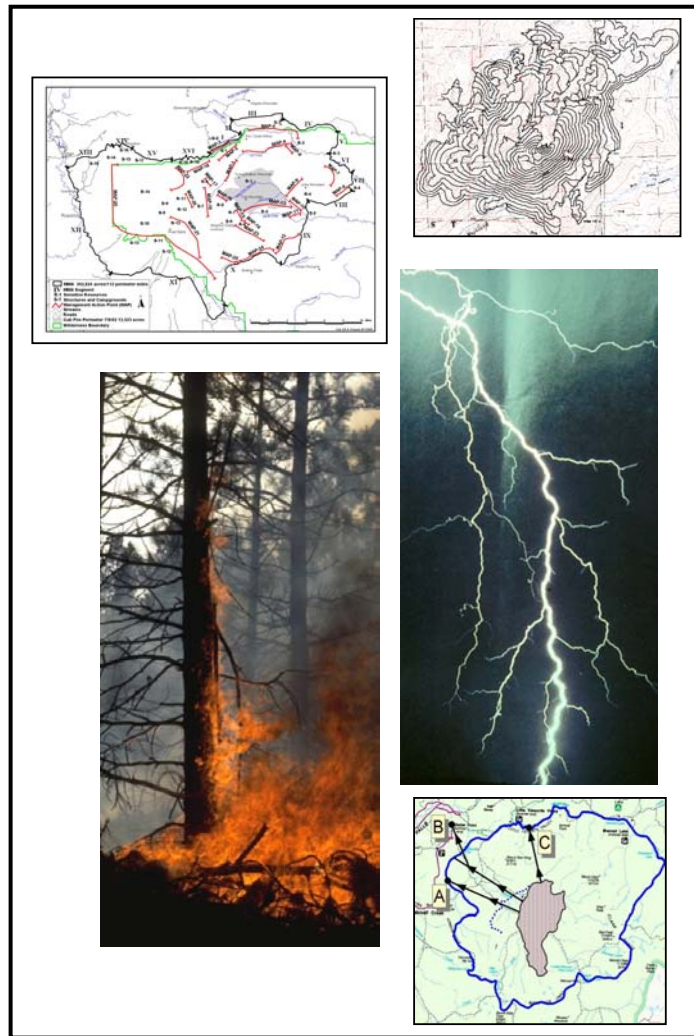




# Wildland Fire Use

## Implementation Procedures Reference Guide



March 2005

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# Executive Summary

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The following Implementation Procedures Reference Guide (2005 Guide) provides direction, guidance, and assistance in implementing the Federal Wildland Fire Management Policy, specifically associated with the planning and implementation of wildland fire use, for the National Park Service, USDA Forest Service, Bureau of Indian Affairs, the U.S. Fish and Wildlife Service, and the Bureau of Land Management.



Originally, this document was published as the *Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide* (USDI/USDA1998) (1998 Guide). The 1998 Guide established consistent agreement between agencies regarding specific, detailed implementation of federal fire policy direction. The 2005 Guide represents the first revision to the original and expands and clarifies the process for wildland fire use planning and implementation consistent with the Federal Wildland Management Policy Review and Update



(USDI/USDA/DOE/DOD/USEPA/FEMA/NASF 2001) and the Interagency Strategy for the Implementation of Federal Wildland Fire Management Policy (USDA/USDI 2003). The 2005 Guide tiers directly to agency policy and guidance as specifically cited in agency manuals.



The Wildland Fire Use Implementation Procedures Reference Guide, February 2005, describes basic policy framework and clarifies what is and is not applicable within policy. The new Implementation Guide incorporates changes and revisions based on seven years of experience in using the original process.

The purpose of the 2005 Guide is to provide standardized interagency operational level interpretation and implementation of the appropriate management response to all wildland fires, but has the greatest value for potentially long-duration wildland fires. Planning, implementation procedures, management requirements, and formats, including the Wildland Fire Implementation Plan (WFIP), are provided. The WFIP is a progressively developed strategic plan consisting of three stages appropriate for changing levels of fire complexity and management needs.

Effective and efficient implementation of wildland fire is the goal of the Federal Fire Policy. Managing wildland fires to accomplish resource objectives, maintain public and firefighter safety, and manage cost expenditures requires significant information archival to document the management decision process for wildland fire use and other wildland fires. This evolving documentation process has been the cornerstone of successful applications of wildland fire use over the past 30 years.

# Chapter 1. Introduction

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The Departments of Interior and Agriculture, together with Tribal governments, States, and other jurisdictions, have responsibility for protection and management of natural and cultural resources on public and Indian Trust lands in the United States. Managing wildland fires for resource benefit (wildland fire use) is an option available to Federal Agencies who have an approved land use plan and fire management plan that allow for wildland fire use. Opportunities and risks associated with management of wildland fire use and other long-duration fire incidents are increasing in both complexity and geographic extent. Escalating values to be protected associated with intricate land use objectives are compounding fire use management program implementation concerns. Uniform Federal policies and procedures are essential to facilitate greater efficiency and responsiveness in the management of fire to meet resource objectives.

Wildland fire use, based on the Federal Fire Policy direction, is a direct component of wildland fire management. It is a management action equal to wildfire suppression and thus, constitutes an emergency action. It receives consideration, management attention, and management policies equal to wildfire suppression, except for specific differences related to ignition source and management action success (see Operational Clarification Statements below).

