWs station and the frequency of distribution. The zero or incipient stage includes the range from 0 to 95, the second stage from 96 to 190, and so on through the fifth stage from 382 and greater.

The seasonal variations in the index generally follow the seasonal temperature pattern. The following is based on this idea. The index will be low in the winter/spring and increasing into the summer and mid fall and then tapering off again into late fall and winter.

Keech-Byram Index Rating of MODERATE (96 - 190)

This level basically corresponds to the early spring dormant season type conditions following winter moisture. Soil moisture levels are high and fuel moisture in the larger fuel classes such as the 100 and 1000 HR are at a sufficiently high level that these larger fuel classes do not significantly contribute to fire intensity in most cases. Fuel moisture in the 1HR and 10HR classes will vary daily with environmental conditions. Fire Planners should be aware that areas with heavy loading of these two fuel classes such as areas that have not received cyclic burns can exhibit intense behavior resulting from the amount of fuel to be consumed. Also, areas that are slope/aspect influenced can give erratic and intense fire behavior from the preheating effects. Southerly aspects on slopes can produce some intense fire behavior while northern aspects of the same unit may have difficulty carrying the fire. At this level, nearly all soil organic matter, duff and the associated lower litter layers are left intact. These layers, even though they may not be soaking wet, will be protected by the insulating properties of the moist layer below and will retain moisture levels close to extinction and resist ignition. Patchy areas of unburned fuel should be expected. Fires burning at this level can be expected to give the "mosaic" effect pattern of burned/unburned fuels over the fire perimeter. The typical situation on fires in this stage are a relatively slow head fire or a backing fire that consumes the upper litter layers. Once the fire passes, remaining embers extinguish quickly and within a few minutes the area is completely extinguished and smoke free. Smoke management concerns are primarily centered around the smoke generated during the burn and not from large smoldering materials following the completion of the burn.

Keetch-Byram Index Rating of HIGH (191 - 364)

In normal years, this level would represent conditions found in a late spring and early growing season type situation, however because of the typical monsoon pattern in July and August, these conditions may also be found in the late summer months. Rising temperatures, increased levels of transpiration within the plants, and normal water movement within the soil all contribute to a reduction of moisture within the soil/fuel profile. Lower litter layers and duff now begin to show signs of water loss and will begin to contribute to fire intensity. Humidity recovery at night will have some positive effect on moisture recovery in the fuel profile, but this will be quickly overcome by daily temperature and humidity variations under normal burning conditions. Fire managers should expect an increase in fuel consumption over the area as the index moves into the upper end of this range. The increase in fuel consumption, and resulting intensity can result in heavier fuel classes becoming involved in the burn. Heavier dead fuels such as downed logs and snags will now become a part of the major players in the burn process. Fire planners should also expect that some of the live fuels such as low level brush species, may now receive sufficient heat to burn actively and contribute to control problems if close to the lines. In addition, because this pattern also develops in the early fall when some killing frost occurs, the grass and brush species exhibit rapid drying and possibility of increased flammability. Most fuels will still retain the characteristic of having patches of unburned fuels left within the burn, but these conditions tend to allow for more smoldering type fires within the duff that may eventually consume most surface fuels. Sufficiently intense fires can be generated with most fuel types to carry across the area. These conditions also allow for an increased consumption of the lower litter layers and some of the duff which tend to insure the fire carries over the unit. Under normal conditions, some of the duff and organic layer will still be intact following the burn with patchy soil exposure. Smoke can become a hazard especially if there is a significant amount of the larger fuel classes available for ignition. Downed logs, stumps and similar material should be expected to ignite and smoulder for a considerable period of time. Expect smoldering and the resulting smoke to carry on into and possibly through the night. Smoke sensitive areas should be thoroughly screened and mitigation measures should be implemented when necessary.

Keetch-Byram Index Rating of VERY HIGH (365 - 449)

These levels are typical of those encountered during the late summer into early fall conditions. Very intense fires can be generated with burns ignited within this range of conditions. Under these levels, most of the duff and associated organic layers will be sufficiently dry to ignite and contribute to the fire intensity and will actively burn. The intensity can be expected to increase at an almost exponential rate from the lower to the upper ends of this range. Expect a considerable amount of soil to be left exposed following a burn. Intensity of burns under these conditions are such that most all fuel classes occurring on a unit will ignite and burn. Complete consumption of all but the

largest dead fuels can be expected. Larger fuels not consumed may smolder for several days creating smoke and potential control problems. Expect weathered stumps, downed logs and most snags to be completely consumed over a period of time (possibly several days) within the burn. A significant portion of the duff and organic layer will be consumed resulting in large areas of exposed soil. These areas may be susceptible to sheet erosion with the next heavy rain. The live fuels on the surface may exhibit enough drying characteristics to carry fire spread on their own. A killing frost or long term drought conditions will aid in fire intensity and spread. Smoke management relating to sensitive areas is of critical importance due to the length of time smoke should be expected to result from the burn area. Increased spotting should be expected. At the mid and upper end of this range live understory fuels will begin to contribute to the available fuel loading and can increase fire intensity.

Keetch-Byram Index Rating of EXTREME (450 - 800)

This range of the index would represent the most severe drought conditions identified and would result from an extended period of little or no precipitation and high daytime temperatures. Fires ignited within this range will be characterized by intense, deep burning fires. Significant down wind spotting should be considered the rule. Live understory vegetation at ground level should be considered part of the fuel complex. Live fuel moisture will be sufficiently low within this vegetation and it will burn easily with a minimum of pre-heating. The majority of soil organic material subject to ignition will be consumed. Expect stump roots and other subsurface organic material that ignite to be completely consumed. Large fuel classes will burn intensely with almost total consumption once ignited. These fires will be very difficult to contain and control. It will take an extended period of time (possibly five years or more) for a layer of soil organic material to be replaced on the area. Resource managers should expect a significant amount of soil loss from erosion until the area replaces sufficient vegetative cover.

