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BUREAU OF LAND MANAGEMENT**

MANUAL TRANSMITTAL SHEET

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H-9214-1 PRESCRIBED FIRE MANAGEMENT HANDBOOK

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/s/

LESTER K. ROSENKRANCE
Director, Office of Fire and Aviation

PRESCRIBED FIRE MANAGEMENT
HANDBOOK

H-9214-1

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

H-9214-1 - PRESCRIBED FIRE MANAGEMENT

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Chapter 1: Introduction

A. Purpose of Handbook

Fire is an essential ecological process in many ecosystems. Prescribed fire is used to alter, maintain or restore vegetative communities, achieve potential future conditions, and to protect life, property, and values that would be degraded by wildland fire. Prescribed fire is only accomplished through management ignition.

B. Objectives of Handbook

The objectives of this Handbook are to provide information to users on how to utilize prescribed fires, in a safe, controlled, cost-effective manner to achieve management objectives as defined in Resource Management Plans and Fire Management Plans.

C. Responsibilities

Existing delegations (910 DM 1.2) from the Secretary of the Interior to the Director of the Bureau of Land Management provide for the operation of the fire management program, including prescribed fire:

1. The Director is responsible for developing policy guidance for the use of prescribed fire.
2. The Director, Office of Fire and Aviation, is responsible for overall prescribed fire management activities. These responsibilities include:
 - a. Establishing prescribed fire planning and fiscal guidance.
 - b. Establishing operational guidance.
 - c. Establishing prescribed fire personnel qualifications.
 - d. Establishing prescribed fire reporting procedures.
 - e. Establishing review criteria and procedures.
 - f. Providing assistance to states as requested including smoke management, fire effects, equipment development, planning, and implementation.
 - g. Program reviews.
 - h. Participating in national level smoke management and air quality programs.

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3. The Associate Director for Resource Assessment and Planning is responsible for establishing resource planning, NEPA compliance, and monitoring and evaluation standards for prescribed fire activities.

4. State Directors are responsible for developing, implementing, and evaluating prescribed fire operations. Each State Director will:

- a. Develop additional guidelines, as needed, for implementation, monitoring, and evaluation of prescribed fire activities.
- b. Approve Prescribed Fire Plans. Authority may be delegated to the Field Office Managers as provided under BLM Manual Section 9211.3 and identified in BLM Manual Section 1203.
- c. Review/investigate escaped prescribed fires.
- d. Incorporate prescribed fire into geographic and local area preparedness plans.
- e. Participate in state level smoke management programs.

5. Field Offices Managers will:

- a. Ensure compliance with national standards and guidelines for prescribed fire activities.
- b. Review Prescribed Fire Plans and recommend or approve plans depending upon the delegated authority.
- c. Approve Bureau participation in the implementation of cooperating agencies prescribed fires.
- d. Ensure interdisciplinary team (IDT) coordination occurs at all planning and evaluation levels.
- e. Make the decision to use prescribed fire, incorporate it into BLM's planning framework (RMP's, FMP's) and related NEPA documents.
- f. Insure that only trained and qualified personnel participate in the prescribed fire program.
- g. Assure escaped prescribed fires are reviewed.

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- record.
- h. Assure projects are monitored, evaluated, and reported as a part of the fire record.
 - i. Participate in local smoke management programs.

D. References to Use

The following Bureau Manual Sections may be referenced:

1. 1112 - Safety and Health Management.
2. 1203 - Delegation of Authority.
3. 1386.6 - Tort Claims.
4. 1619 - Activity Plan Coordination.
5. 1625.3 - Supplemental Program Guidance for Support Services.
6. 1740 - Renewable Resource Improvements and Treatments.
7. 1743 - Renewable Resource Investment Analysis.
8. 9210.2 - Fire Management - Financing.
9. 9211.3 - Fire Planning - Prescribed Fire Plan.
10. 9215 - Fire Training and Qualifications.
11. 9218.3 - Fire Reporting and Statistics.

Other references.

1. 910 DM Chapter 1 - Wildland Fire Suppression and Management
2. Rx Fire Plan Guide NFES 1839/PMS 431-1
3. Federal Fire and Aviation Leadership Council, Increasing Programmatic Accomplishments and Reducing Agency Differences in Prescribed Fire Management. 1/10/96.
4. Prescribed Fire Smoke Management Guide - NFES 1279/PMS 420-2

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5. User Assessment of Smoke-Dispersion Models for Wildland Biomass. PNW-GTR-379. 12/96.
6. Interagency Helicopter Operations Guide, and the Aerial Ignition Guide.
7. BLM Standards for Fire Operations.
8. National Interagency Mobilization Guide.
9. NWCG Wildland Fire Qualifications Subsystem Guide Part 2 - Prescribed Fire NFES 2497/PMS 310-1 Part 2.
10. Fire Effects Information System. Intermountain Research Station General Technical Report INT-GTR-327. This information is also found at: www.fs.fed.us/database/feis/welcome.htm
11. Index to fire related web sites. www-a.blm.gov/narsc/wildland/fire/index.html/intro.html

E. Priorities

1. Firefighter and public safety is the first priority in every fire management activity.
2. Develop qualified personnel and insure that only trained and qualified personnel participate in prescribed fire activities.
3. Prescribed Fire Plans and activities will support land and resource management plans. Compliance with National Environmental Policy Act (NEPA) is mandatory for all prescribed fire projects.
4. Each prescribed fire will have a written Prescribed Fire Plan. That Prescribed Fire Plan will be approved by the appropriate Agency Administrator (See Chapter 1.C.4.b.). The prescribed fire project will be conducted in compliance with the approved Prescribed Fire Plan.
5. Prescribed fires will comply with applicable Federal, State, and local laws and regulations for smoke management.
6. A prescribed fire that is not meeting management objectives or that exceeds holding capability must have immediate action(s) taken to correct the situation, or be declared a wildland fire and the "Appropriate Management Response" will be taken.

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7. Establish a clear and consistent message to internal and external audiences about existing resource and ecosystem conditions, management goals and the role of fire, including prescribed fire, in ecosystem management.

8. Insure coordination and cooperation across interagency administrative boundaries in the planning and implementation of prescribed fires.

9. Planning and implementation funding for prescribed fires will be equitably cost-shared between resources and fire management.

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Chapter 2: Prescribed Fire Definition and Planning

A. Prescribed Fire Definition

Prescribed Fire is the application of fire as an ecological process, under specified conditions, in a designated area to achieve land management objectives.

Prescribed Fires are defined as: Any fire ignited by management action to meet specific objectives. A written approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

B. Prescribed Fire Planning

The Bureau's prescribed fire activities function under the concept of one coordinated effort between Resources and Fire Management. All benefiting activities will coordinate their respective roles for the planning, implementation, monitoring, evaluation, reporting, and funding, for prescribed fire projects. Resources Management is responsible for managing vegetation and Fire Management is responsible for managing ignitions.

All use of prescribed fire will support land and resource management plans. The Resource Management Plans (RMP) or other land use plans (See section C.1. below) serve as the document to initiate, analyze and justify prescribed fire activities. The effort and workload for project planning and NEPA compliance for a small project are often the same as that required for a larger project. If appropriate; resource managers and fire managers should consider large scale or even landscape scale projects. Multi unit and multi year projects should be considered.

The Fire Management Plan serves as the implementation strategy document for the prescribed fire activities. The Fire Management Plan (FMP) should capture and quantify the overall prescribed fire needs of the Field Office. The FMP needs to identify how prescribed fire, along with other fire management strategies, will be used to meet the overall land management goals. The FMP also needs to identify the average annual funding needed to manage, coordinate, plan and implement the prescribed fire activities.

The Prescribed Fire Plan serves as the project implementation document for an individual prescribed fire project.

C. BLM Prescribed Fire Planning Model

The model below illustrates the general process for planning and implementing a prescribed fire project. The basic process is the same as for planning and implementing any other project. Local units may have alternate processes that they use or they may alter the process below to fit their needs. This process should be initiated in the fiscal year prior to the expected implementation of the prescribed fire project.

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PLANNING STEPS FOR A PRESCRIBED FIRE

1

DOCUMENTS

Planning documents normally provide basis for initiating the project. General objectives and constraints are identified.

2

TEAM/SITE REVIEW

Interdisciplinary site review for suitability. Resource Coordinator assigned. Project checklists started.

3

PROJECT OBJECTIVES

Clear concise statements of what is to be accomplished. Reasonable opportunity for attainment. Measurable factors that determines the degree of success.

4

CONCURRENCE

Receive program input and identify the amount of time and personnel commitment needed. Initial management approval.

5

SITE DATA

Identification and collection of data. Develop the final objectives and mitigating measures.

6

NEPA DOCUMENTATION AND PLAN PREPARATION

If not completed at the RMP/FMP level, prepare the appropriate NEPA documentation. Prepare the prescribed fire plan.

7

APPROVALS

Secure approvals, permits, and concurrence as necessary. Public review and comment. Final approval by Agency Administrator.

8

ANNUAL WORK PLAN

Coordinate needs internally and include the project in the AWP.

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1. Source Documents: Land use plans are the primary planning documents through which prescribed fire projects will be identified. These documents will identify the management goals and constraints that project planners and coordinators will need. They will guide the NEPA analysis and Prescribed Fire Plan development. Common planning documents include:

- Management Framework Plan (MFP)
- Resource Management Plan (RMP)
- Allotment Management Plan (AMP)
- Habitat Management Plan (HMP)
- Fire Management Plan (FMP)
- Coordinated Resource Management Plans (CRMP)
- Herd Management Area Plan (HMPA)
- Other agreements and management plans

2. Preliminary Site Review: Resource specialists and Fire Management personnel or a Fuels Management Specialist should do an on-site review to determine the potential success of a prescribed fire project. Use other sites that have been burned in the same vegetation type, climate conditions, and soil types to assess the general suitability of the project. If the recommendation is to proceed, a Project Coordinator or Interdisciplinary Team (IDT) Leader should be assigned, and a prescribed fire plan and project checklist started. Appendix 1 is an example of a Site Review and Job Planning Checklist.