This guide provides procedures and requirements to implement the full range of wildland fire use management actions within an appropriate management response framework consistent with the Interagency Strategy for the Implementation of Federal Wildland Fire Management Policy (USDI/USDA 2003). Policy statements from the Federal Wildland Fire Policy directly relevant to wildland fire use (WFU) include:

**Safety:** *Firefighter and public safety is the first priority. All Fire Management Plans and activities must reflect this commitment.*

**Fire Management and Ecosystem Sustainability:** *The full range of fire management activities will be used to achieve ecosystem sustainability including its interrelated ecological, economic, and social components.*

**Response to Wildland Fire:** *Fire, as a critical natural process, will be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. Response to wildland fires is based on ecological, social and legal consequences of the fire.*

**Use of Wildland Fire:** *Wildland fire will be used to protect, maintain, and enhance resources and, as nearly as possible, be allowed to function in its natural ecological role. Use of fire will be based on approved Fire Management Plans and will follow specific prescriptions contained in operational plans.*

**Science:** *Fire management plans and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical,*

*and sociological factors. Information needed to support fire management will be developed through an integrated interagency fire science program.*

***Interagency Cooperation:*** *Fire management planning, preparedness, prevention, suppression, fire use, restoration and rehabilitation, monitoring, research, and education will be conducted on an interagency basis with the involvement of cooperators and partners.*

***Communication and Education:*** *Agencies will enhance knowledge and understanding of wildland fire management policies and practices through internal and external communication and education programs.*

Operational clarification statements from the Federal Fire Policy directly relevant to wildland fire use include:

*"Only one management objective will be applied to a wildland fire. Wildland fires will either be managed for resource benefits or suppressed. A wildland fire cannot be managed for both objectives concurrently. If two wildland fires converge, they will be managed as a single wildland fire."*

*"Human caused wildland fires will be suppressed in every instance and will not be managed for resource benefits."*

*"Once a wildland fire has been managed for suppression objectives, it may never be managed for resource benefit objectives."*

*"Wildland fire use is the result of a natural event. The Land/Resource Management Plan, or the Fire Management Plan, will identify areas where the strategy of wildland fire use is suitable. The Wildland Fire Implementation Plan (WFIP) is the tool that examines the available response strategies to determine if a fire is being considered for wildland fire use."*

*"When a prescribed fire or a fire designated for wildland fire use is no longer achieving the intended resource management objectives and contingency or mitigation actions have failed, the fire will be declared a wildfire. Once a wildfire, it cannot be returned to a prescribed fire or wildland fire use status."*

Clarifying terms and definitions from the Federal Fire Policy having importance to wildland fire use include:

***Wildland Fire:*** *Any non-structure fire that occurs in the wildland. Three distinct types of wildland fire have been defined and include wildfire, wildland fire use and prescribed fire.*

***Wildland Fire Use:*** *The application of the appropriate management response to naturally-ignited wildland fires to accomplish specific resource management objectives in predefined designated areas outlined in Fire Management Plans.*

Other Policy clarifying briefing papers include:

***Three Kinds of Fire:*** *Wildfire, wildland fire, and prescribed fire. (National Fire and Aviation Executive Board 2005a).*

***Use of Wildland Fire:*** *Either wildland fire use or prescribed fire applications to meet resource objectives (National Fire and Aviation Executive Board 2005b).*

While unique agency missions may cause wildland fire use management operational differences, it is expected that these differences will be minor and will not limit cross-jurisdictional planning and implementation. The interagency wildland fire use planning and implementation procedures described in this guide will enhance effective and efficient operations across administrative boundaries, facilitate short- to long-duration management, reduce problems or suspensions of operations during personnel transfer of commands, improve agency ability to meet other challenges and opportunities when managing wildland fires for resource benefit, and fulfill the standardization of procedures and policies direction from the Federal Fire Policy.

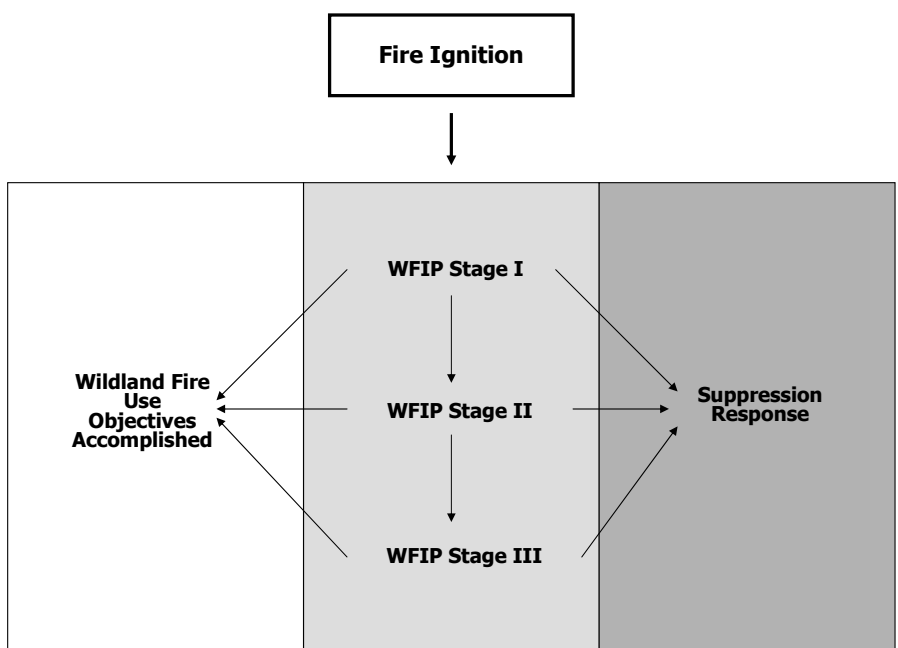
The reference guide is structured to provide a management summary for each section (in red boxes), then more detailed descriptions of processes and contains reproducible forms in Appendix A.