Rising and Falling Indices

This discussion primarily address the effects on the larger dead component of fuel associated with a given fuel model and has its basis in the time lag concept associated with 100 and 1000 HR fuels. Indices that have been low and begin the normal seasonal rise are characterized by the larger fuel classes being damp deep inside. It is typical for a large piece of woody material to be basically saturated in the interior and therefore difficult to ignite and sustain combustion. As time progresses the exterior dries but interior fuel moisture still remain high. This situation is sometimes characterized by smoldering logs that have ignited by fire intensities high enough to overcome the surface moisture levels but which later go out due to the high interior moisture levels precluding further combustion. When this situation occurs, there may be some concern for smoke from the smoldering debris and mop-up may be a consideration, but dealing with this situation is relatively easy. Humidity recovery

J-4

at night can be a major factor in extinguishing this type ignition. The very opposite situation can be expected on a falling index. The larger fuel classes have experienced deep drying from a sustained period of little or no precipitation. The exterior surface may have a relatively high fuel moisture level from a recent precipitation event, the interior of the fuel will have lower moisture due to the longer equilibrium time lag. Fires ignited under these conditions may develop sufficient intensities to break through this outer layer of high fuel moisture. Once this happens the fire encounters a reservoir of comparatively low fuel moisture material and will continue to burn for an extended period of time. This could go on for several days within the area and result in a large amount of smoldering material and resulting smoke management problems, depending on the type and amount of fuels on the area. This could have resulted from one precipitation event, and while the 1 HR and 10 HR classes of fuel are immediately affected, the other classes are slower to react.

Days Since Rain

Finer fuel classes, i.e., grasses are immediately affected by precipitation of any type. Since fires originate and spread within these classes, we can use this characteristic to accomplish prescribed fire objectives during what might normally be unacceptable drought conditions. During the first few days following a precipitation event, the surface fuels will have been saturated and begin to dry out. The larger fuels and possibly even the organic layer may still have moisture of extinction levels present. Resource objectives can be accomplished when the burn occurs during this time period even though the drought index levels may still be high. Fire personnel should be especially careful in monitoring the amount of precipitation that has occurred. Once fuels have experienced deep drying, it takes a significant rainfall event to dampen conditions to the point where they are reasonably safe. Precipitation amounts in the 0.5 inch range over a short period of time should be considered minimal in most cases.

Index Readings that Depart from Seasonal Norms

Fluctuations in weather patterns, variations in temperatures and precipitation levels can all coincide to create a departure from the normal yearly index pattern. An abnormally dry fall and winter season could lead into an early spring fire season with drought index readings abnormally high for that time of year. Fire Planners must recognize departures from normal readings for their particular location. These type conditions should be recognized as those primed for a potential escape situation.