3. Project Objectives: The desired results and objectives need to be discussed and confirmed. Develop clear concise statements(s) of what is to be accomplished. The statement(s) should state what is to be accomplished from a management standpoint. There should be a reasonable opportunity to attain the objectives, and there should be measurable factors that determine the degree of success.

The management objectives should then be redefined into specific prescribed fire objectives. State exactly what the prescribed fire should and should not do, e.g., remove 40% to 60% of the sagebrush within the perimeter; do not burn the critical habitat areas identified within the unit.

4. Concurrences: Receive other program input and identify the amount of time and personnel commitment needed to develop and implement the project. Obtain management approval for the project.

5. Data Collection: Identify and collect any needed field data. This would include botanical and archeological data, fuel inventories, fire history and any other required data.

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6. National Environmental Policy Act and Prescribed Fire Plan: Compliance with the National Environmental Policy Act (NEPA) is required for all prescribed fire projects. Where proposed actions have been identified and analyzed in existing planning documents, then probably no further analysis would be necessary. Several of the documents listed under C.1. above have had an Environmental Assessment (EA) or Environmental Impact Statement (EIS) prepared in conjunction with the plan. **If an existing EA or EIS addresses the impacts of the prescribed fire further analysis is not needed.** NEPA compliance could also take the form of a programmatic EA that covers a number of related treatments (mechanical and prescribed fire), in association with the Fire Management Plan. A single analysis could also be appropriate for large scale projects or multiple projects within a defined area up to and including an entire Resource Area. Where proposed treatments are not compatible with the existing planning documents, a Plan Amendment and associated NEPA documentation would be appropriate. As a last alternative a separate analysis could be done for each proposed project. The Planning and Environmental Coordinator can help determine the level of analysis (if any) needed, and address issues relating to conformity with existing plans and analysis. If it is determined that additional analysis is needed, the benefitting activities(s) are responsible for doing the analysis and documentation

The Prescribed Fire Plan is the site specific implementation document. Fire Management the Fuels Management Specialist, a fire ecologist, or other person trained in fire behavior and fire effects normally is assigned the responsibility for preparing the Prescribed Fire Plan. Fire Managers must maintain close coordination and communication between ID team members and other people who may be involved. The IDT leader or other Resource Area representative may be assigned to work with the Fire Management staff or Fuels Specialist in the development of the prescribed fire plan. This helps insure that the desired resource management objectives are accomplished. This individual could also serve as the Manager's representative or resource advisor during the actual burn. A separate plan is needed for each prescribed fire project.

7. Approvals: Once the Prescribed Fire Plan, and NEPA analysis (if required), are completed to a quality draft stage (minus signatures), submit them, as necessary, to the appropriate agencies, tribal entities, user groups and interested people (public) for review and comment. After reviewing the comments and revising the NEPA analysis and the Prescribed Fire Plan as appropriate, submit them for final approval. Insure that any needed cooperative agreements are in place.

8. Annual Work Plan: Insure that the project is included in the Annual Work Plan. The Hazardous Fuel Reduction subactivity (2823) is controlled by AWP target production levels. Funds cannot be expended from this subactivity for a prescribed fire or mechanical treatment unless the project is included in the budget year target.

As part of the AWP process, determine that project funding is available and what portion each subactivity will fund. Insure that other agency and/or cooperator funding identified during the planning is available. Assign a Prescribed Fire Number and if applicable a Range Improvement Project System (RIPS) number. (See Chapter 6.)

H-9214-1 - PRESCRIBED FIRE MANAGEMENT**Chapter 3: Prescribed Fire Plan Requirements****A. Prescribed Fire Plans**

The Prescribed Fire Plan is a stand alone and legal document that provides the Prescribed Fire Burn Boss all the information needed to implement the project. Prescribed fire projects will be implemented in compliance with the written plan. If a tort action occurs as a result of a prescribed fire, the Prescribed Fire Plan is always considered as evidence. At a minimum, consider each of the items discussed below. The size and complexity of the prescribed fire project will determine the level of detail required and which sections are required. The information below is for a high complexity prescribed fire plan.

1. **Plan Approval:** Approval of the prescribed fire plan is by the appropriate Agency Administrator. This may be at the State, or Field Office level depending on the delegation of authority.

2. **Technical Review:** There will be a technical review of the plan by a person(s) who was not involved in the development of the plan. Provide for a signature space for the person doing the review.

The person doing the review should have formal training in fire behavior calculations, experience in planning and executing prescribed fires, and knowledge of the vegetation type(s) involved in the project. The technical review will insure that all the items required in a Prescribed Fire Plan are addressed, and that there is sufficient information for the Prescribed Fire Burn Boss to implement the project. The technical review should also serve as a check of the prescription parameters to insure that the project as planned, has a reasonable chance to meet the objectives.

3. **Complexity:** Identification of the level of complexity of the prescribed fire project. (See Chapter 4.)

4. **Risk Assessment:** An assessment that portrays an estimation of the probabilities, and consequences should the fire escape the planned perimeter is required. As a minimum, consider threats to life or property; smoke management concerns; potential impacts on key resources, public land users, cooperators, and communities. The risk assessment is often combined with a brief summary of the project that provides management with an overview of the project.

5. **Physical Description:** A description of the burn unit(s) including location, size, topography, fuels, and ownership. Reference the assigned Environmental Analysis (EA) number and/or Range Improvement Project System (RIPS) number if applicable.

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5a. Map: A map depicting the project boundaries. If the project is divided into subunits, each unit should be identified. Identify any contingency area boundaries. Contingency areas are areas outside the primary unit boundaries that are used as buffer or containment areas if the fire escapes the primary boundaries.

6. Management Objectives: Identification of the management objectives to be accomplished. Resource management objectives will then be redefined into measurable prescribed fire objectives. (See Chapter 2, C.3.)

Monitoring to determine if management objectives and fire objectives have been met is required. An assessment of the fire objectives will be made upon the completion of the prescribed fire project. A comparison of the actual results to the objectives listed in the prescribed fire plan will be made and documented as part of the prescribed fire report. Some objectives, such as the percentage of the area burned can be estimated immediately upon completion of the project. Other objectives, such as a reduction of fuel loading can be determined after the remeasurement of inventory plots. Resource objectives, such as changes in species composition or frequency can only be monitored on a longer term basis. All monitoring should be documented and placed in the project file.

7. Prescription: A fire prescription; containing key weather, fuel, and fire behavior parameters needed to achieve desired results. Prescriptions for fuels with a significant living component (brush) will have a prescription element related to live fuel moisture. Prescriptions for projects in timber (under burns) will have at least one element related to site dryness. This could be 1,000 hour fuel moisture, duff moisture or soil moisture. Until the moisture relationships between these items can be established for specific sites, more than one of the elements may need to be measured.

The plan will also provide provisions to monitor and record on-site conditions prior to and during the burn. Some level of preburn monitoring is required to determine when the site is within the prescription. Monitoring of weather, fuel conditions, and fire behavior during the burn is also required. Appendix 3 is a form for recording basic prescribed fire information. Depending on the project, additional information may need to be recorded. The monitoring of on site conditions and fire behavior provides the basic data. The comparison of that data with the resource objectives and fire objectives can help verify the prescription for possible duplication in future projects, or lead to refinements which will better meet the objectives of future prescribed fire projects.

Prescribed fire prescriptions are often written with the broadest possible parameters. Typically prescriptions include a wide range of environmental (weather) conditions and a wide range of fuel moisture condition and a wide range of acceptable fire behavior parameters. If the extremes of all these factors are used it is likely that the resulting fire behavior will not produce the desired objectives and or will exceed control capabilities. Prescriptions need to be “bracketed” to insure that the objectives are met. e.g. lower humidities and higher temperatures need to be offset by lower wind speeds or higher fuel moistures.

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Prescriptions are often written a year or more in advance of the anticipated project implementation. As such prescriptions are written for “average or existing” conditions. When the project is implemented other than average conditions such as heavier than normal fuel loadings, or dryer than normal conditions may exist and need to be recognized and the appropriate modifications made.

8. Fire Behavior Calculations: Develop the fire behavior calculations and attach to the prescribed fire plan as appropriate.

9. Smoke Management: Describe how the project will comply with county, state, and Federal air quality regulations. The Prescribed Fire Plan should identify any Class I air sheds, restricted areas, designated areas, and population centers that could be impacted by the project. Local features such as highways, airports, and recreation sites should also be identified. If potential negative impacts from smoke could occur, an assessment of potential down wind impacts using an appropriate smoke management model will be completed. (See Chapter 4, C.) Some state regulatory agencies may require that modeling be done and non-impact be demonstrated prior to issuing a burn permit.

Restrictions on acceptable wind direction(s) or other prescription parameters can be incorporated into the Prescribed Fire Plan to avoid or help mitigate anticipated adverse impacts from smoke.

10. Notifications: Provisions to make burn day notification to appropriate individuals, agencies, and the public.

11. Ignition and Holding: Specific descriptions of ignition and holding procedures are required. For projects with more than one unit, the information should be provided for each unit, if there are differences between the units. This section should provide the general procedures to be used. Specific procedures and instructions may depend on the actual weather and fuel conditions present at the time the project is implemented. Depending on the complexity of the situation, a map showing the location of the holding forces and the ignition pattern may be desirable.

12. Organization: Identify the organization needed to carry out the project. The organization and holding forces described in the approved Prescribed Fire Plan will be used to execute the burn. (See Chapter 3, B. for exceptions and plan modifications.)

If aerial firing is specified in the Prescribed Fire Plan, a specific air organization and air operations section will be included. Reference the Interagency Helicopter Operations Guide, Aerial Ignition Guide and the 9400 manuals. Field Offices doing extensive aerial ignition may wish to develop generic air operations plans and attach pertinent portions to the Prescribed Fire Plans.