## Chapter 2. Wildland Fire Use Planning and Assessment

### Wildland Fire Implementation Plan

Specific planning and documentation requirements exist for management of wildland fires where resource benefits are a primary objective. The full planning process used for Wildland Fire use events is uniquely different than the processes used for management of unwanted wildfires. Figure 1 illustrates the basic Wildland Fire Use planning process.

A standard Wildland Fire Implementation Plan (WFIP) has been developed. The complete WFIP consists of three stages and is prepared progressively. Each individual stage constitutes a stand alone implementation plan and specific forms and formats are available for each stage. Progression from one stage to the next is dependent upon fire activity, potential duration, and relative risk as it relates to the incident. As each progressive stage is prepared, it is attached to the previous stage and becomes the guiding document until management of the fire accomplishes resource objectives or progression to a higher stage occurs.



Since each stage can be completed individually and used as a stand-alone plan, it is possible that an individual fire will be managed under only Stage I for its duration. Some fires will progress to Stage II and some will progress to Stage III. Thus, the overall objectives for managing individual fires can be accomplished through successful implementation of any or all of the stages, as illustrated by the left portion of Figure 1.

**Figure 1.** Generalized flow of Wildland Fire Implementation Plan showing progression of stages and points of movement to a suppression response.

WFIP Stage I documents the fire situation, Agency Administrator decision, management actions, and sets the initial periodic assessment schedule. This Stage is the initial stage of the planning process. Given suitable circumstances, it can be used to manage a fire with low potential for spread and negative impacts. Components of the WFIP Stage I include:

- Strategic Fire Size-Up (documents fire situation, including fire location and cause). A Strategic Fire Size-Up is completed for all wildland fires and provides information necessary to decide whether to implement a wildland fire use or a suppression response. All wildland fires naturally caused and in a fire management unit approved for wildland fire use become wildland fire use candidates. For fires not meeting these criteria, the WFIP planning stops at this point and a suppression action is initiated. For wildland fires meeting these criteria (WFU candidate), the planning continues into the Decision Criteria Checklist.
- Decision Criteria Checklist (documents the decision to manage fire for resource benefits or initiate a suppression action)
- Management Actions (identifies management actions)
- Periodic Fire Assessment (set assessment frequency, confirms decision to continue with WFU, identifies planning stage needs and implementation qualification levels). A Periodic Fire Assessment is completed as part of each Stage on a schedule determined by Managers. Completing this step in Stage I provides direction to move to Stage II, remain with Stage I, or initiate a suppression response.

The Strategic Fire Size-Up, Decision Criteria Checklist, and Periodic Fire Assessment are points in the WFIP Stage I where a suppression response could be indicated (Figure 1) although the Agency Administrator can decide to suppress a fire at any time.

WFIP Stage II defines management actions required in response to a changing fire situation as indicated by monitoring information and the Periodic Fire Assessment completed as part of Stage I. Stage II is used to manage larger, more active fires with greater potential for geographic extent than in Stage I. Under suitable circumstances and fire situation, this stage could represent the end point in WFIP planning and be used to manage a fire through its duration. Components of the WFIP Stage II include:

- Objectives
- Fire Situation
  - Current and predicted fire behavior
  - Current and predicted weather
  - Threats
  - Safety considerations
  - Environmental concerns
  - External concerns
- Management actions (include description of action and expected duration)
- Estimated costs
- Periodic fire assessment. Completing this step in Stage II provides direction to move to Stage III, remain with Stage II, or initiate a suppression response.

WFIP Stage III defines management actions required in response to an escalating fire situation, potential long duration, and increased need for management activity, as indicated by the Periodic Fire Assessment completed as part of Stage II. It addresses management objectives and constraints in detail, describes the maximum area that the fire may be managed within (Maximum Manageable Area), identifies foreseeable threats and concerns, provides a quantitative long-term risk assessment, identifies management actions to mitigate or eliminate threats, provides cost estimates, and documents a periodic assessment of the situation. This stage constitutes a substantial planning effort but some of the information used in this stage can be pre-planned or completed prior to fire ignition if the administrative unit desires to do so. Such pre-planning is strongly encouraged. Additional information on pre-planning is provided in Appendix B.

Components of the WFIP Stage III include:

- Objectives and Risk Assessment Considerations
  - Natural and Cultural resource objectives
  - Management Constraints
- Maximum Manageable Area (MMA) Definition and Maps
- Weather Conditions and Drought Prognosis
- Long-Term Risk Assessment (describe techniques and outputs, include maps as appropriate)
- Threats
  - MMA
  - Public Use and Firefighter Safety
  - Smoke dispersion and effects
  - Other
- Monitoring Actions (actions, frequency, and duration)
- Mitigation Actions (describe management actions, management action points that initiate these actions, and key to map if necessary)
- Resources needed to manage the fire
- Contingency Actions (describe actions necessary when mitigation actions are unsuccessful)
- Information Plan
- Estimated costs
- Post-burn evaluation
- Signatures and Date
- Periodic Fire Assessment

## Minimum Planning and Implementation Qualifications

The following table (Table 1) shows the minimum interagency qualification requirements for planning and implementation at each stage of the WFIP process.