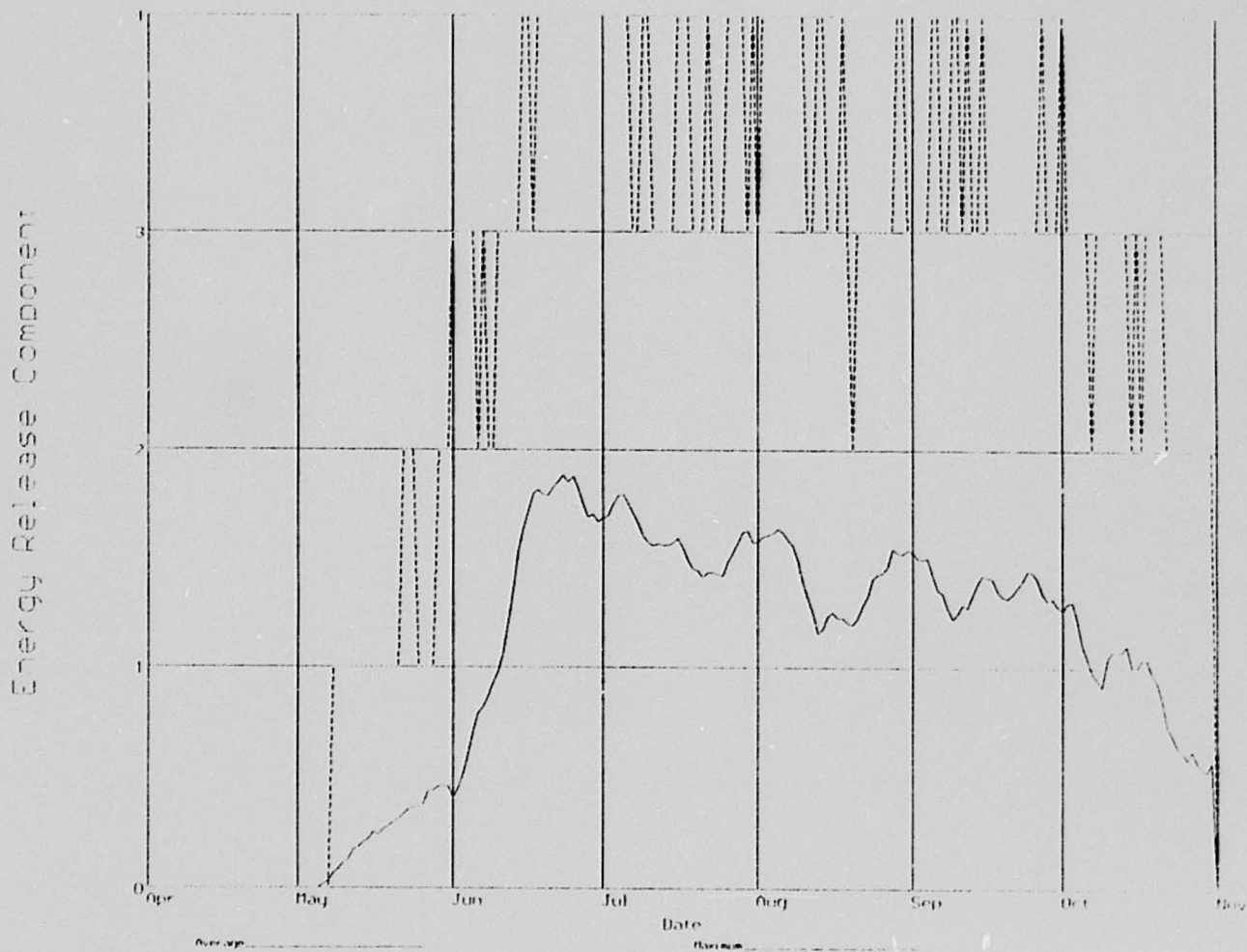
J-5

APPENDIX K

ENERGY RELEASE COMPONENT GRAPHS

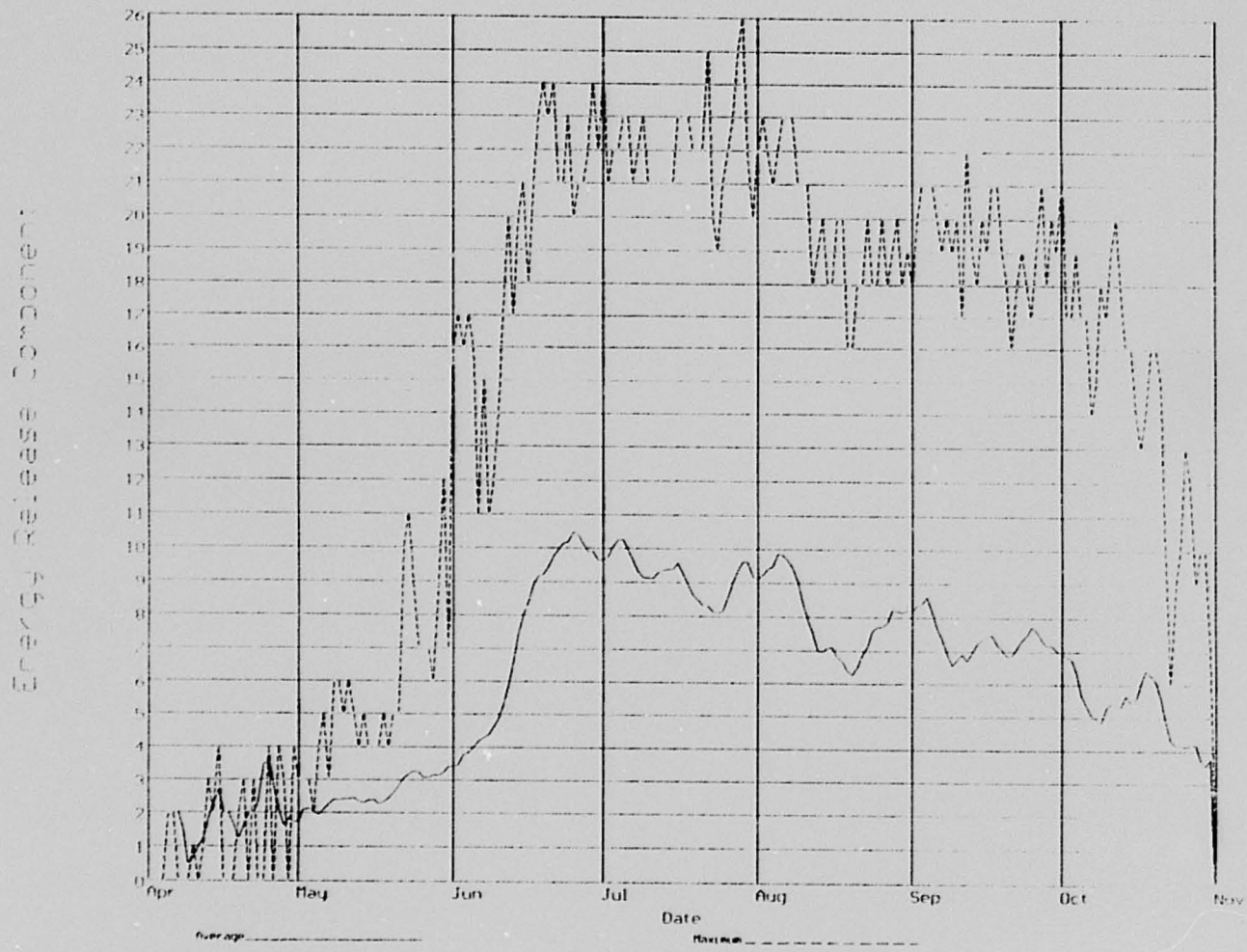
Fuel Model A -- Grass

Season Plot - CO NATIONAL MONUMENT



Fuel Model T -- Sagebrush

Season Plot - CO NATIONAL MONUMENT



APPENDIX L

RISK ASSESSMENT CHARTS

Unit: #2 West Unit

KBDI Range May 01-15 May 16-31 Jun 01-15 Jun 16-30 Jul 01-15 Jul 16-31 Aug 01-15 Aug 16-31 Sep 01-15 Sep 16-30 Oct 01-15

0 - 95	Moderate	Moderate	Moderate	Moderate	Low	Low	Low	Low	Low	Low	Low
96 - 190	Moderate	Moderate	High	High	Moderate	Moderate	Moderate	Moderate	Low	Low	Low
191 - 364	High	High	High	High	High	High	High	High	Moderate	Low	Low
365 - 449	High	High	High	High	High	High	High	High	Moderate	Moderate	Low
450 +	High	High	High	High	High	High	High	High	High	Moderate	Moderate

Unit: #3 Central Unit

KBDI Range May 01-15 May 16-31 Jun 01-15 Jun 16-30 Jul 01-15 Jul 16-31 Aug 01-15 Aug 16-31 Sep 01-15 Sep 16-30 Oct 01-15

0 - 95	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Low	Low	Low	Low	Low
96 - 190	Moderate	High	High	High	High	Moderate	Moderate	Moderate	Low	Low	Low
191 - 364	High	High	High	High	High	High	High	High	Moderate	Low	Low
365 - 449	High	High	High	High	High	High	High	High	Moderate	Moderate	Low
450 +	High	High	High	High	High	High	High	High	High	Moderate	Moderate

L-2

Unit: #4 East Unit

KBDI Range May 01-15 May 16-31 Jun 01-15 Jun 16-30 Jul 01-15 Jul 16-31 Aug 01-15 Aug 16-31 Sep 01-15 Sep 16-30 Oct 01-15

0 - 95	High	High	High	High	Moderate	Moderate	Moderate	Low	Low	Low	Low
96 - 190	High	High	High	High	High	Moderate	Moderate	Moderate	Moderate	Low	Low
191 - 364	High	High	High	High	High	High	High	High	High	Moderate	Low
365 - 449	High	High	High	High	High	High	High	High	High	Moderate	Moderate
450 +	High	High	High	High	High	High	High	High	High	High	Moderate

APPENDIX M

MINIMUM IMPACT SUPPRESSION TACTICS GUIDE

MINIMUM IMPACT SUPPRESSION TACTICS GUIDELINES

USDI BLM Grand Junction Resource Area - Ruby Canyon/Black Ridge

PREAMBLE

Fire is a natural and primary disturbance in the ecosystems of the Rocky Mountains. The following Minimum Impact Suppression Tactics (MIST) guide is designed to assist BLM fire personnel when taking suppression action on wildland fires. The guidelines are intended to reduce fire suppression impacts on the land while insuring the actions taken are timely and effective. This is especially important given that FMUs, One, Two, and Three are in a WSA.

It is obvious MIST principles have application on other BLM lands as well as those described above. It will take considerable coordination with other cooperators who protect public lands before this concept can be adopted on all lands.