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13. Cost: The source of funding and estimated costs.
14. Contingency Plan: Identification of contingency actions to be taken if the fire exceeds prescription parameters and/or escapes perimeter lines and cannot be returned to prescription or contained with the resources identified in the plan. A contingency plan should also list containment opportunities outside of the planned perimeter and list the location and type of suppression resources that would normally be available to assist with suppression actions should an escape occur.
15. Safety Briefing: A Safety Briefing checklist. Insure that any items identified in the Job Hazard Analysis (JHA) are included in the checklist and briefing.
16. Job Hazard Analysis: Develop a Job Hazard Analysis to identify hazards to employees and the public. The analysis will identify hazards, corrective actions and the required safety equipment to ensure public and employee safety. If aerial ignition devices will be used, include an aerial operation hazard analysis to determine procedures and safety requirements.
17. Public Safety: Provisions for public safety.
18. Go/No GO Checklist: This checklist will be completed by the Prescribed Fire Burn Boss on the day of the burn and retained as part of the project documentation.
19. Test Fire: Provisions for a test fire prior to the ignition of the burn unit. The test fire should be done in a location that can be easily be controlled or extinguished. The location should also be representative of the general fuel type in the burn unit. Documentation of the test fire conditions and results is required.
20. Medical Plan: Develop a Medical Plan with specific information, locations and contacts.
21. Communications Plan: Develop a Communications Plan. If aerial ignition is to be used, consider using a separate frequency for communications between the aircraft and Ignition Specialist and/or Prescribed Fire Burn Boss.
22. Mop Up and Patrol: A detailed description of the mop up and patrol procedures. Mop up standards and patrol procedures should be noted in this section.

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A significant number of prescribed fires that escape do so during the mop up and patrol phase. Almost all of these escapes are the result of **high wind events** and many are **preceded by a period of warming and drying**. Another factor contributing to many escaped prescribed fires is **heavier than normal fuel loadings**. Above average fuel loadings should be recognized as a potential problem and changes should be made to the Prescribed Fire Plan as appropriate. The prescribed fire plan should outline the procedures to be implemented between the time the area is burned and the time it is declared out.

23. Prescribed Fire Report: A post burn evaluation and summary that documents burn day conditions, problems, concerns and results. Where possible the prescribed fire results should be compared to the resource and fire objectives that were identified for the project. As special studies and longer term monitoring are completed, copies should be added to the Prescribed Fire Report.

Appendix 2 is an example of a Prescribed Fire Plan that addresses all of the above items. Local units may change the format to fit their needs or adopt a different format.

The original Prescribed Fire Plan and any attachments are to be kept with the project files in the Resource Area files. The Fire Management Staff and/or the Fuels Specialist should keep copies for reference.

B. Implementation

If the Prescribed Fire Burn Boss assigned to the project was **NOT** involved in planning the project and/or writing the Prescribed Fire Plan, that individual will be afforded the opportunity to review the Prescribed Fire Plan and inspect the project site prior to executing the project.

There needs to be a clear understanding between Agency Administrators, fire management and the prescribed fire burn boss as to which parts of the prescribed fire plan (if any) may be changed on the site prior to implementing the project. This information may be included in the plan or it may be established as local policy. On-site changes to the prescribed fire plan usually **do not** include changes to the objectives or the prescription. Examples of changes that might be permitted are; minor boundary adjustments, or minor changes in the amount or type of holding or ignition resources required, or changes in ignition patterns(s), techniques, or sequence. Any changes to the prescribed fire plan by the Prescribed Fire Burn Boss will be noted on the original copy of the Prescribed Fire Plan and initialed by the Prescribed Fire Burn Boss.

C. Implementation Restrictions

Implementation of Prescribed Fires at National Preparedness Levels IV and V is restricted. (See the National Mobilization Guide.)

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At National Preparedness Level IV concurrence by the State Fire Management Officer (SFMO) must be obtained before implementing the local Agency Administrator's recommendation for a prescribed fire. An evaluation of significant risk is made by the SFMO or representative in a presentation of the prescribed fire implementation proposal to the geographic multi agency coordinating (MAC) group prior to prescribed fire approval. A coordination/tracking function will be established to track prescribed fires and resource commitments at Geographic Area and National coordination levels.

At National Preparedness Level V a National level representative must concur with the SFMO's recommendation. The national level representative will present an evaluation of significant risk in a proposal to the national MAC group prior to prescribed fire approval.

Chapter 4: Prescribed Fire Complexity.

A. Determination of Complexity

A complexity rating will be completed for each prescribed fire project. The determination of prescribed fire complexity will be based on an assessment of **risk** (the probability or likelihood of an unplanned event or situation occurring), **potential consequences** (some measure of the cost or result of an undesirable event or situation occurring), and **technical difficulty** (the level of skills needed to complete the project **and** deal with unplanned events).

Classify prescribed fire projects by complexity elements, High, Moderate, or Low as outlined in Prescribed Fire Complexity Rating System Guide, NEFS 2474, May 1995. This guide is the Bureaus standard for rating prescribed fire complexity. The individual elements in the rating system can be deleted if they do not apply to a specific project. Additional elements can be added to tailor the system to local needs. The complexity rating will be based on the Prescribed Fire Plan and the potential social, political, economic, biological, environmental, and legal consequences.

Use the complexity rating to guide staffing levels, determine skill and experience requirements, and to determine the level of detail needed in the prescribed fire plan. Complexity ratings can also be helpful in developing the risk assessment.

The Prescribed Fire Complexity System does not tie directly to the Prescribed Fire Qualifications System. The following guidance will apply. **All prescribed fire projects rated as complex will require a Prescribed Fire Burn Boss rated as RXB1 and an Ignition Specialist rated as RXI1.**

B. Classification

1. High - This classification includes prescribed fires where burning activities are complex and highly interactive where:

- a. The difficulty of achieving objectives is high and consequences of project failure may be serious.
- b. Risks may be unusually high; for example, an extended duration prescribed fire, prescribed fires in the wildland/urban interface, and prescribed fires where smoke management objectives may be difficult to meet.
- c. Prescribed fires where three or more activities are interdependent, e.g., holding, ignition, and water supply.
- d. Where multiple prescribed fire units are ignited at once.

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2. Moderate - This classification includes prescribed fires where more than one activity depends on the successful achievement of previous or concurrent actions. The consequences of project failure are less serious and can be mitigated.
 - a. Where multiple fuel types and/or varied topography are present.
 - b. Prescribed fires with multiple units but without simultaneous ignitions.
 - c. All aerial ignitions must be classified as at least moderate complexity.
3. Low - Where few constraints exist, other than normal prescription parameters. Activities are independent or loosely dependent on other activities.

C. Smoke Management

Smoke Management: As per public law 95-95 compliance with Federal, state, and local air quality regulations is mandatory and will require coordination with state and local air quality authorities. Fire Management personnel and/or the Fuels Management Specialist should be involved with state and local rule making and periodic reviews.

The National Wildfire Coordinating Group (NWCG) publication **Prescribed Fire Smoke Management Guide**, NFES 1279/PMS 420-2, provides an understanding of smoke management concepts. Several computer models including Simple Approach Smoke Estimation Model (SASEM), NSFpuff, VSSMOKE, and the Ventilated Valley Box Model (VALBOX) are available to help with determining what smoke impacts on a given area might be. **User Assessment of Smoke-Dispersion Models for Wildland Biomass Burning**, PNW-GTR-379, 12/96, is a guide on the available smoke models.

Personnel developing Prescribed Fire Plans must be aware of state and local regulations, and the impacts that a specific project may have on critical areas. Potential smoke impacts on critical areas such as Class I air sheds, restricted areas, and designated areas (often called non attainment areas) must be considered. Equally important are local features that could be impacted such as highways, airports, recreation sites and smaller population centers. Prescribed Fire Plans need to identify sensitive areas and provide operational guidance to minimize the impacts from smoke. If potential negative impacts from smoke could occur, an assessment of potential down wind impacts using an appropriate smoke management model will be completed. Some states require that some type of smoke dispersion modeling be done before they will issue a permit for the prescribed fire project.

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Chapter 5: Safety and Qualifications

A. Safety Awareness

Every person involved in a prescribed fire project is responsible for identifying safety issues and concerns. The safety of people and property involved in planning and executing a project cannot be overemphasized.

A personnel briefing will be conducted prior to any prescribed fire activity to insure that those people involved understand how the project will be executed and what their individual assignments are. Briefings must cover safety considerations for both known site specific hazards and potential hazards. The development of a briefing checklist which is attached to the Prescribed Fire Plan is required.

A Job Hazard Analysis (JHA) will be completed and attached to each Prescribed Fire Plan (JHA BLM Form 112-3, Manual Section 1112). All items identified will be mitigated. Appendix 4 is an example of a JHA for prescribed fire operations. Note that this is an example and does not contain site specific elements. Prescribed fire managers need to develop a site specific JHA for each prescribed fire project.

B. Safety Equipment

All personnel on a prescribed fire project will be equipped with required Personal Protective Equipment (PPE) appropriate to their position or as identified in a Job Hazard Analysis. For holding and ignition personnel the minimum PPE (unless otherwise identified in the JHA) is the same as that required for wildland fire assignments. (Reference **Standards for Fire Operations 1997**, Chapter 4.)

C. Positions and Qualifications

1. General Qualification Requirements:

a. There are several key organizational positions to consider when implementing any Prescribed Fire Plan. Not every project will require that each position be filled, while other projects may require additional positions. Each Field Office planning a prescribed fire project will identify the required positions and build an organization necessary to execute the burn. A Prescribed Fire Burn Boss will be assigned to every prescribed fire.

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b. The National Wildland fire Coordinating Group issued the Wildland Fire Qualification Subsystem Guide, Part 2 Prescribed Fire (PMS 310-1 Part 2) in February 1995. This guide is the BLM's standard for prescribed fire qualifications. All BLM personnel assigned to prescribed fire operations will meet the minimum qualifications outlined in the subsystem guide. This will include personnel assigned to assist other agencies even though the other agency may have established its own (lower) qualifications.

As a supplement to the qualifications system the BLM has identified an additional position. This position would be identified as a "Prescribed Fire Burn Boss 3" (RXB3). The individual would need to be qualified as an Incident Commander Type 5 (ICT5). Required training would be S-290, Intermediate Fire Behavior. Suggested training would be S-201, Fire Supervision. The intent of the position is to qualify a person to supervise prescribed fire operations that are of "Low Complexity." These types of operations typically would have only a few personnel assigned, they would have a very low threat of escape, and they would present a minimal risk to the people involved in the operation. Examples of these types of operations would be; burning of piled slash, the burning of landings, ditch burning, debris burning, and small broadcast burns with a minimal chance for escape. (Note: These types of operations still require a signed prescribed fire plan.)