**Table 1.** WFIP planning and implementation minimum qualifications.

| <b>WFIP Stage</b> | <b>Minimum Planning Qualifications</b> | <b>Minimum Implementation Qualifications</b><br>(Use Fire Use Manager Decision Chart to determine recommended position) |
|-------------------|--|---|
| WFIP Stage I      | Unit Duty Officer                      | Incident Commander Type 4 (ICT4)  |
| WFIP Stage II     | Fire Use Manager Type 2 (FUM2)         | Fire Use Manager Type 2 (FUM2)  |
| WFIP Stage III    | Fire Use Manager Type 2 (FUM2)         | Fire Use Manager Type 2 (FUM2)  |

The determination of the appropriate level of implementation qualifications is made through the Wildland Fire Use Management Assessment, Part 2: Fire Use Manager Decision Chart (See Wildland Fire Management Assessment, WFIP Stage I, Periodic Fire Assessment). Duty Officer qualifications are defined in local unit operating plans.

## Wildland Fire Implementation Plan Completion Timeframes

Specific completion timeframes have been established for each stage of the WFIP. The following table shows maximum completion timeframes for WFU planning tasks.

**Table 2.** WFIP completion timeframes.

| <b>WFIP Stage</b>        | <b>Maximum Completion Timeframe</b>                               |
|--------------------------|---|
| WFIP Stage I             | 8 hours after confirmed fire detection and Strategic Fire Size-Up |
| WFIP Stage II            | 48 hours after need indicated by Planning Needs Assessment        |
| WFIP Stage III           | 7 days after need indicated by Planning Needs Assessment          |
| Periodic Fire Assessment | As part of all stages and on assigned frequency thereafter        |

## Chapter 3. Detailed Description - Wildland Fire Implementation Plan Procedures

### Wildland Fire Implementation Plan - Stage I

|                            |  |
|----------------------------|--|
| <b>Purpose:</b>            | <b>Documents the fire situation and Agency Administrator decision, describes management actions, and sets the initial periodic assessment schedule as the preliminary stage of the planning process.</b>   |
| <b>Information Source:</b> | Fire size-up information, current fire weather and fuel moisture conditions, local information, Agency Administrator input, and site-specific information from the Fire Management Plan (FMP).   |
| <b>Completion Time:</b>    | The Strategic Fire Size-Up is completed as soon as aerial or on-the-ground resources provide a confirmation of the fire's existence and the required fire size-up information.<br><br>All remaining Stage I components completed within 8 hours of completion of Strategic Fire Size-Up. |

The WFIP Stage I establishes the information base for managing the fire. It documents the current and predicted situation, documents all appropriate administrative information, and aids managers by providing them with information to make an initial decision to continue management of the fire for resource benefits or to take suppression action. It also allows the manager to select and document a recommended response action. Stage I consists of four specific components: Strategic Fire Size-Up, Decision Criteria Checklist, Management Actions, and Periodic Fire Assessment (an element of all stages). The information shown in the box to the right illustrates all WFIP Stage I elements. The four Stage I components are described in detail in the following sections. Completion of this stage is determined by the Periodic Fire Assessment indicating Stage II is needed, the Agency Administrator directing it to be completed, or the objectives being accomplished with no further need to advance through planning stages. A sample plan is included in Appendix A and an electronic software package for WFIP preparation is available.

- |  |
|--|
| <p><b>WFIP Stage I Content</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Strategic Fire Size-Up             <ul style="list-style-type: none"> <li>▪ Fire name</li> <li>▪ Fire number</li> <li>▪ Administrative unit(s)</li> <li>▪ Start date/time</li> <li>▪ Discovery date/time</li> <li>▪ Current size</li> <li>▪ Fuel model(s)</li> <li>▪ Current weather</li> <li>▪ Observed fire behavior</li> <li>▪ Location</li> <li>▪ FMU</li> <li>▪ Cause</li> </ul> </li> <li><input type="checkbox"/> Decision Criteria Checklist</li> <li><input type="checkbox"/> Management Actions             <ul style="list-style-type: none"> <li>▪ Forecasted weather</li> <li>▪ Forecasted fire behavior</li> <li>▪ Hazards and Safety concerns</li> <li>▪ Management Actions</li> <li>▪ Availability of resources</li> </ul> </li> <li><input type="checkbox"/> Periodic Fire Assessment</li> </ul> |
|--|

#### ***Strategic Fire Size-Up:***

All reported wildland fires receive a size-up. The Strategic Fire Size-Up consists of a standard information set (refer to Incident Response Pocket Guide or Interagency Standards for Fire and Fire Aviation