CONCEPT

The concept of MIST is to use the minimum amount of forces necessary to effectively achieve the fire management protection objectives consistent with land and resource management objectives. It implies a greater sensitivity to the impacts of suppression tactics and their long-term effects when determining how to implement an appropriate suppression response. In some cases MIST may indicate cold trailing or wet line may be more appropriate than constructed hand line. In another example, the use of an excavator may be used rather than a dozer. Individual determinations will be dependent on the specific situation and circumstances of each fire.

MIST is not intended to represent a separate or distinct classification of firefighting tactics but rather a mind-set of how to suppress a wildland fire while minimizing the long-term effects of the suppression action. When the term MIST is used in this document it reflects the above principle.

Suppression actions on all wildland fires will be those having a minimum impact on the physical resources associated with each site. In so doing, the principle of fighting fire aggressively but providing for safety first will not be compromised.

The key challenge to the line officer, fire manager and firefighter is to be able to select the wildland fire suppression tactics that are appropriate given the fire's probable or potential behavior. The guiding principle is least cost plus loss while meeting land and resource management objectives. It is the second part of this statement which must be recognized more than it has in the past. As this recognition emerges, actions must be modified to accommodate a new awareness of them.

M-1

These actions, or MIST, may result in an increase in the amount of time spent watching, rather than disturbing, a dying fire to insure it does not rise again. They may also involve additional rehabilitation measures on the site that were not previously carried out.

When selecting an appropriate suppression response, firefighter safety must remain the highest concern. In addition, fire managers must be assured the planned actions will be effective and will remain effective over the expected duration of the fire.

Other guides, such as specific threatened, endangered, or sensitive species guides will also be utilized in determining fire suppression tactics.

GOAL

The goal of MIST is to halt or delay fire spread in order to maintain the fire within predetermined parameters while producing the least possible impact on the resource being protected. These parameters are represented by the initial attack incident commander's size-up of the situation in the case of a new start or by the WFSA in the case of an escaped fire.

It is important to consider probable rehabilitation needs as a part of selecting the appropriate suppression response. Tactics that reduce the need for rehab are preferred whenever feasible.

SUPPRESSION RESPONSIBILITY

As stated previously, safety is the highest priority. All action will be anchored to the standard fire orders and watch out situations. Safety will remain the responsibility of each person involved with the incident.

Initial/Extended Attack

Incident Commander - Understand and carry out an appropriate suppression response which will best meet the land management objectives of the area at the least cost plus loss. Insure all forces used on the fire understand the plan for suppressing the fire in conjunction with MIST.

Keep in communication with responsible fire manager or line officer to insure understanding and support of tactics being used on the fire. Evaluate and provide feedback as to the tactical effectiveness during and after fire incident.

M-2

Project Fire

Type I/II Incident Commander - Carry out instructions given by the responsible line officer both verbally and through the WFSA. Establish and nurture a close dialogue with the resource advisor assigned to the fire team. Review actions on site and evaluate for compliance with line officer direction and effectiveness at meeting fire management protection objectives.

Responsible Line Officer - Transmit the land management objectives of the fire area to the fire team and to define specific fire management protection objectives. Periodically review for compliance.

Resource Advisor - Insure the interpretation and implementation of WFSA and other oral or written line officer direction is adequately carried out. Provide specific direction and guidelines as needed. Participate at fire team planning sessions, review incident action plans and attend daily briefings to emphasize resource concerns and management's expectations. Provide assistance in updating WFSA when necessary. Participate in incident management team debriefing and assist in evaluation of team performance related to MIST.

GUIDELINES

Following is a list of considerations for each fire situation:

Hot-Line/Ground Fuels

- Allow fire to burn to natural barriers.
- Use cold-trail, wet line or combination when appropriate.
- If constructed fireline is necessary, use only width and depth to check fire spread.
- Consider use of fireline explosives for line construction.
- Burn out and use low impact tools like swatter or "gunny" sack.
- Minimize bucking and cutting of trees to establish fireline; build line around logs when possible.
- Use alternative mechanized equipment such as excavators, rubber tired skidders, etc. rather than tracked vehicles. Use high pressure type sprayers on equipment prior to assigning to incident to help prevent spread of noxious weeds.
- Constantly re-check cold trailed fireline.

Hot-Line/Aerial Fuels

- Limb vegetation adjacent to fireline only as needed to prevent additional fire spread.

M-3

- During fireline construction, cut shrubs or small trees only when necessary. Make all cuts flush with the ground.
- Minimize felling of trees and snags unless they threaten the fireline or seriously endanger workers. In lieu of felling, identify hazard trees with a lookout or flagging.
- Scrape around tree bases near fireline if it is likely they will ignite.
- Use fireline explosives for felling when possible to meet the need for more natural appearing stumps.

Mopup/Ground Fuels

- Do minimal spading; restrict spading to hot areas near fireline.
- Cold-trail charred logs near fireline; do minimal tool scarring.
- Minimize bucking of logs to extinguish fire or to check for hotspots; roll the logs if possible.
- Return logs to original position after checking and when ground is cool.
- Refrain from making bone yards; burned and partially burned fuels that were moved should be returned to a natural arrangement.
- Consider allowing large logs to burnout. Use a lever rather than bucking to manage large logs which must be extinguished.
- Use gravity socks in stream sources and/or a combination of water blivits and fold-a-tanks to minimize impacts to streams.
- Consider using infrared detection devices along perimeter to reduce risk.
- Personnel should avoid using rehabilitated firelines as travel corridors whenever possible because of potential soil compaction and possible detrimental impacts to rehab work, i.e., water bars.

Mopup/Aerial Fuels

- Remove or limb only those fuels which if ignited have potential to spread fire outside the fireline.
- Before felling consider allowing ignited tree/snag to burn itself out. Ensure adequate safety measures are communicated if this option is chosen.
- Identify hazard trees with a lookout or flagging.
- If burning trees/snag pose a serious threat of spreading fire brands, extinguish fire with water or dirt whenever possible. Consider felling by crosscut or chainsaw should be the last resort.
- Align saw cuts to minimize visual impacts from more heavily traveled corridors. Slope cut away from line of sight when possible.