Some Field Offices will need to determine the proper qualification level for personnel currently involved in prescribed fire operations. Agency Administrators and Fire Management Officers need to review all the wildland fire training, wildland fire experience, prescribed fire training, and prescribed fire experience and determine at what level each individual should be qualified. The qualifications system is a performance based system; as such the individual's ability to do the job should be the primary consideration. The formal training is an important but secondary consideration. There are a couple of key points to consider when reviewing the training side of the qualifications issue. The only **required** training is Basic Firefighter Training, S-130, and the Fire Behavior Skills Courses, S-190, S-290, S-390, S-490, and RX-590. All of the other training is "**suggested training.**" Many of the listed prescribed fire courses are relatively new. As such many of the people currently in the prescribed fire program will not have had an opportunity to attend these classes. Also two of the older courses have new numbers and titles: RX-230 Ignition Specialist is based on the old RX-96 course, and RX-300 Burn Boss is based on the old RX-90 course. Individuals that have attended the older courses should be given credit for the new courses. One method of evaluating individuals is to compare that individual's skills and abilities against the tasks listed in the task book for a given position. If there is sufficient evidence that the individual can perform all of the tasks in a given task book and has all of the **required** training that individual can be qualified at that level.

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Once the qualification level for an individual has been decided upon, a letter or memo stating the level of qualifications should be drafted, signed by the Agency Administrator, and placed in the file. The appropriate entries then need to be made into the Incident Qualification and Certification System. It may be necessary to do some management overrides within the system to obtain the proper qualifications for an individual. Rick Jensen 208-387-5710 can assist you with the Qualification and Certification System.

At this point; advancement in the system requires that all **required** training be completed and that the appropriate Task Book(s) be completed.

c. Physical fitness requirements: The prescribed fire qualifications systems does not establish physical fitness levels. The following are the physical fitness levels established by the BLM for each prescribed fire position.

Arduous: All holding and ignition personnel, Ignition Specialist 2 (RXI2), Ignition Specialist 1 (RXI1), Prescribed Fire Behavior Specialist (RXFS), Prescribed Fire Behavior Monitor (RXFM), and Prescribed Fire Burn Boss 3 (RXB3).

Moderate: Prescribed Fire Burn Boss 2 (RXB2), and Prescribed Fire Behavior Analyst (RXFA).

Light: Prescribed Fire Burn Boss 1 (RXB1).

None: Prescribed Fire Manager 1 (RXM1), and Prescribed Fire Manager 2 (RXM2).

d. The prescribed fire qualifications system does not establish currency requirements to maintain prescribed fire qualifications. The currency requirement is set at five years, the same as for suppression qualifications. As with the suppression qualifications an assignment at one level will maintain prescribed fire qualifications at the next higher level. For example an assignment at the Prescribed Fire Burn Boss 2 (RXB2) level would maintain the individuals qualifications at the Prescribed Fire Burn Boss 1 (RXB1) and Prescribed Fire Manager 2 (RXM2) level.

2. Recording and Tracking Prescribed Fire Qualifications: The Incident Qualification and Certification System is the system the Bureau uses to track prescribed fire qualifications, training and experience. The BLM Manual Section 9215 Fire Training and Qualifications establishes the State Office and Field Office responsibility for maintaining qualification, training and experience records.

All records of prescribed fire qualifications, training, and experience will be entered into the Qualification and Certification System. Prescribed fire qualifications will appear on individual "Red Cards" along with wildfire qualifications.

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The Qualification and Certification System does not separate prescribed fire qualifications by fuel type. The local units are responsible for insuring that Prescribed Fire Burn Boss and Ignition Specialist qualifications and training are appropriate for the fuel type(s) that they will be working in. “Management has the ultimate responsibility and is accountable for failures resulting from inappropriate use of personnel in unfamiliar fuel types, regardless of their Red Card rating.”

D. Smoke Exposure

Exposure to smoke during prescribed fire operations can be a significant safety concern. Research has shown that smoke exposure on prescribed fires, especially in the holding and ignition positions, often exceeds that on wildfires. There are many things that prescribed fire planners and Prescribed Fire Burn Bosses can do to reduce the personnel exposure to smoke.

1. Planning: Smoke exposure needs to be considered when planning prescribed fires. Simple things such as altering line locations can have a significant impact on smoke exposure. Placing fire lines in areas of lighter fuels or moving lines to roads or other barriers that will require less holding, patrol and mop up will significantly reduce the smoke exposure to personnel. The identification of contingency areas where fire outside the main control line may not need to be aggressively attacked is also a good method to reduce smoke exposure.

2. Execution: There are many techniques that can help reduce the exposure of personnel to heavy smoke. Rotating people out of the heaviest smoke area may be the single most effective method of limiting smoke exposure. Changing firing patterns and preburning (black lining) during less severe conditions can greatly reduce exposure to smoke. The use of retardant, foam or sprinklers can also significantly reduce the workload and exposure time for holding crews.

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Chapter 6: Project Financing

A. Project Funding for Prescribed Fire

Prescribed Fire: Prescribed fire projects will be funded by equitably cost-sharing. It is the responsibility of each program area to cover their own regular (base-eight) salaries and fixed costs. This applies to items such as preliminary site assessments, writing environmental assessments, developing Prescribed Fire Plans, obtaining clearances, training, and monitoring. Regular salaries for fire management staff involved in prescribed fire activities are programmed in Preparedness (2810), identified in the FMP, and considered part of the Most Efficient Level (MEL).

Funding for the implementation of prescribed fire projects must be identified and agreed to at the Field Office level. Beginning in FY98 the Hazardous Fuel Reduction subactivity (2823) will provide funding for operational implementation costs. The “BLM Fiscal Fund Coding Handbook” provides specific guidance for the use of this funding. The primary focus of the 2823 funding is the on the ground implementation of prescribed fire projects. General guidance is provided below.

Project cost estimates must be submitted through agency fire management organizations for incorporation into agency targets by Field Offices and State Offices. All obligations must be charged to a specific project number.

Includes the costs of implementing prescribed fire projects and mechanical treatments to reduce hazardous fuels and to restore fire to ecosystems. This includes mechanical treatments necessary to reduce fuels as a precursor to the introduction of fire. The intent of this funding source is to focus on implementation.

Excludes treatment of fuels generated in conjunction with commodity production activities, such as timber stand improvement and slash. Also excludes type conversions where the principal purpose is for commodity production. Routine maintenance of firebreaks should be included in the Preparedness funding, but the initial construction may be funded by the hazardous fuel reduction subactivity.

The basic premise regarding labor costs is that regular planned salaries cannot be lapsed when working on hazardous fuel reduction funded activities:

Includes salaries for seasonal and career seasonal personnel who are hired specifically for hazardous fuel reduction projects implementation.

Includes overtime, premium pay, and travel and per diem for all personnel, fire and non-fire, permanent or seasonal, who are involved in project implementation.

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Includes temporary hire, project-dedicated support personnel such as archeological clearance personnel, but not permanent compliance personnel already existing for general activities, and non-fire project purposes.

Includes regular planned salaries for all fuels management permanent full time personnel who are dedicated for the full year to non commodity production fuels management activities. Permanent full time fuels management personnel that also have responsibility for treatment of fuels associated with commodity production must pro rate their salary.

Excludes regular planned salaries for all fire or non-fire permanent full time personnel other than permanent full time fuels management personnel. Career seasonal and seasonal personnel hired under another subactivity may not charge their base salary to the hazardous fuel reduction subactivity. However, career seasonal and seasonal employees' appointments may be extended under the hazardous fuel reduction authority when dedicated to fuels projects, regardless of the original purpose of hire.

Includes all travel and training costs associated with developing and attending NWCG's certified prescribed fire curriculum for those employees performing hazardous fuel reduction activities.

Includes program support cost allocation (administrative fee) only for the organization level directly responsible for implementing fuels management activities and which cannot exceed five percent (5%) of the office target.

Includes project site preparation, initial treatment effects monitoring plot establishment and first-year post-treatment monitoring on these plots. The primary purpose of fire behavior and effects monitoring funded by hazard fuels operations must be to determine whether the treatment met the objectives.

Includes aircraft flight time costs associated with a project.

Includes equipment rental costs for those hours worked on projects.

Includes cost of contracted projects.

Excludes all managerial oversight, administrative surcharges and cross billing for interagency hazard fuels treatments and ecosystem prescribed burning programs.

Excludes purchase of sensitive and capitalized equipment, except for the costs of replacing equipment destroyed while working on a project and will require a board of survey action.

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The use of 1010, 5500, 8100, 6650, other activity funds, and contributed funds are also still appropriate for prescribed fire and other fuels management activities.

B. Hazard Pay

Current policy is that hazard pay will not be paid for any prescribed fire. [Note: An interagency proposal covering hazard pay on prescribed fires has been developed and submitted to the Office of Personnel Management. This proposal would permit the payment of hazard pay on prescribed fires under some conditions. If and when this proposal is approved, an Instruction Memorandum will be issued.]

Should a prescribed fire become a wildfire, suppression policies will govern the conduct and use of hazard pay.

C. Escaped Fires

When any prescribed fire is declared a wildland fire, it is suppressed using the concept of the "Appropriate Management Response." All costs associated with the suppression actions will be charged to the 2821 subactivity. A "Fire Number" must be assigned for this purpose. (See Chapter 8 for Escaped Fires and Chapter 9 for Reports.)

D. Contracting for Services

The Bureau can contract to conduct all or part of the prescribed fire operations and/or all or part of mechanical treatments for "Hazard Fuel Reduction" projects. Standard contracting procedures will be followed. Extra care must be taken when developing specifications for prescribed fire contracts. The exact service or end product must be carefully described to insure the desired outcome.

Contractor personnel conducting prescribed fire operations must meet the same qualification, experience, and fitness requirements as BLM personnel would if they were conducting the operation. Refer to Chapter 5 C. 1. b and c.