Operations or locally developed operating guidelines and forms) needed for the Duty Officer to determine if the fire meets the requirements for WFU management. The Duty Officer is responsible within his/her delegated authority for determining if the fire meets minimum WFU requirements and keeping the Agency Administrator informed of the situation. Two key pieces of information collected for the Strategic Fire Size-Up will help the Duty Officer make this determination. These are fire location in regard to the Fire Management Plan’s Fire Management Unit and the cause of the fire. Location of the fire in an FMU not approved for wildland fire use or being human-caused is reason to initiate a suppression response. If the fire is located in an FMU approved for wildland fire use and naturally ignited, it becomes a WFU candidate and the planning process continues into the Decision Criteria Checklist. This determination is noted at the bottom of the Strategic Fire Size-Up form (Figure 2 shows that portion of the Strategic Fire Size-Up). The appropriate information is circled and the person preparing this form initials and dates after completion.

|  |  |                    |                       |                  |
|--|--|--------------------|-----------------------|------------------|
| <b>FMU</b> (circle appropriate FMU situation)  | WFU Approved   |                    | WFU not Approved      |                  |
|  | Natural Ignition   |                    | Human Caused Ignition |                  |
| <b>Cause</b><br>(circle fire cause)  | <b>Wildland Fire Use Candidate</b><br>—<br>Continue with Decision Criteria Checklist | <b>Suppression</b> | <b>Initials</b>       | <b>Date/Time</b> |
| <b>Suitability for Wildland Fire Use</b> (circle situation, initials of person preparing, date/time) |  |                    |                       |                  |

**Figure 2.** Location, cause, and WFU suitability portions of Strategic Fire Size-Up.

### ***Decision Criteria Checklist***

The Decision Criteria Checklist consists of three sections: Decision Elements, Recommended Response Action, and Justification for Suppression Response (Figure 3). The Decision Elements are five questions the Agency Administrator must answer. This process allows the Agency Administrator to gain better situational awareness and helps evaluate if the current wildland fire should be managed under a WFU response. These questions assess threats from the fire, potential effects of the fire, risk from the fire, effects of other fire activity on management capability, and allow the Agency Administrator to consider external or other unanticipated issues.

To complete the checklist, the Agency Administrator answers the decision elements, based on input from his/her staff, and determines if the fire should receive a WFU management response or a suppression response. **A "Yes" response to any of the five elements indicates that management should take a suppression response. All "No" answers to the decision elements indicate that the fire is a viable candidate to be managed as a WFU.**

#### **Detailed Explanations of Decision Elements:**

- ❑ The first decision element involves the relative threats to life and property. If known threats cannot be adequately mitigated (i.e., "yes" answer), managing the fire as a WFU has potential concerns due to fire location, serious threats to firefighter and public safety, and potentially significant consequences.
- ❑ The second decision element involves objectives and resource conditions for wildland fire management as stated in the FMP. Potential outcomes and desired effects are closely correlated with burning conditions and fire behavior. Objectives and constraints include air quality and effects on natural and cultural resources, as applicable. References for objectives and constraints include the unit FMP, unit land management plan, and Agency Administrator input.

- The third decision element involves a relative assessment of the risk for the fire. Since the decision to suppress or manage the fire is time constrained (8 hour decision space), it may not be possible to complete a long-term risk assessment. In lieu of the quantitative long-term risk assessment, a qualitative assessment process has been developed to provide the Agency Administrator with a quick but comprehensive assessment of the relative risk of the fire. Input information for this decision element is acquired by completing the Wildland Fire Relative Risk Assessment (Figure 4). This assessment must be completed to support the Decision Criteria Checklist in Stage I, and is reevaluated during each Periodic Fire Assessment. Neither a high nor low relative risk rating necessarily predispose a "yes" or "no" answer on the Decision Criteria Checklist. The Agency Administrator must still decide what level of risk is acceptable. A description of the Wildland Fire Relative Risk Assessment is provided in the following section (**Wildland Fire Relative Risk Assessment**).

- The fourth decision element pertains to other local and regional fire activity, commitments of unit and cooperators resources, specific unit FMP limitations on fire numbers, and availability to fill special skill positions from local resources for this fire. If current fire activity precludes the ability to manage fire with adequate resources and skill mixtures, then the response to this element will be "Yes" and a suppression response is indicated.

- The final decision element allows Agency Administrator discretion in the event there are other issues which were unknown to fire staff and must be considered as part of the decision to manage the fire for resource benefits. Agency Administrators will document other issues that precluded management of the fire for resource benefits.

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

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

| Recommended Response Action (check one) | Signature/ Position | Date |
|---|---------------------|------|
| Suppression Response                    |                     |      |
| Wildland Fire Use Response              |                     |      |

**Justification for Suppression Response:**

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**Figure 3.** Decision Criteria Checklist (a standard size reproducible copy of the checklist is included in Appendix A.

Once the Decision Criteria Checklist is complete, the Agency Administrator decides whether to initiate actions to manage the fire as a WFU or manage it under a suppression response. At the bottom of the Decision Criteria Checklist is a check box for the recommended response action followed by the Agency Administrator's (or other delegated individual's) signature and date. If a suppression response is selected, the Agency Administrator must include a justification for this selection at the bottom of the page

## **Wildland Fire Relative Risk Assessment**

The Federal Fire Policy requires that sound risk management be a foundation for all fire management activities. Recent reviews and audits have also stressed the need for risk management. In fact, risk management is rapidly becoming a cornerstone phrase associated with fire management. A report by the National Academy of Public Administration (NAPA) (2001), "stresses the role of risk reduction in wildlands as a critical mitigation approach to improve community protection. The Government Accountability Office (USGAO 2004) completed a report on risk assessment associated with the fuel treatment program. This report also stresses the importance of risk assessment in fire and fuels management.