M-4

LOGISTICS

Campsite Considerations

- Locate facilities outside of wilderness and WSAs whenever possible.
- Coordinate with the Resource Advisor in choosing a site with the most reasonable qualities of resource protection and safety concerns.
- Evaluate short-term low impact camps such as coyote or spike versus use of longer-term higher impact camps.
- Use existing campsites such as reserved sites used by outfitters when possible.
- New site locations should be on impact resistant and naturally draining areas such as rocky or sandy soils, or openings with heavy timber.
- Avoid camps in meadows, along streams or on lakeshores. Locate at least 200 feet from lakes, streams, trails, or other sensitive areas.
- Lay out the camp components carefully from the start. Define cooking, sleeping, latrine, and water supply.
- Minimize the number of trails and ensure adequate marking.
- Consider fabric ground cloth for protection in high use areas such as around cooking facilities.
- Use commercial portable toilet facilities where available. If these can't be used a latrine hole should be utilized.
- Select latrine sites a minimum of 200 feet from water sources with natural screening.
- Do not use nails in trees.
- Constantly evaluate the impacts which will occur, both short and long term.

Personal Camp Conduct

- Use "leave no trace" camping techniques.
- Minimize disturbance to land when preparing bedding site. Do not clear vegetation or trench to create bedding sites.
- Use stoves for cooking, when possible. If a campfire is used, limit to one site and keep it as small as reasonable. Build either a "pit" or "mound" type fire. Avoid use of rocks to ring fires.
- Use down and dead firewood. Use small diameter wood which burns down more cleanly.
- Don't burn plastics or aluminum - "pack it out" with other garbage.
- Keep a clean camp and store food and garbage so it is unavailable to animals. Ensure items such as empty food containers are clean and odor free, never bury them.
- Select travel routes between camp and fire and define clearly.

M-5

- Carry water and bathe away from lakes and streams. Personnel must not introduce soaps, shampoos or other personal grooming chemicals into waterways.

AVIATION MANAGEMENT

Aviation Use Guidelines

- Maximize back haul flights as much as possible.
- Use long line remote hook in lieu of constructed helispots for delivery or retrieval of supplies and gear.
- Take precautions to insure noxious weeds are not inadvertently spread through the deployment of cargo nets and other external loads.
- Use natural openings for helispots and paracargo landing zones as far as practical. If construction is necessary, avoid high visitor use areas.
- Consider maintenance of existing helispot construction prior to the commencement of any ground work.
- Consider directional felling of trees and snags so they will be in a natural appearing arrangement.
- Buck and limb only what is necessary to achieve safe/practical operating space in and around the landing pad area.

Retardant Use

- During initial attack, fire managers must weigh the non-use of retardant with the probability of initial attack crews being able to successfully control or contain a wildland fire. If it is determined that use of retardant may prevent a larger, more damaging wildland fire, then the manager might consider retardant use even in sensitive areas. This decision must take into account all values at risk and the consequences of larger firefighting forces' impact on the land. Consider impacts of water drops versus use of foam/retardant. If foam/retardant is deemed necessary, consider use of foam before retardant use.

HAZARDOUS MATERIALS

Flammable/Combustible Liquids

- Store and dispense aircraft and equipment fuels in accordance with National Fire Protection Association (NFPA) and health and Safety Handbook requirements.
- Avoid spilling or leakage of oil or fuel, from sources such as portable pumps, into water sources or soils.

M-6

- Store any liquid petroleum gas (propane) downhill and downwind from firecamps and away from ignition sources.

Flammable Solids

- Pick up residual fusees debris from the fireline and dispose of properly.

Fire Retardant/Foaming Agents

- Do not drop retardant or other suppressants near surface waters.
- Use caution when operating pumps or engines with foaming agents to avoid contamination of water sources.

Fireline Explosives

- Remove all undetonated fireline explosives from storage areas and fireline at the conclusion of the incident and dispose of according to Bureau of Alcohol, Tobacco and Firearms (BATF) and Fireline Blaster Handbook requirements. Properly dispose of all packaging materials.

FIRE REHABILITATION

Rehabilitation is a critical need. This need arises primarily because of the impacts associated with fire suppression and the logistics that support it. The process of constructing control lines, transport of personnel and materials, providing food and shelter for personnel, and other suppression activities has a significant impact on sensitive resources regardless of the mitigating measures used. Therefore, rehabilitation must be undertaken in a timely, professional manner.

During implementation, the resource advisor should be available for advice and support of personnel doing this work as well as quality control.

Rehabilitation Guidelines

- Pick up and remove all flagging, garbage, litter, and equipment. Dispose of trash appropriately.
- Clean fire pit of unburned materials and fill back in.
- Discourage use of newly established trails created during the suppression effort by covering with brush, limbs, small diameter poles, and rotten logs in naturally appearing arrangement.
- Replace dug-out soil and/or duff and obliterate any berms created during the suppression effort.

M-7

If impacted trails have developed on slopes greater than six percent, construct waterbars according to the following waterbar spacing guide:

Trail (%Grade)	Maximum Spacing (Feet)
6-9	400
10-15	200
15-25	100
25+	50

- Where soil has been exposed and compacted, such as in camps, on user trails, at helispots and pump sites, scarify the top two to four inches and scatter with needles, twigs, rocks, and dead branches. It is unlikely that seed and fertilizer for barren areas will be appropriate, in order to maintain the genetic integrity of the area. It may be possible, depending on the time of year and/or possibility of a rainy period, to harvest and scatter nearby seed, or to transplant certain native vegetation.
- Blend campsites with natural surroundings, by filling in and covering latrine with soil, rocks, and other natural material. Naturalize campfire area by scattering ashes in nearby brush (after making sure any sparks are out) and returning site to a natural appearance.
- Where trees were cut or limbed, cut stumps flush with ground, scatter limbs and boles, out of sight in unburned area. Camouflage stumps and tree boles using rocks, dead woody material, fragments of stumps, bolewood, limbs, soil and fallen or broken green branches. Scattered sawdust and shavings will assist in decomposition and be less noticeable. Use native materials from adjacent, unimpacted areas if necessary.
- Remove newly cut tree boles that are visible from trails or meadows. Drag other highly visible woody debris created during the suppression effort into timbered areas and disburse. Tree boles that are too large to move should be slantcut so a minimal amount of the cut surface is exposed to view. Chopping up the surface with an axe or pulaski, to make it jagged and rough, will speed natural decomposition.
- Leave tops of felled trees attached. This will appear more natural than scattering the debris.
- Consider using explosives on some stumps and cut faces of the bolewood for a more natural appearance.
- Consider, if no other alternatives are available, helicopter sling loading rounds and tops from a disturbed site when there has been an excessive of bucking, limbing and topping.