By definition a contractor is not supervised by BLM personnel. The contractor is fulfilling the terms of the contract and is responsible only to the contracting officer or designated representative. This concept is valid whether the contractor is executing a full service prescribed fire contract, or assisting the BLM in the execution of a project, e.g., providing holding and/or mop up services. If a contractor is actively involved in igniting, holding or mopping up a BLM prescribed fire, a Contracting Officers Authorized Representative (COAR) or Project Inspector (PI) will be on the site (exceptions can be made for late stage mop up and patrol) to insure that the burn objectives are being met and that the terms of the contract are adhered to.

The BLM representative (COAR or PI) must have prescribed fire and/or wildfire qualifications equal to what the BLM would require if a BLM Prescribed Fire Burn Boss were conducting the actual operations. This requires coordination with the Contracting Officer to insure that qualified personnel are designated as COAR and PI's.

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Chapter 7: Cooperation and Assistance

A. Cooperation

Offices are encouraged to enter into agreements for the cooperative use of prescribed fire resources. Joint ecosystem based prescribed fire management programs are encouraged to accomplish resource or landscape management objectives when consistent with Resource Management Plans. These partnerships are encouraged at both the programmatic and project levels to implement prescribed fire projects.

Any prescribed fire that involves Bureau employees or major equipment (engines or helicopters, etc.) will be supported by a Prescribed Fire Plan. (This plan would be developed by the agency or BLM Field Office doing the burning. The BLM unit providing the assistance does not have to develop a separate Prescribed Fire Plan.) In the absence of a Cooperative Agreement the Field Office Manager will provide a memo authorizing BLM participation. This memo will state the type and amount of assistance to be provided, identify safety, liability and other issues, and specify financial arrangements.

B. Other BLM Units and Other Federal Agencies

Assistance to other BLM units may be provided without formal agreement. If the assistance is related to the implementation of prescribed fire projects, the assisting unit may use the prescribed fire number assigned by the host unit.

Coordination with other Federal agencies will occur in the planning phase for joint prescribed fire projects. The BLM may provide assistance for prescribed fire that will be conducted on land administered by other Federal Agencies. The "Interagency Agreement for Fire Management," dated 2/20/97, provides for interagency assistance without additional agreements. Assistance is initiated by the issuance of "Task Orders" that provide the project specifics. Fuels management, "including prescribed fire" is specifically covered in the agreement. The agreement states that "Agencies may choose to bill by mutual agreement." BLM Field Offices choosing to bill for prescribed fire or other fuels management activities should first offset services and costs to the greatest degree possible. Billing should be done when all projects are completed or at the close of the fiscal year rather than on a project by project basis.

Keep in mind that there is **no** additional prescribed fire funding for assisting other agencies. Funds must be spent out of existing program funds then offset, recovered or donated. See Chapter 9 for report requirements for prescribed fire assists.

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C. Private Individuals and Organizations

Agency administrators should enter into agreements with private parties on intermingled lands when resource objectives can best be met through this approach. The agreements will specify the exact lands involved, the overall objectives, what actions will be taken by each party, and how costs will be shared. The BLM has only very limited authority to expend public funds to provide benefits on private lands. Any expenditure on private land must have a clear benefit to biological resources on public land administered by BLM. In most cases the private land owner must fund a proportional share of the project cost. However, this does not need to be a monetary exchange. The private land owner(s) may provide services (e.g., line construction), equipment (e.g., engines, water tenders or dozers), supplies (e.g., fuel), or personnel to fulfill their part of the obligation.

There may be occasions where a private land owner would allow the BLM to burn private land to facilitate a BLM project. For example moving a perimeter to a road or natural barrier on private land would allow the BLM to avoid constructing a significant amount of fire line. In such cases there is a clear benefit to the BLM and asking the private land owner to pay a share of the cost would not be appropriate.

D. Prescribed Fire Management Teams and Support Modules

There are six Interagency Prescribed Fire Management Teams available to provide assistance in planning, developing, and implementing the prescribed fire program. These teams consist of seven personnel and include the following positions: Team Leader (Incident Commander), Operations Section Chief, Planning Section Chief, Logistics Section Chief, Prescribed Fire Behavior Analyst, and two trainees. These teams are capable of providing technical assistance in the planning, implementation, and evaluation of complex prescribed fire projects as requested by the ordering unit. For additional information refer to the National Interagency Prescribed Fire Management Teams Operational Guide for 1997.

These teams can be ordered through the normal dispatch system. Local dispatch offices should forward orders to the appropriate Geographical Area Coordinating Center.

The National Park Service maintains four Prescribed Fire Support Modules. These modules are seven people each and are trained to do ignition, holding and monitoring of prescribed fires. The modules are available for interagency use. At this time the use of the modules outside of the National Park Service needs to be coordinated through the program coordinator. The program coordinator is Ben Jacobs, NPS-NIFC, Office: 208-387-5219, Residence: 208-343-6407, Cell Phone: 208-867-9144, E-Mail: Ben.Jacobs@nps.gov.

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Chapter 8: Escaped Fires

A. Definition of Escaped Prescribed Fire

If a prescribed fire is not meeting the identified management objectives or otherwise meets the criteria described below; that prescribed fire becomes a wildland fire. (See Chapter 9 for reporting requirements and Chapter 6 for financial information.) Once a prescribed fire becomes a wildland fire it cannot be returned to prescribed fire status.

A Prescribed Fire becomes a wildland fire when the Prescribed Fire Burn Boss determines that an escape has, or is likely to occur, or environmental conditions and/or fire behavior exceeds the parameters in the prescribed fire plan and as such, the fire is no longer meeting the identified management objectives. Fire outside of the planned perimeter that cannot be contained with the holding forces identified in the prescribed fire plan is an escape and will be declared a wildland fire. This is not a "sloper" that crosses the fire line but which can be contained by resources on-site (no suppression charges will be used).

Some Prescribed Fire Plans identify "Contingency Areas" where a fire outside the planned perimeter will not be declared a wildland fire until it exceeds specified criteria, exceeds a stated target size or threatens the boundary of the "Contingency Area." In such cases an escape does not need to be declared until the criteria in the Prescribed Fire Plan have been exceeded.

B. Escaped Prescribed Fire Actions

When a prescribed fire is declared a wildland fire, managers still have the full range of suppression options available under the concept of the "Appropriate Management Response." If a prescribed fire is declared a wildfire a "Fire Number" will be assigned and all suppression costs will be charged to the 2821 subactivity.

The following actions will be taken on all Bureau prescribed fires that escape and are declared wildland fires:

1. Take prompt and reasonable action to control and suppress the fire. This could include the development of a "Wildland Fire Situation Analysis" to determine what the suppression action will be.
2. Notify the BLM Agency Administrator responsible for the area.
3. Notify the other Agency Administrator(s), and/or other land owners that may be affected, of the escaped fire. Coordinate suppression actions with the other affected parties.

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4. Document the time and environmental conditions that existed when the escape occurred.

5. Document the incident, including all actions prior to and after the escape. Set up a file that includes all pertinent information, i.e., the prescribed fire plan, a chronology of events including the prescribed fire report and unit logs or individual statements, the fire investigation report, weather forecasts including any spot forecasts, Remote Automated Weather Station (RAWS) data and National Fire Danger Rating System (NFDRS) data for the day of the escape for the nearest weather stations, photos, and any appraisal of damages.

Since all prescribed fires are planned management actions, an escape onto non-federal land may lead to a Tort Claim and liability issues. The instructions contained in Manual 1386 should be followed. Special attention to documentation is critical.

C. Escaped Prescribed Fire Administrative Review

A prescribed fire that escapes and requires an expenditure of suppression funds or results in property damage, injuries or fatalities will be investigated. Bureau Manual 1112 - Safety, Paragraph .22, outlines accident investigation procedures. The following guidelines apply to escaped prescribed fire reviews.

1. The objectives of the prescribed fire review are:
 - a. To prevent future escapes from occurring and to establish accountability.
 - b. To determine if the Prescribed Fire Plan was adequate for the project.
 - c. To determine if the prescription, actions, and procedures set forth on the Prescribed Fire Plan were followed.
 - d. To determine if overall policy, guidance, and procedures relating to prescribed fire operations are adequate.
 - e. To determine the level of awareness and the understanding of the personnel involved, in regard to procedures and guidance.
 - f. To determine the extent of prescribed fire training and experience levels of personnel involved.

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2. Responsibilities for the review are as follows:

a. Fire Management Officer. The Fire Management Officer is required to make an investigation of all escaped prescribed fires either personally or through an appropriate designated investigator.

b. Field Office Manager. The Field Office Manager has the responsibility for ensuring adequate and proper investigation of all escaped prescribed fires that result in personal injuries, burn onto private or other agency land, or requiring expenditures of up to \$50,000 for suppression and/or damage to property. The Field Office Manager may appoint an investigation team or request that one be appointed consistent with Manual Section 1112 - Safety, paragraph .22D, Accident Investigations.

The Field Office Manager will notify the State Director of escaped prescribed fires meeting the criteria in Chapter 8.C.2.b. within 24 hours. Copies of the completed review report will be sent to the State Director and SFMO.

c. State Director. State Directors have the responsibility for ensuring adequate, proper investigation of all prescribed fire escapes resulting in serious or multiple personal injuries, significant burned area on private or other agency lands, or has an estimated expenditure of from \$50,000 to \$100,000 for suppression and/or property damage.

The State Director will notify the Director, Office of Fire and Aviation, of escaped prescribed fires meeting the criteria in Chapter 8C.2.c. within 24 hours. Copies of the completed review report will be sent to the Director (FA-100).

d. BLM Director (FA-100). The Director is responsible for ensuring adequate and proper investigation of all prescribed fire escapes resulting in fatalities(s), injuries to people not involved in the prescribed fire operation, fire shelter deployment(s), a major transportation route closure, smoke significantly impacting a major population center or caused a public health concern, or where suppression expenditure's and/or property damage will exceed \$100,000.

3. The documentation required for a review are those listed below. A review team will be provided with all of the **original** documents related to the incident.

a. Those items listed in Chapter 8. B.

b. Documents pertaining to the qualifications and experience of the Prescribed Fire Burn Boss, Ignition Specialist, Holding Specialist, and other key overhead. This would include red cards, training and experience records, and task books.

c. Dispatch logs, radio logs, and any aviation records or logs.

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Chapter 9: Reports

A. Individual Prescribed Fire Report

All prescribed fires, will be assigned a "Prescribed Fire Number" and will be reported on the DI-1202. A block of numbers is issued by the National Office of Fire and Aviation for each reporting office.