Using fire to meet resource objectives contains an inherent level of risk given that we are dealing with a number of unknowns and uncertainty in what the future will bring. The relative risk rating is intended to characterize the general magnitude of risks associated with implementing a wildland fire use incident at a snapshot in time. It is an attempt to qualify the level of uncertainty regarding the eventual outcomes of the fire in relation to the management objectives and other mandates. The relative risk rating is a direct input into the decision criteria checklist, wildland fire use management assessment, and periodic fire assessment.

The Wildland Fire Relative Risk Assessment provides the Agency Administrator with a quick but comprehensive assessment of the relative risk of the fire. This is a qualitative process that can be completed in less time than a quantitative long-term risk assessment. The relative risk rating produced from this assessment is a decision support aid for the Agency Administrator in answering the Decision Criteria Checklist elements and during the Periodic Fire Assessment.

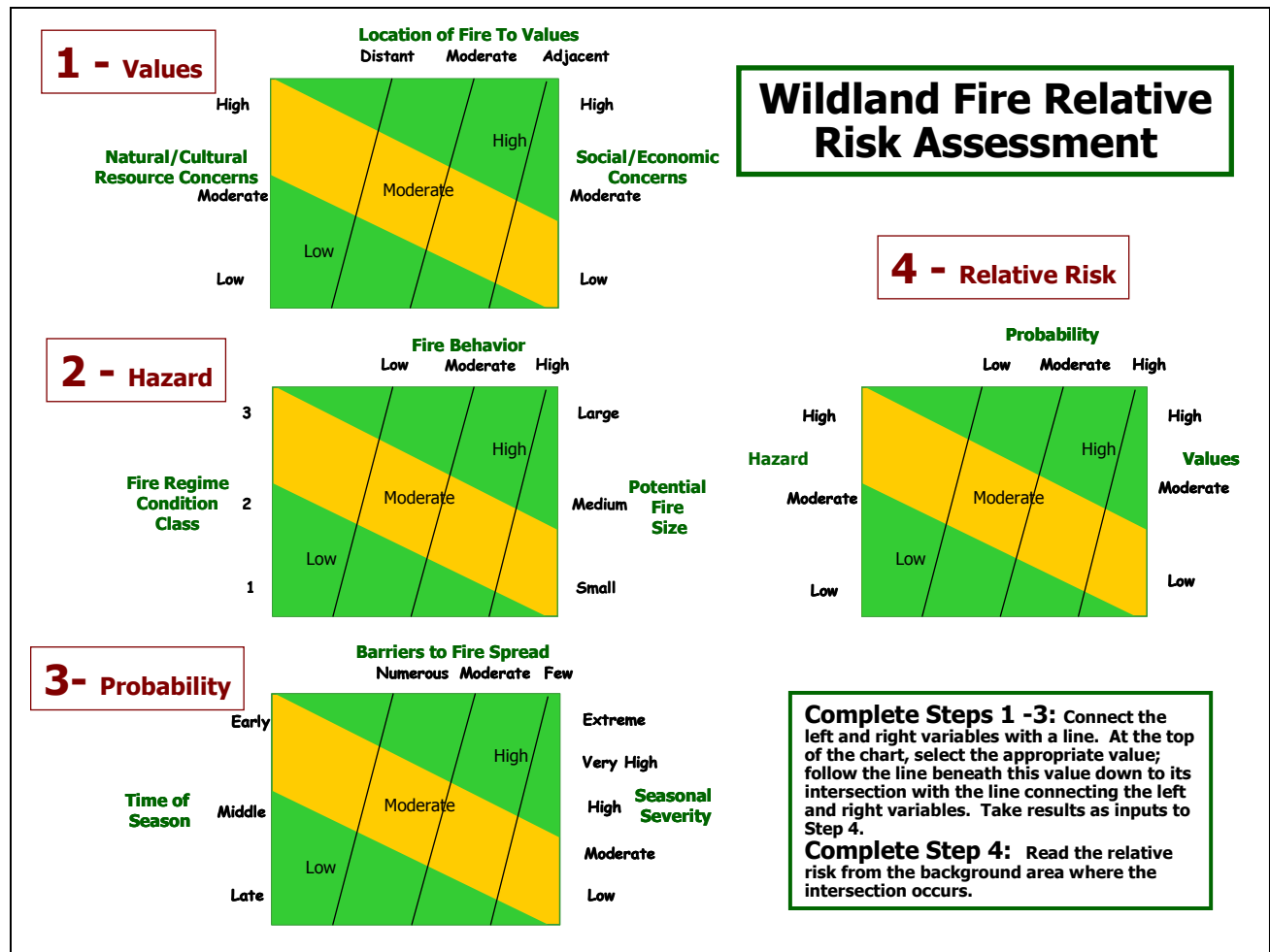
The relative risk assessment chart uses three risk components: values, hazard, and probability. Each of these components is assessed in an independent step. Then, the three outputs are evaluated in a final step that provides the relative risk for the fire. Each risk component is defined by three variables. One variable is located on the right and one on the left side of the box and the third variable is defined by three interior lines extending from top to bottom (Figure 4).