M-8

- Tear out stumps or darns, where they have been used, and return site to natural condition. Replace any displaced rocks or streambed material that has been moved. Reclaim streambed to its predisturbed state, when appropriate.
- Walk through adjacent undisturbed area and take a look at your rehab efforts to determine your success at returning the area to as natural a state as possible. Good examples should be documented and shared with others.

DEMOBILIZATION

Because demob is often a time when people are tired or when weather conditions are less than ideal, enough time must be allowed to do a good job. When moving people and equipment, choose the most efficient and least impactful method to both the landscape and fire organization mission. An on-the-ground analysis of "How Things Went" will be important.

POST-FIRE EVALUATION

Post-fire evaluation is important for any fire occurrence so management can find out how things went. Identify areas needing improvement to formulate strategies and to produce quality work in the future. This activity is especially important in wilderness and like sensitive areas due to their fragility and inclination to long-term damage by human impacts.

Resource advisors and functional specialists will be responsible for conducting the post-fire evaluation. They are the people who have the experience and knowledge to provide information required to make the evaluation meaningful and productive.

Post-fire evaluation will consist of data collection, documentation and recommendations. This process and report will, in most cases, be fairly simple and to the point. It should be accomplished before an overhead team departs from the fire. The evaluation emphasis should be on the MIST actions and not on the effects of the fire.

Data Collection/Documentation/Recommendations

This phase will be completed by a review of the rehab plan and visit to the fire site as soon after demobilization as possible. This will also include an objective overview of other areas covered by the rehab plan.

M-9

Observations will be documented in a brief report to the line officer with a copy to the appropriate incident commander. In the report the evaluator will include recommendations for ensuing fire suppression activities on similar lands. It is important that the evaluator recognize and commend the initial attack forces or overhead team for positive activities. Make special note of the extra efforts and sensitivity to suppression impacts. Attached is a sample format for a Post-Fire Evaluation Report:

M-10

POST-FIRE EVALUATION

for
(Name of Fire)

EXISTING DIRECTION PERTINENT FOR FIRE

Management Area

Other Management Concerns/Guides: T & E Plants and Animals:

FINDINGS

- A. Resource Advisor Input and/or Actions:
- B. Wildland Fire Situation Analysis (WFSA)
- C. Line Direction to Incident Commander
- D. Incident Action Plan

ON-SITE VERIFICATION

OVERALL REVIEW EVALUATION

REVIEW RECOMMENDATIONS

M-11

WATCH OUT SITUATIONS

1. Fire not scouted and sized up.
2. In country not seen in daylight.
3. Safety zones and escape routes not identified.
4. Unfamiliar with weather and local factors influencing fire behavior.
5. Uninformed on strategy, tactics and hazards.
6. Instructions and assignments not clear.
7. No communication link with crew members/supervisor.
8. Constructing fireline without safe anchor point.
9. Building fireline downhill with fire below.
10. Attempting frontal assault on fire.
11. Unburned fuel between you and the fire.
12. Cannot see main fire, not in contact with anyone who can.
13. On a hillside where rolling material can ignite fuel below.
14. Weather is getting hotter and drier.
15. Wind increases and/or changes direction.
16. Getting frequent spot fires across line.
17. Terrain and fuels make escape to safety zone difficult.
18. Taking a nap near the fireline.

M-12

STANDARD FIRE ORDERS

- F Fight fire aggressively but provide for safety first.
- I Initiate all actions based on current and expected fire behavior.
- R Recognize current weather conditions and obtain forecast.
- E Ensure instructions are given and understood.
- O Obtain current information on fire status.
- R Remain in communication with crew members, your supervisor, and adjoining forces.
- D Determine safety zones and escape routes.
- E Establish lookouts in potentially hazardous situations.
- R Retain control at all times.
- S Stay alert, keep calm, think clearly, act decisively.

M-13

APPENDIX N

SIGNS

CAUTION

MOTHER NATURE AT WORK!

You are entering an area where some fires may be allowed to burn as part of a program to return the natural force of fire to the ecosystem. Please use caution when traveling in the vicinity of a fire.

For further information, contact:

**Bureau of Land Management
Grand Junction Resource Area
2815 H Road
Grand Junction, CO 81506
(970)244-3000**



CAUTION

MOTHER NATURE AT WORK!

A lightning-caused fire is being allowed to burn under natural conditions along or near this trail.

If you travel in the vicinity of the fire, beware of the following hazards:

- ERRATIC FIRE BEHAVIOR •**
- ROLLING ROCKS AND LOGS • FALLING SNAGS AND TREES •**

FIRE NAME:

LOCATION:

For further information, contact:

**Bureau of Land Management, Grand Junction Resource Area
2815 H Road, Grand Junction, CO 81506
(970)244-3000**



CLOSED TO PUBLIC MOTHER NATURE AT WORK!

A lightning-caused fire is being allowed to burn under natural conditions near this trail. Concern for your safety prohibits access until fire conditions change.

Hazards associated with fire include:

- **ERRATIC AND RAPID FIRE SPREAD** •
- **ROLLING ROCKS AND LOGS** • **FALLING SNAGS AND TREES** •
- **HEAVY SMOKE AND LIMITED VISIBILITY** •

FIRE NAME:

LOCATION:

For further information, contact:

Bureau of Land Management, Grand Junction Resource Area
2815 H Road, Grand Junction, CO 81506, (970)244-3000



YOUR SAFETY AND WILDLAND FIRES

IF YOU COME UPON A FIRE, KEEP THESE GUIDELINES IN MIND:

- ✓ Do not attempt to suppress the fire. Report it immediately!
- ✓ Never camp uphill from a fire. Always travel below or downvalley from a fire.
- ✓ Never position yourself where winds could move the fire towards you.
- ✓ Stay well away from even a smoldering fire. Usually falling trees and rolling rocks are nearby.
- ✓ Keep an eye on the fire at all times.
- ✓ Dark smoke indicates the fire may be burning intensely and spreading rapidly.
- ✓ Beware of storm fronts and thunder storms. The associated high winds may cause the fire to move rapidly in your direction.
- ✓ If you are trapped or cut-off by a fire seek shelter in areas with little or no fuel such as rock slides, lakes, alpine meadows or even aspen patches.

STAY CALM AND THINK CLEARLY!

FIRE IS A NATURAL FORCE TO BE TREATED WITH RESPECT.