A method to track "mechanical treatments" that are done for "hazardous fuels reduction" will be available in 1998. A "Prescribed Fire Number" should be assigned to mechanical treatment projects to aid in tracking accomplishments and the financial cost of the project. Prescribed fire and mechanical treatments reporting will be done electronically similar to wildfire reporting. Instructions for prescribed fire and mechanical treatment reporting are included in the DI-1202 instructions. However, some unique entries will be required to allow the Bureau to capture the required data.

1. The acreage for the project should be the actual burned area or **Black Acres**, or the actual acres treated for mechanical treatments.
2. An entry for the Fire Behavior Prediction System (FBPS) fuel model will be required. An excellent reference is "Aids to Determining Fuel Models for Estimating Fire Behavior," General Technical Report INT-122/NFES 1572.
3. An estimation of preburn fuel loading is required. Fuel loadings should be determined by using a combination of experience, photo series, and inventory. The instructions for the DI-1202 will contain a reference chart that can help in estimating the preburn fuel loadings for each fuel model.
4. A post burn estimation of the percentage of fuel consumed by the prescribed fire is also required. A combination of experience and inventory will provide an adequate level of information. This will make it possible to estimate the emissions produced by each prescribed fire project, and allow for the accumulation of baseline data.
5. An entry must be made to identify the objective of the prescribed fire project. This entry should identify the overall objective of the project.
6. An additional entry must be made to identify the benefiting program(s). Up to seven entries can be made. However, the total acreage shown cannot exceed the total **Black Acres** for the entire project. The above information will allow the Bureau to track accomplishments and costs and eliminate end-of-year reporting.

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Should a prescribed fire escape and be declared a wildfire, two reports would be required. The acreage burned while the fire was considered a prescribed fire would be reported as prescribed fire acreage using the "Prescribed Fire Number." Acreage burned after the fire was declared a wildfire would be reported as wildfire acreage using the local "Fire Number."

Instructions for both reports can be found in the 1998 DI-1202 Fire Report Instructions.

C. Other Agency Assist Reports

Assist prescribed fire numbers **DO NOT** provide additional funding. Funds spent in providing assistance to other agencies must come out of existing Field Office funds.

The purpose of using assist numbers is to track funds spent to assist other agencies with Prescribed Fire or other Fuels Management projects. While "offset services" or billing is not required when providing assistance, using an assist number provides the basis for such actions.

Assist Prescribed Fire numbers can be used with any subactivity code e.g. 2823, 2810, 5500, etc.

Assign one number per project where the cost must be tracked. Use the next available Prescribed Fire Number from the block assigned to your office.

Do not use an assist number for assists to other BLM offices; use the prescribed fire number assigned by the host unit.

Instructions for assist reports can be found in the 1998 DI-1202 Fire Report Instructions.

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EXAMPLE OF A
PRELIMINARY BURN SITE REVIEW

Review Group

_____	Field Office _____
_____	Location (w/map) _____
_____	Project Name _____
_____	Project Number _____

A. Management Consideration

Land/Resource Planning Documents: _____

Present Management Constraints: _____

BLM Relationship W/Operator: _____

Potential Conflicts with Other Uses: _____

Smoke Management Issues: _____

(Consider location of communities, prevalent winds, smoke sensitive air sheds, etc.)

Project Goals/Objectives:

1. _____
2. _____
3. _____
4. _____

B. Site Analysis

General Site Description: _____

Plant Species and Densities: Bare Ground % _____ Litter Depth: _____

Overstory: _____ , _____

Understory: _____ , _____

Topographic Features: % Slope _____ Elevation: _____

Aspect: _____ **Fuel Description:** Height: _____

Continuity: _____ **Loading in tons/AC:** _____

By Size Class: _____

Fuel Profile Adjacent to the Planning Unit: _____

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Site Considerations

Water Quality	Water Shed	Water Source	Recreation
Wildlife/T&E	Wildlife/Other	Wilderness	Mining

Archaeology _____ **Other** _____
Land Status/Use Conflicts: _____

Type of Ignition: _____

Season to Burn: _____

Barriers to Fire: _____

Special Equipment Needed: _____

Preburn Actions Needed to Meet Fire Behavior Objectives: _____

_____ **Fire**

Organization (Specify number of people needed): **Burn Manager** _____, **Burn Boss** _____, **Firing Crew** _____, **Holding Crew** _____, **Other** _____

_____ **Type and**

Amount of Equipment Needed: _____

Duration of Activity: Site Preparation _____

Implementation _____

Post-Burn Activities _____

E. Logistics of Project

Travel Time to the Site _____

Preparation _____

Camp/Motel Arrangements _____

F. Recommendations

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JOB PLANNING CHECKLIST

Field Office _____ Project Name _____
 Project Number _____ Subactivity _____

SECTION I - ACTION REQUIRED TWO YEARS PRIOR TO AWP.	DATE	INITIAL
1. Prescribed Fire Project Proposed to local Agency Administrator.		
2. Local Manager approves or denies further action and assigns the project to appropriate area staff person.		
3. Site inspection. Map and initial flag project. Preliminary objective determined and discussed. Environmental concern identified and agreement that objectives can be met.		
4. Check and document the following: <ul style="list-style-type: none"> a. Planning Documents b. Land Claims c. Mining Claims d. Wilderness Status e. Water Rights Status f. Possible threatened and endangered species conflict g. Possible conflicts with wildlife concerns h. Possible problems with soil, water quality, or air quality i. Possible problems with livestock, wild horses or burros j. Possible conflicts with other authorized uses k. Possible conflict with other Federal, state, or local government agencies and public. <p>*Note: Indicate either Conflict (C), Possible Conflict (PC), No Conflict (NC), or Not Applicable (NA). If a conflict or possible problem does exist, explain on a separate sheet or memo and attach.</p>		
5. Local Manager reviews and resolves or initiates resolution of conflicts or terminates the proposal.		
6. Prepare a prescribed fire project file. Include this checklist, full documentation of all items, and best available map of the project area.		
7. Initiate possible Co-op agreement and contributions. Prepare rough draft of co-op agreement(s).		

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<u>SECTION II - ACTION REQUIRED ONE YEAR PRIOR TO AWP</u>		
8.	Visual contrast Rating completed (form #8400-4) and mitigated if required.	
9.	Cultural Resources/Antiquities inventory completed and mitigated if required.	
10.	Environmental Analysis report prepared, reviewed and signed	
11.	Local Manager reviews the mitigation identified in Environmental Assessment, Cultural Resource Report, Visual Resource Management, draft co-op agreements, and resolves or mitigates conflicts.	
13.	Prescribed Fire Plan prepared and approved.	
14.	Resource Advisory Council review.	
15.	Permission by private land owners for access, if need ed.	
16.	Co-op agreements finalized and signed.	
17.	Office staff review and approval.	
18.	Public review and/or involvement of interest groups, tribal entities, user groups, or individuals.	
19.	Final project lay out.	
20.	Project submitted to Agency Administrator.	
21.	Final approval.	
<u>SECTION III - AWP & JOB COMPLETION</u>		
22.	Contracting Draft prepared if this option selection: <ul style="list-style-type: none"> a. Contract Draft reviewed. b. Contract advertised. c. Bids reviewed. d. Contract awarded. e. Contract administration COAR and PI assigned. (These are the only people authorized to perform administration of the contract.) 	
23.	Implementation of Prescribed Fire Plan.	
24.	Conduct long term monitoring of resource objectives	

H-9214-1 - PRESCRIBED FIRE MANAGEMENT

PRESCRIBED FIRE PLAN CHECKLIST

The items in the checklist can be found in the Prescribed Fire Plan on the page indicated.

ITEM	PAGE
Agency Administrator Approval	<u>1</u>
Technical Review Certification	<u>1</u>
Complexity Rating	<u>1</u>
Risk Assessment and Management Summary	<u>2</u>
Burn Area Description	<u>3</u>
Resource Objectives and Fire Objectives	<u>4</u>
Fire Prescription	<u>5</u>
Fire Behavior Calculations	<u>A</u>
Smoke Management Information	<u>6</u>
Burn Day Notifications	<u>6</u>
Ignition and Holding Procedures	<u>7</u>
Public Safety Provisions	<u>7</u>
Workforce and Equipment List	<u>8</u>
Air Operations Organization/Plan	<u>AN</u>
Cost Estimate	<u>9</u>
Contingency Plan	<u>10</u>
Safety Briefing Checklist	<u>12</u>
Job Hazard Analysis	<u>A</u>
Go/No Go Checklist	<u>13</u>
Test Fire Provisions	<u>13</u>
Medical Plan	<u>14</u>
Communications Plan	<u>15</u>
Mop Up and Patrol Plan	<u>16</u>
Prescribed Fire Summary	<u>17</u>

A= Attached AN= As Needed

Attach the following to the Prescribed Fire Plan after the project is completed:

Fuel Moisture Data
 General and Spot Weather Forecasts
 Weather and Fire Behavior Observations
 Photographs

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EXAMPLE OF A
PRESCRIBED FIRE PLAN

PROJECT NAME _____

FIELD OFFICE _____

Prepared By: _____ Date: _____

Technical Review By: _____ Date: _____

Reviewed: By: _____ Date: _____

Reviewed By: _____ Date: _____

The approved Prescribed Fire Plan constitutes the authority to burn. No one has the authority to burn without an approved plan or in a manner not in compliance with the approved plan. Actions taken in compliance with the approved Prescribed Fire Plan will be fully supported. Personnel will be held accountable for actions taken which are not in compliance with elements of the approved plan regarding execution in a safe and cost-effective manner. The complexity of this project is:

HIGH _____ MODERATE _____ LOW _____

Estimated Cost Per Acre _____

Benefitting Activity(s) _____

Approved By: _____ Date: _____

H-9214-1 - PRESCRIBED FIRE MANAGEMENT

MANAGEMENT SUMMARY AND RISK ASSESSMENT

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BURN AREA DESCRIPTION

Legal Description:

Lat./Long.

Size:

County:

Elevation: Top:

Bottom:

Aspect:

Drainage:

Environmental Assessment No.:

RIPS No.