**Values:** Values are those ecologic, social, and economic resources that could be lost or damaged because of a fire. Ecologic values consist of vegetation, wildlife species and their habitat, air and water quality, soil productivity, and other ecologic functions. Social effects can include life, cultural and historical resources, natural resources, artifacts, sacred sites. Economic values make up things like property and infrastructure, economically valuable natural and cultural resources, recreation, and tourism opportunities.

**Hazard:** The hazard in wildland fire is made up of the conditions under which it occurs and exists, its ability to spread and circulate, the intensity and severity it may present, and its spatial extent.

**Probability:** Probability refers to the likelihood of a fire becoming an active event with potential to adversely affect values.

The Wildland Fire Relative Risk Assessment Chart is shown in Figure 4. Four steps are necessary to complete the risk assessment. Step-by-step instructions for completing the Wildland Fire Relative Risk Assessment are included in Appendix A. While all four steps are shown in this figure, each step is available individually in a larger format figure in Appendix A.



**Figure 4.** Wildland Fire Relative Risk Assessment.

Initial information to consider in developing the rating for the individual element is provided in the following section and after each of the individual charts in the Appendix (Appendix A). This descriptive list is not all inclusive and items on the list can be expected to vary by place and time. Users are expected to exercise their judgment in determining the ratings; information is intended to provide both guidance in completion and flexibility in determining exactly what the descriptions mean. Local information can and should be amended to the lists to better reflect site-specific situations. Local, site-specific information concerning air quality and smoke management must be amended into the Wildland Fire Relative Risk Assessment at the local level to reflect variances in situations and local values and regulatory concerns. Air quality criteria should be reflected in the values assessment portion, smoke production can be incorporated into the hazard descriptive list, and descriptive information related to the probability of adverse smoke events, if available, can be addressed as part of the probability assessment.

**PART 1: VALUE ASSESSMENT:** Values are those ecologic, social, and economic effects that could be lost or damaged because of a fire. Ecologic values consist of vegetation, wildlife species and their habitat, air and water quality, soil productivity, and other ecologic functions. Social effects can include life, cultural and historical resources, natural resources, artifacts, sacred sites. Economic values make up things like property and infrastructure, economically valuable natural and cultural resources, recreation, and tourism opportunities. This assessment area allows opportunity for the local agency administrator to identify particular local concerns. These concerns may be identified in the fire management plan or other planning documents.

**Natural/Cultural Resource Concerns** - key resources potentially affected by the fire. Examples include, but are not limited to habitat or populations of threatened, endangered, or sensitive species, water quality, erosion concerns, and invasive species.

| Low   | Moderate  | High   |
|---|---|--|
| Resource concerns are few and generally do not conflict with management of the fire. Mitigation measures are effective. | Significant resource concerns exist, but there is little conflict with management of the fire. Mitigation measures are generally effective. | Multiple resource concerns exist, some of which may conflict with management of the fire. The effectiveness of needed mitigation measures is not well established. |

**Social/Economic Concerns** - the risk of the fire, or effects of the fire, impacting the social or economic concerns of an individual, business, community or other stakeholder involved with or affected by the fire. Social concerns may include degree of support for the Wildland Fire Use program or resulting fire effects, potential consequences to other fire management jurisdictions, impacts to tribal subsistence or gathering of natural resources, air quality regulatory requirements and public tolerance of smoke. Economic concerns may include potential financial impacts to property, business, or infrastructure. Infrastructure impacts may be costs to repair or replace sediment catchments, wildlife guzzlers, corrals, roads, culverts, power lines, domestic water supply intakes, and similar items.

| Low   | Moderate  | High  |
|---|---|---|
| Local support for wildland fire use is high. The fire should have little or no impact on subsistence or Tribal activities involving treaty rights. The fire is expected to remain within a single jurisdiction or agreements are in place to allow the fire to move across several jurisdictions. Media coverage is favorable. Few structures or business ventures are potentially affected by the fire. There are few impacts to recreation and tourism. | Local support of wildland fire use is clearly divided between supporters and opponents. The fire will have some impacts on subsistence or Tribal activities involving treaty rights. The fire is expected to involve more than one jurisdiction, cooperator, or special interest group and agreements need to be developed. Media coverage tends to be a mix of favorable and unfavorable views. Some structures may be threatened by the fire or some business ventures may be affected by the fire. | Local support for wildland fire use is low. The fire will have significant impacts on subsistence activities or Tribal activities involving treaty rights. Smoke impacts may become a concern for higher level air quality regulatory agencies. The fire is expected to involve several jurisdictions, cooperators, and special interest groups and agreements requiring significant negotiation need to be developed. Media coverage tends to be unfavorable. Many structures or private properties could be threatened. |

**Location of Fire to Values**

| Distant   | Moderate  | Adjacent  |
|---|---|---|
| Fire location is not proximate to values to be protected or fire is located where it is highly unlikely that it would reach the values. | Fire location is moderately proximate to values. Location is such that, based on historical data, fire could potentially reach the values but will take multiple burning periods and sustained fire activity to reach the values. | Fire location is in close proximity to values. Without mitigation actions, fire will be expected to reach the values. |

**PART 2: HAZARD ASSESSMENT:** The hazard in wildland fire is made up of the conditions under which it occurs and exists, its ability to spread and circulate, the intensity and severity it may present, and its spatial extent.