APPENDIX O

SUGGESTED MONITORING EQUIPMENT

ON-SITE NIF MANAGEMENT EQUIPMENT LIST

For the on-site NIF management, a minimum amount of equipment will be required to insure safety and adequate data collection for decision making. Minimum equipment needs include:

Fire Shelter Radio (Programmable)
Belt weather kits Fireline Handbook
NIF management forms Hand tools
Safety apparel First aid kit
Fuseses Flashlight
NIF Guidelines

Other equipment recommended for on-site observation of NIF(s) are:

Clinometer	100-foot tape
Compass	Duff pins
Camera with film supply	Rate of spread markers
Tatum	Wristwatch
Topographic maps	Aerial photos
Plastic flagging	Precipitation gauge
Handheld GPS unit	

APPENDIX P

SUGGESTED HANDOUT FOR VISITOR INFORMATION PERSONNEL

WHAT IS A NATURAL IGNITION FIRE AND HOW IS IT MANAGED?

Natural ignition fires (NIF) are lightning-caused fires within designated boundaries that are allowed to play their natural role in the life cycle of an area. "Prescribed" means that a specific plan for the fire's management is developed and followed. "Natural" means that the fire was started by lightning, not by man.

Management of a natural ignition fire is much more complex than the commonly-used term "let-burn" implies. A description of NIF and the process used to manage it follows.

Why allow a fire to burn - What good does it do?

Fire has always been a part of shaping the ecosystem in the west. It is a necessary element in the life cycle of many areas and, in fact, some species need fire to regenerate.

Fires burn with different intensities. In some areas a fire may burn hot, leaving patches of ashes, charred trees and a good seedbed for plants to regenerate. In other areas, cool burns just meander along the ground, burning grass, brush, dead logs, and lower branches. Fire returns valuable nutrients to the soil, opens overgrown areas to sunlight, and allows new growth that provides food and habitat for various animal species. The fuels (dead wood and other debris) that could kindle larger, more intense fires are burned before they become dangerous. The result of this free-burning is a patchwork of young and old vegetation, often referred to as a mosaic. This variety of vegetation promotes a variety of wildlife and a diverse landscape.

Natural ignition fire vs. wildland fire - What is the difference?

When a fire starts in the RCBR, a determination has to be made: Is it a "**natural ignition fire**" or a "**wildland fire**"? A **natural ignition fire** is a lightning-caused fire burning under pre-planned specified conditions (prescription) to accomplish specific objectives. It is termed as a "wanted event." It will be allowed to burn as long as it stays within the predetermined "prescription." A **wildland fire** is an unplanned ("unwanted fire"). Immediate action will be taken to suppress a wildland fire.

How is the decision made? How does the system work?

The decision to classify a fire as "natural ignition fire" or "wildland fire" is complex, requiring consideration of many factors, and involvement of both fire and resource specialists.

1. **Within a maximum of four hours** of the discovery of a fire in the RCBR area, a team of specialists in fire behavior and resource management must decide if it will be classified as a natural ignition fire or a wildland fire to be suppressed. These factors are considered in the decision.

Wildland fire

Man-caused fire or

Lightning-caused fire that is:

- A threat to RCBR boundary
- A threat to human life or property and natural/cultural resources
- Fuel moisture unacceptable
- Weather forecast unacceptable
- Smoke impacts unacceptable
- No funds available for prescribed natural fire
- Local, regional, and national situation unacceptable

Natural ignition fire

Lightning-caused fire that is:

- No threat to RCBR boundary
- No threat to human life or property and natural/cultural resources
- Fuel moisture is acceptable
- Weather forecast acceptable
- Smoke impacts acceptable
- Funds are available for prescribed natural fire
- Local, regional, and national situation acceptable

2. **Then, within a maximum of three days** (72 hours) after the decision to proceed with a natural ignition fire, fire managers must develop a comprehensive "burn plan." The burn plan will be reviewed and approved by the Area Manager on a daily basis. The burn plan includes general information about the fire, like the date it started, location, fuel type, dryness of the fuels and size of fire. It includes fire weather and fire behavior forecasts, the current and predicted drought index, estimates of resources needed to manage the fire, provisions for daily evaluation, and contacts for public involvement. The plan also provides a risk assessment of threats to human life; property and natural/cultural resources, smoke management, and impacts on local communities and public land users.

Fire managers constantly evaluate weather and fuel conditions, comparing them to long-term averages, as well as known wet and dry years. This enables managers to better assess risks associated with the natural ignition fire program.

If the plan is not approved, the fire will be considered a wildland fire, and suppression action will begin.

In preparing the burn plan, resource specialists must establish a MMA. This perimeter defines an area which the fire can effect before it is determined to have negative impacts. The fire can spread any direction within this area. The

P-2

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MMA must be defensible. If a fire does happen to cross the MMA for some unforeseen reason, it must then be classified a wildland fire and will be suppressed.

3. **Each day, the fire is evaluated by the team of specialists.** They continue to examine fire behavior, smoke conditions, the regional and national fire situation, and many other factors. If the situation changes from the original assumptions, the deciding officer must determine whether to allow the natural ignition fire to continue, or to declare it a wildland fire and suppress it.

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**COLORADO DEPARTMENT OF PUBLIC HEALTH & ENVIRONMENT
ANNUAL PERMIT APPLICATION AND REPORTING OR OPEN BURNING FOR
NATURAL IGNITION FIRE AREAS
(Form AFC-95B)**

PERMITTEE: BIA _____ BLM _____ CDOW _____ CSFS _____ NPS _____
 USAF _____ USFS _____ USF&WS _____ Other _____

ADMINISTRATIVE UNIT: _____ COUNTY: _____

COUNTY: _____ PHONE: _____

ADDRESS: _____

NAME OF AREA: _____ LOCATION: _____

(T, R, 1/2S or Long/Lat)

SMOKE SENSITIVE AREAS* DISTANCE FROM BURN(miles) DIRECTION FROM
 BURN(degrees)

*Smoke sensitive areas include: Class I areas as well as other scenic and important views, urban and rural population center, hospitals, nursing homes, schools, transportation facilities such as roads, highways, and airports, recreational areas, and other locations that may be sensitive to smoke impacts for health, safety, and/or aesthetic reasons.

Applicant Signature: _____ Date: _____

Submit Application To: Dept. of Public Health & Environment, APCD-SS-B1
 4300 Cherry Creek Drive South
 Denver, CO 80222-1530

Note: 1) Annual approval of permit required. Unpermitted natural fires will be considered wildland fires. 2) Permit conditions include adherence to Colorado Smoke Management Memorandum of Understanding and Smoke Management Plan and burning in a manner that does not result in a violation of ambient air quality standards for particulate matter. 3) Additional conditions to permit may be attached. 4) Initial application for natural ignition fires must include a map and plan. Subsequent annual applications for approved areas need not include maps and plans. 5) Permit decisions within 20 days of receipt of complete application by the APCD.