DESCRIPTION OF FUELS ON SITE AND ADJACENT:

FUELS DESCRIPTION: NATURAL:

ACTIVITY:

Photo series and Code(s): GTR:

Code:

Fuel Model(s): NFDRS

FBPS

SIZE CLASS TONS ACRE: Total Dead:

Duff Depth:

0"-1

Shrubs:

Surface Fuel Depth:

1"-3

Herbaceous:

3"-9"

Total Fuel Loading (Live & Dead):

9"-20"

20" +

Continuity:

General description of the fuels adjacent to the project area:

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PROJECT OBJECTIVES

RESOURCE OBJECTIVES	PRESCRIBED FIRE OBJECTIVES (Specific)

TOLERABLE DEVIATION OF OBJECTIVES:

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WEATHER AND FUEL PARAMETERS

	ACCEPTABLE PRESCRIPTION RANGE			
	(Low)	(High)	(Desired)	
Temperature				OUTSIDE AREA AT CRITICAL HOLDING POINT MINIMUM ACCEPTABLE MOISTURE
Relative Humidity				
Wind Speed (Mid Frame)				
Slope				
Wind Direction				
1 hr. Fuel Moisture				
10 hr. Fuel Moisture				
1000 hr. Fuel Moisture				
Live Fuel Moisture				
Woody Fuel Moisture				
Duff Moisture				
Soil Moisture				

	ACCEPTABLE FIRE BEHAVIOR RANGE			
	(Low)	(High)	(Desired)	
				OUTSIDE AREA AT CRITICAL HOLDING POINT
Fuel Model(s)				Model
Rate of Spread				Ch./hr.
Heat Per Unit Area				BTU/ft.
Fire line Intensity				BTU/ft./sec.
Flame Length				Feet
Probability of Ignition				%
Reaction Intensity				BTU/ft./min.
Scorch Height				Feet
Spotting Dist.				Miles

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SMOKE MANAGEMENT

**Smoke Management No.:
Distance and Direction From
Smoke Sensitive Area(s):**

**Available Fuel Reported
For Smoke Management:**

**Necessary Transport Wind Direction:
Visibility Hazard(s) (i.e., roads, airports, etc.):**

Actions to Reduce Visibility Hazard(s):

Can Residual Smoke Be a Problem?

Special Constraint(s)/Consideration(s):

SCHEDULING & NOTIFICATIONS

Ignition Scheduling:

**Season: Approximate Date:
Limitation on Days of Week for Burning:
Length of Ignition Phase:**

**Time of Day:
Type of Burn:
Length of Burnout Phase:**

Public Information: (What, When, By Whom):

Pre-burn & Burn Contacts: (When, By Whom):

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IGNITION & HOLDING

Firing Plan:

Potential Holding Problems:

Location of Holding Forces and Instructions:

Water Sources:

Counter Measures for Slopovers:

Public Safety Provisions:

Other:

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WORKFORCE & EQUIPMENT NEEDS FOR IGNITION & HOLDING

Prescribed Fire Burn Boss:

Resource Advisor:

Ignition Specialist:

Holding Specialist:

PERSONNEL	TOTAL AMOUNT	AMOUNT SUPPLIED BY	
		BLM	OTHER
EQUIPMENT			
Ignition Equipment			
Engines			
Water Tenders/Other			
Fittings/Hose/Etc.			
Pumps and Accessories			
Other (Radios, Belt W x Kits, etc.)			

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PROPOSED COST

PROPOSED TOTAL COST:

These costs could all be in the 2823 subactivity; or could be spread across several subactivities; estimate the cost for each area.

Site Preparation:

Ignition + Holding:

Mop & Patrol:

Supplies:

These costs could be in one or more subactivities; estimate the cost and show the subactivity for each area.

Planning:

Other:

E.A.

Clearances

Plan Preparation

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ESCAPEMENT CONTINGENCY PLAN

NOTE: THIS IS ONLY AN EXAMPLE. A SITE SPECIFIC CONTINGENCY PLAN NEEDS TO BE DEVELOPED FOR EACH PRESCRIBED FIRE PROJECT.

1. Should an escape occur, the Prescribed Fire Burn Boss (or other designated person) will act as IC until relieved. The IC will organize all on site resources for an aggressive response.
2. The IC will notify _____ of the situation and order the needed resources. Resource Area personnel will notify adjacent landowners as needed. The Field Office manager will assign an environmental specialist, if needed.
3. The FMO and/or IC and the environmental specialist will develop an WFSA. This document will determine what the suppression effort will be.
4. Upon an escape, all key personnel will initiate a unit log to document all actions taken. After the incident is contained, the Prescribed Fire Burn Boss will submit a report documenting weather, resources on site, ignition sequence, suppression actions, and other pertinent data.
5. The strategy for an escaped fires will include flanking the fire until the forward rate of spread is stopped, and/or burning out from roads and/or natural barriers.

Containment opportunities include:

6. Analysis of on site resources:

Line Building Rate: Chains per hour over an extended period. A higher rate will occur during the first hour.

Light Engine - 200 Gallon
Ch/hr.

Heavy Engine - 800 Gallon +
Ch/hr.

Hand Crew - (number)
Ch/hr.

Other- (list)
Ch/hr.

On site resources: _____ heavy engines and _____ light engines. Total on site line building capabilities: _____ Ch/hr.

The line building rate of on site equipment WILL/WILL NOT exceed expected fire spread rate or perimeter increase during initial escape. If the escape occurs at wind speed over _____ MPH, additional resources will be required. In some cases, fire intensity or flame length could limit the effectiveness of engines in suppressing an escape. Topography and/or the lack of a water source could also limit containment efforts. Topography is/is not a significant factor limiting access. A contingency area has been/has not been identified. Any escape into the contingency area will NOT be treated as an escaped fire unless it exceeds the "escape burn area target". The escape burn area target is _____ acres. If this target is exceeded, an escape will be declared. At this point efforts to burn the unit will cease and all resources committed to containment efforts.

The closest additional forces are:

BLM resources at: _____. Other resources: _____.

H-9214-1 - PRESCRIBED FIRE MANAGEMENT

PRESCRIBED FIRE CREW BRIEFING CHECKLIST

UNIT NAME/NO.: _____

CHAIN OF COMMAND:

OBJECTIVES:

COMMUNICATIONS:

FIRING/HOLDING
ASSIGNMENTS:

CONTINGENCY:

WEATHER
FORECAST:

SAFETY:

PUBLIC SAFETY:

- JHA
- Known Hazards
- Public Safety
- Other

OTHER CONSIDERATIONS AND NOTES ON THE BRIEFING:

Signed: _____

Date: _____

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GO/NO-GO CHECKLIST**(A "NO" RESPONSE TO ANY ITEM MEANS STOP!)**

1. ARE ALL FIRE PRESCRIPTION SPECIFICATIONS MET?
2. ARE ALL SMOKE MANAGEMENT PRESCRIPTION SPECIFICATIONS MET, AND/OR HAS SMOKE MANAGEMENT CLEARANCE BEEN GIVEN FOR THE PROJECT?
3. IS THE AREA FIRE WEATHER FORECAST FAVORABLE?
4. ARE ALL REQUIRED PERSONNEL IN THE PRESCRIBED FIRE PLAN ON-SITE?
5. IS ALL REQUIRED EQUIPMENT IN THE PRESCRIBED FIRE PLAN IN PLACE AND FUNCTIONAL?
6. HAVE ALL PERSONNEL BEEN BRIEFED ON THE PROJECT OBJECTIVES AND THEIR ASSIGNMENTS?
7. HAVE ALL PERSONNEL BEEN BRIEFED ON THE SAFETY HAZARDS, ESCAPE ROUTES AND SAFETY ZONES.
8. HAVE ALL THE REQUIRED NOTIFICATIONS BEEN MADE?
9. ARE THE "CONTINGENCY RESOURCES" ADEQUATE FOR CONTAINMENT OF ESCAPES UNDER THE EXPECTED CONDITIONS?
10. IN YOUR OPINION, CAN THE BURN BE CARRIED OUT ACCORDING TO PLAN AND WILL IT MEET THE PLANNED OBJECTIVES?

IF ALL QUESTIONS WERE ANSWERED "YES" PROCEED WITH A TEST FIRE. DOCUMENT THE CONDITIONS, LOCATION AND RESULTS.

Signed: _____

Prescribed Fire Burn Boss

Date: _____

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MEDICAL PLAN

INCIDENT MEDICAL AID STATIONS

MEDICAL	LOCATION	PARAMEDICS	
		YES	NO
Trauma kit and burn kit on site			

* Identify any on site EMT's, and First Responders.

TRANSPORTATION

A. Ambulance services

NAME	TELEPHONE	ADDRESS	PARAMEDICS	
			YES	NO

B. Incident Ambulance

NAME	LOCATION	PARAMEDICS	
		NO	YES
Helispot			

HOSPITALS

NAME	ADDRESS	TRAVEL TIME		PHONE	HELIPAD		BURN CENTER	
		AIR	GRND		YES	NO	YES	NO

* Identify the Latitude and Longitude for hospitals with helipads. Also list hospital radio frequencies.

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MEDICAL EMERGENCY PROCEDURES

Notify Prescribed Fire Burn Boss of serious accidents or injuries. The Prescribed Fire Burn Boss will initiate on site response and coordinate additional needs through _____. The first option is to transport to _____ if using an ambulance for transport, send someone to meet the ambulance at a known location. IE. Highway Junction or known landmark.

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INCIDENT RADIO COMMUNICATIONS PLAN

SYSTEM/CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS
					<i>H = Hand held</i> <i>M = Mobile</i>

* If aerial ignition is used consider assigning a specific radio frequency for use between the aircraft and Prescribed Fire Bum Boss and/or Ignition Specialist.

**H-9214-1 - PRESCRIBED FIRE MANAGEMENT
DAILY MOP UP SHIFT PLAN**

Burn Date:

Shift Plan Date:

PREDICTED WEATHER NEXT 24 HOURS		
	MINIMUM	MAXIMUM
Temperature		
Relative Humidity		
Wind Speed (20 ft.)		
Wind Direction		

Weather Trend Narrative:

Shift Plan Objective:

Special Considerations and Hazards:

Mop Up IC:

Patrol Coordinator:

AMOUNT SUPPLIED BY:				
PERSONNEL	TOTAL AMOUNT	BLM	PURCHASER	OTHER
EQUIPMENT				
ENGINES				
HOSE				
PUMPS				
OTHER				
Add extra pages as needed				

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PRESCRIBED FIRE REPORT

Burning Unit:

Date(s):

Date of Burn(s)

Time of Burn(s):

On site moisture conditions obtained by (sticks, oven, NFDRS, etc.):

Temp.

R.H.

Wind Speed

Direction:

Fuels Present after Burning:

Estimated:

Measured:

ACHIEVEMENT OF PRESCRIBED FIRE OBJECTIVES

Short Term

Results

Prescribed Fire Boss Comments (i.e., fire behavior, personnel & equipment performance, etc.

Prescribed Fire Burn Boss

**H-9214-1 - PRESCRIBED FIRE MANAGEMENT
WEATHER + FIRE BEHAVIOR OBSERVATION SHEET**

Observer's Name _____

Date _____

Fire Identification

Section of line identification _____

Weather + Fuels							
Time							
Slope (%)							
Aspect							
Elevation (Ft.)							
Fuel Model (1-13)							
Shade Percent (Est.)							
Dry Bulb Temp.							
Wet Bulb Temp.							
Relative Humidity (%)							
Eye Level Windspeed							
Wind Direction							
1 Hr. Fuel Moist. Open (%)							
1 Hr. Fuel Moist. Shade (%)							
FIRE OBSERVATIONS							
Average Flame Length (Ft.)							
Maximum Flame Length (Ft.)							
Overstory Torching/Crowning (Y/N)							
Fire whirls (Y/N)							
Spotting Occurrence (Y/N)							
Spotting Distance (Ft.)							
Rate Of Spread (Ch/Hr. or Ft./Min.)							

Other Information: 1,000 Hr. Fuel Moisture: _____ Duff Moisture: _____ Soil Moisture: _____

Live Fuel Moisture: _____ .

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**EXAMPLE OF A
JOB HAZARD ANALYSIS FOR PRESCRIBED FIRE OPERATIONS**

ACTIVITY	HAZARDS	ACTION TO ELIMINATE HAZARD
1. Driving to work site	A. General operations and public traffic.	A. Defensive driving techniques.
	B. Steep, narrow roads.	B. Drive cautiously so that you can stop in less than ½ of your usual distance. Lights on.
	C. Unsecured loads.	C. Check loads for secureness before departing - use tie downs.
	D. Hauling flammable substances.	D. Use appropriate containers for hauling slash fuel or gasoline.
	E. Transporting sharp tools.	E. Use guards, cages, boxes, or tool mounts.
	F. Loading vehicles.	F. Use proper lifting techniques.
	G.	G.
	H.	H.
2. Driving at or near work site	A. Backing or turning around in small areas.	A. Use spotters. Face the hazard while turning around. Avoid tight turn around if possible.
	B. Heavy truck traffic between units and water source.	B. Maintain radio communications and alert other drivers in the area. Lights on.
	C. Smoke, poor visibility.	C. Place a guide on foot ahead of the vehicle. Wait until smoke is less dense. Lights on. Use light bars and/or warning lights.
	D. Parking near a prescribed burn.	D. Use parking brake. Leave keys in ignition, avoid leaving exposed flammable in bed of vehicle. All windows closed.
	E. ATV's.	E. Operated by trained and licensed drivers only. Lights on. Avoid steep slopes.
	F. Public Safety.	F. Post signs an/or use road blocks if needed.
3. Handling flammable material	A. Exposure to sparks.	A. Use proper containers, move away from hot areas, no smoking.

ACTIVITY	HAZARDS	ACTION TO ELIMINATE HAZARD
	B. Eye or skin contamination from fuel.	B. Gloves, goggles, leather lace-up boots.
	C. Leaking containers or torches.	C. Empty and tag in field, have repairs made before next use.
	D. Improper gas/diesel ratios for slash fuel.	D. Use labels on containers, field test small amounts before use.
	E. Slippery surfaces from spilled fuel.	E. Make every effort to avoid spilling fuel, where feasible. Install non-slip material on fuel truck beds. Clean up spills as soon as possible.
4. Equipment set-up	A. Muscle or back strain lifting heavy objects.	A. Use of proper lifting techniques. Get help if too heavy.
	B. Operating pumps and mechanized equipment exhaust burns, loose clothing.	B. Tuck in shirt tails, remove scarfs and jewelry. Proper clothing, gloves and boots.
	C. Application of slippery retardant, poor footing.	C. Eight-inch lug sole, lace-up boots. Avoid slick areas if possible.
	D. Crew people working uphill from each other (rolling debris).	D. Post lookout. Shout warnings.
	E. Operating high pressure nozzles.	E. Maintain visual contact with pump operator and other crew members. Use backup person behind nozzle man. Use goggles.
	F. Traversing rocky terrain.	F. Eight-inch lug boots, slow cautious movement.
	G. Noise from pumps and saws.	G. Use hearing protection (ear plugs or muffs).
5. Firing (hand ignition)	A. Rolling debris.	A. Use hand held radios, close supervision, lookouts. Consider aerial ignition.
	B. Close proximity to intense heat and erratic fire behavior.	B. Same action as in A. Use PPE.
	C. Smoke, sparks, and cinders.	C. Avoid very dense smoke. Wear PPE, Alter firing patterns. Rotate personnel out of worst areas.

ACTIVITY	HAZARDS	ACTION TO ELIMINATE HAZARD
	D. Poor footing, steep slopes, heavy fuels.	D. Constant awareness, learn to identify hazard area. Slow down.
	E. Noise of fire, obscures verbal warnings.	E. Hand held radios for all lighting personnel.
	F. Burning fuel dripping from torches. Burns from drip torches.	F. Lighters stay alert to where torch head is. Close air vent when not actually lighting. Proper PPE.
	G. Misguided lighter lighting wrong area.	G. Know location of others. Radios for all lighting personnel. Close supervision.
	H.	H.
	I.	I.
5.1 IGNITION DEVICES		
5.1.1 Flares	A. Risks associated with firing projectiles or flares.	A. Basic firearm safety rules followed, separation of ammo by type and size, access to launchers limited to trained personnel or those undergoing training.
	B. Inadvertent firing over/under shot resulting in activity outside project boundaries.	B. Post lookouts. Notify ignition spec. and holding spec. Holding crews extinguish spot, subsequent to further ignition.
5.1.2 Mechanical (ATV)	A. Vehicle Maintenance.	A. Thorough inspection of vehicles and ignition equipment.
	B. Close proximity to fire, intense heat, erratic behavior.	B. Same as in 5. B, Know escape routes.
	C. Rough terrain, heavy ground fuels, side hills and slopes.	C. Scout and locate accessible routes, make dry run, experienced operator or supervised trainee. Fire by hand if needed.
	D. Noise of ATV and fire obscures verbal warnings.	D. Hand held radios required of all ignition personnel. Hard hats instead of helmets to facilitate communications.
	E. Inadvertent ignitions.	E. Preplan ignition on/off points, check wand apparatus on regular basis. Notify holding crew.
	F.	F.

ACTIVITY	HAZARDS	ACTION TO ELIMINATE HAZARD
5.1.3 Mounted (Terra torch)	A. Intrinsic danger of using terra torch (vehicle mounted).	A. Terra torch is to be operated under supervision of the ignition spec. Use only with trained operator's ie. driver, operator, and engine support.
	B. Vehicle maintenance.	B. Thorough inspection of vehicle and ignition equipment. Electrical connections and grounds all in working order.
	C. Close proximity to fire, intense heat, erratic behavior.	C. Same as 5. B, known escape routes.
	D. Rough terrain/roads, ground fuels, side hills and slopes.	D. Terra torch use restricted to roads or two tracks, pre-scouted paths or routes only.
	E. Chemical exposure, mixing/transferring.	E. Trained personnel only. Well ventilated area. Use PPE. All containers grounded.
	F. Flammable vapors, liquids, and solids.	F. Terra torch mixing group will wear 100% cotton clothing. All containers grounded. Clean up all spills.
	G. Slippery surfaces from spilled fuel.	G. Make every effort to avoid spilling fuel, install non-slip material on decking, absorbent material for spills will be in torch kit.
5.1.4 Helitorch/PSD	A. Hazards of aircraft use combined with ignition systems.	A. Aviation operations to be coordinated by certified personnel. HEMG on project site. Trained and experienced personnel operating ignition equipment. Separate operating plan and JHA developed.
	B. Flight routes, project area and flight following coordinations (MOA's, TFR's etc.).	B. Follow guidelines and restrictions as stated in IHOG, file special use safety plan, coordinate w/Aviation Management Specialist and Dispatch Centers.
	C. Apparatus viability.	C. Aerial ignition apparatus thoroughly maintained, inspected, tested before installing into aircraft, pilot has ultimate GO/NO GO authority.
6. Holding (includes all of item 4)	A. Carrying sharp tools.	A. Keep tool guards on while traveling, remove only while in use.
	B. Tool use.	B. Proper crew training, with close supervision by crew boss.

ACTIVITY	HAZARDS	ACTION TO ELIMINATE HAZARD
	C. Snag falling.	C. Falling and bucking to be done only by trained personnel.
	D. Burned off snags or widow-makers.	D. Avoid entering burned over areas. Post lookout, flag. Obtain professional faller if needed.
	E. Burns from radiant heat and hot embers.	E. Nomex clothing, hard hats and gloves required.
	F. Rolling debris.	F. Post lookouts, brief crew as to potential hazard areas.
	G. Erratic fire behavior	G. To be covered by burn boss in pre-burn briefing, escape route shall be known by everyone.
7. Mop-up: Included all hazards in items 4, 5, 6, and the following	A. Slippery, wet surfaces.	A. All PPE required.
	B. Smoke inhalation.	B. Crews will be rotated in and out of dense smoke.
	C. Fatigue, long hours of work.	C. Shifts of duty shall not exceed 12 hours, except in emergencies. Crews will work no longer than 7 days on with 1 day off or 14 on with 2 off. Work in pairs, have rested drivers available.
	D.	D.