Approved by Colorado APCD: _____ Date: _____

Permit Number (APCD assigned): _____ Date entered into database: _____

APPENDIX Q

STATE OF COLORADO NIF SMOKE PERMIT APPLICATION

PERMIT NUMBER: _____

**ACTUAL FIRE ACTIVITY
NATURAL IGNITION FIRE AREAS
(Form APC-95B)**

NO FIRE ACTIVITY AT THIS LOCATION DURING PERMIT PERIOD
(CHECK IF APPLICABLE, SIGN BELOW AND RETURN FORM BY MARCH 1ST): _____

ACTUAL BURN BEGAN: DATE _____ TIME _____
ACTUAL BURN ENDED: DATE _____ TIME _____

ACTUAL ACREAGE: _____

Complete the following with the best available information. If no information is available, please leave blank.

FUEL LOADING DETERMINATION METHOD:
INVENTORY _____ TABLE 1*(which model) _____ PROFESSIONAL JUDGMENT _____

FUEL TYPES	PERCENT OF ACTUAL ACREAGE (must total 100%)	FUEL LOADING (tons/acre)	PERCENT CONSUMPTION
GRASS			
SAGEBRUSH			
OAKBRUSH			
ASPEN			
PINE/CONIFER			
OTHER			
OTHER			

* Aid to Determining Fuel Models for Estimating Fire Behavior, GTR INT-122

SIGNATURE: _____ DATE: _____

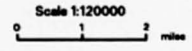
Submit To: Colorado Department of Public Health & Environment, APCD-SS-B1
4300 Cherry Creek Drive South
Denver, CO 80222-1530

Note: 1) Reporting of fire activity for previous calendar year's permitted natural ignition fires due by March 1st. 2) If no actual fire activity occurred on a permitted natural ignition fire area, check appropriate space and sign and date form. 3) If permitted burn became a wildland fire, report it as a wildland fire. 4) When reporting, for example fuel loading, it is understood that the best available information may be estimates and/or expert judgment.

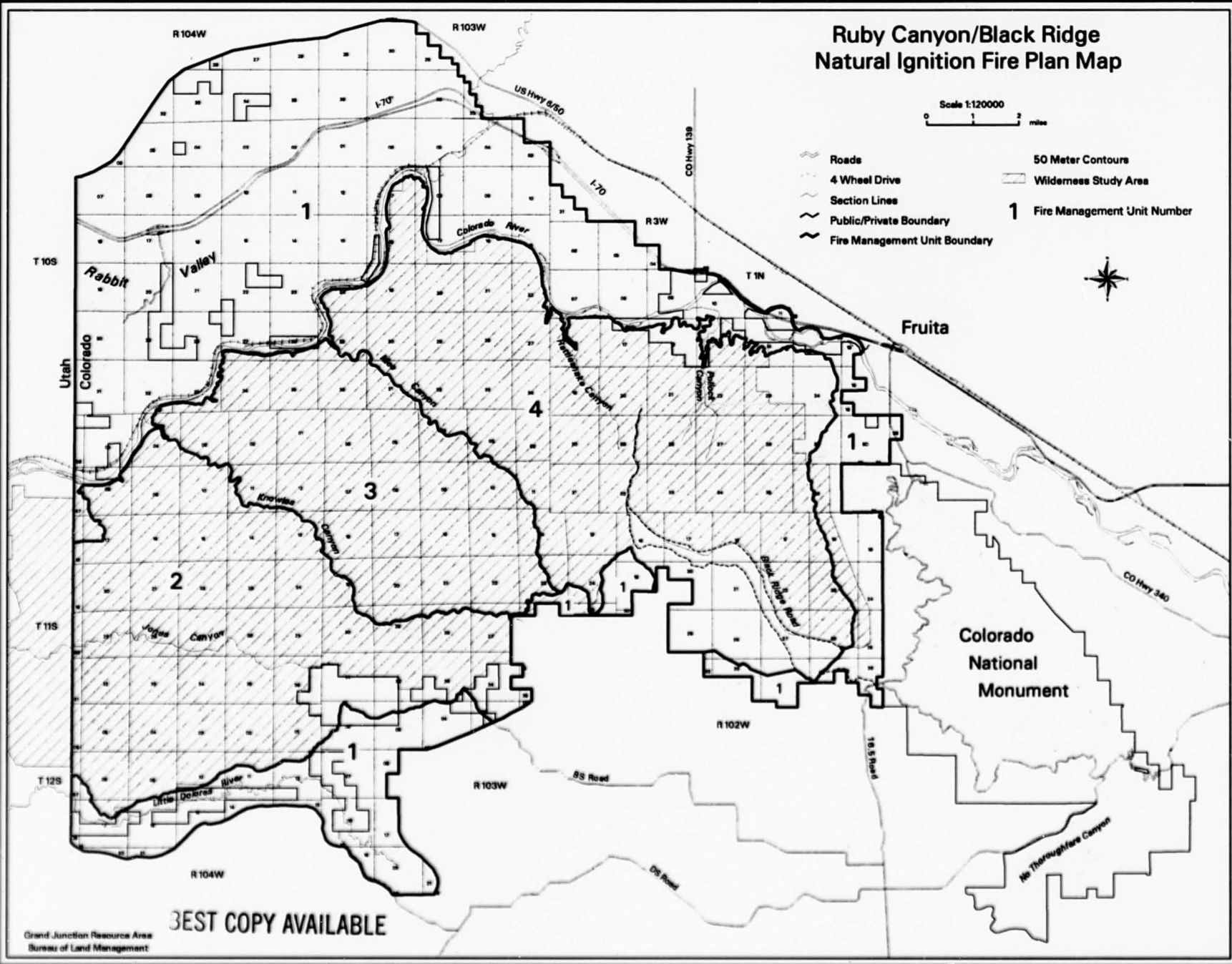
Date received by APCD: _____ Date entered into database: _____

Bureau of Land Management
Grand Junction Resource Area
2815 H Road
Grand Junction, CO 81506

Ruby Canyon/Black Ridge Natural Ignition Fire Plan Map



- Roads
- 4 Wheel Drive
- Section Lines
- Public/Private Boundary
- Fire Management Unit Boundary
- 50 Meter Contours
- Wilderness Study Area
- 1 Fire Management Unit Number



BEST COPY AVAILABLE

Grand Junction Resource Area
Bureau of Land Management