**Current Fire Behavior** – the current fire behavior or that most recently observed. Changing fire behavior is addressed through repeated completion of the Periodic Fire Assessment.

| Low   | Moderate  | High   |
|---|---|--|
| Short duration flaming front with occasional torching. Fuels are uniform and fire behavior can be easily predicted and tactics implemented. | Short range spotting occurring. Moderate rates of spread are expected with mainly surface fire and torching. Fuels and terrain are varied but don't pose significant problems in holding actions. | Long range spotting > ¼ mile. Extreme rates of spread, and crown fire activity are possible. Fuels, elevation, and topography vary throughout the fire area creating high resistance to control. |

**Fire Regime Condition Class** – a measure of ecological functions at risk based on changes in vegetation.

| 1   | 2   | 3   |
|---|---|---|
| Vegetative composition and structure are resilient and key components are at low risk of loss. Few, if any, fire return intervals have been missed and fuel complexes are similar to historic levels. | Both the composition and structure of vegetation has shifted towards conditions that are less resilient and more at risk of loss. Some fire return intervals have been missed, stand structure and composition, and fuel complexes have been altered and present potential for fires of severity and intensity levels in excess of historic levels. | The highly altered composition and structure of the vegetation predisposes the landscape to fire effects well outside the range of historic variability, potentially producing changed fire environments never before measured. |

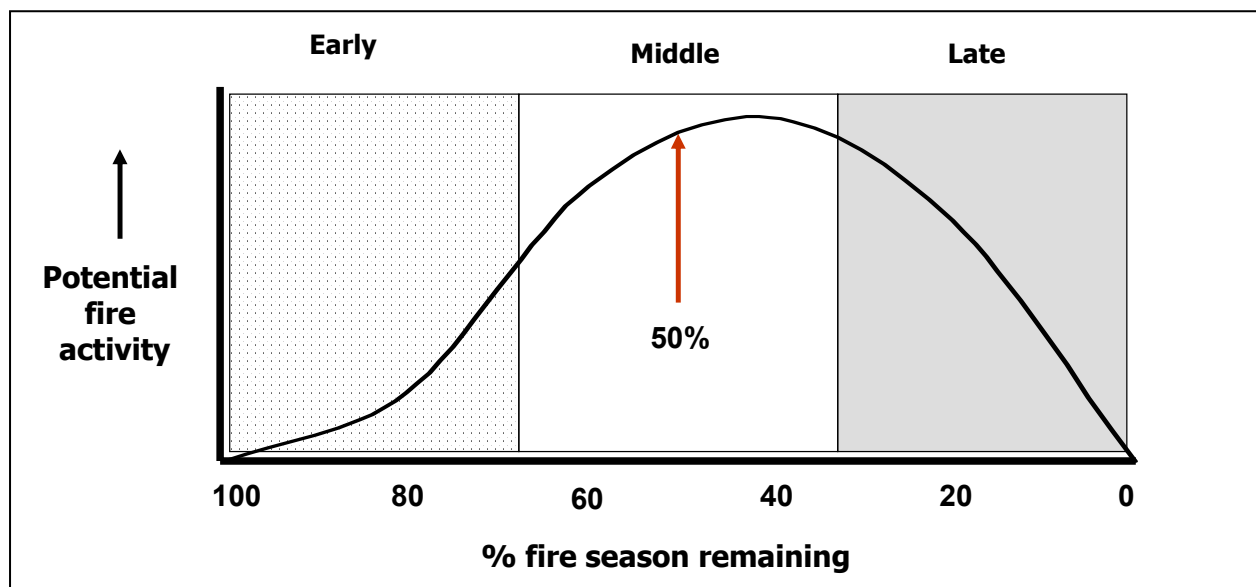
**Potential fire size** - the potential fire size by the end of the season in comparison to historical fire occurrence.

| Small   | Medium   | Large  |
|---|--|--|
| Fire size is expected to be small for the dominant fuel type involved | Fire size is expected to be in the mid-range for the dominant fuel type involved | Fire size is expected to be large for the dominant fuel type involved. |

**PART 3: PROBABILITY ASSESSMENT:** Probability refers to the likelihood of a fire becoming an active event having potential to adversely affect values.

**Time of Season** - the current time in relation to the historical fire season. The chart below the guidelines reinforces the importance of time of season. During the early part of the fire season, the peak of burning activity is still to come, thus the fire could present substantial variation in behavior and activity. In the middle of the season, the peak of burning activity may or may not have occurred while in the late part of the season, the peak of fire activity generally has occurred and managers can reasonably expect diminishing fire activity and behavior as time progresses. As the amount of fire season remaining decreases or as the time of season progresses from early to late, management concerns and issues associated with potential fire activity decrease.

| Early  | Middle   | Late  |
|--|--|---|
| The current date is in the early portion of the historic fire season, at least 2/3 of the established fire season remains and the peak of burning activity is still to come. | The current date is in the middle of the historic fire season, at least 1/3 of that period has passed and no less than 1/3 remains. The peak burning activity period either has occurred, is occurring now, or will occur very soon. | The current date is in the latter part of the historic fire season. At least 2/3 of the historic period has passed, the peak burning activity period has occurred, and the probability of a season-ending or fire-ending event is increasing quickly. |



**Seasonal Severity** - a measure of the potential burning conditions as expressed by factors such as ERC, drought status, live fuel moistures, dead fuels moistures, soil moisture, stream discharge, and similar types of measures.

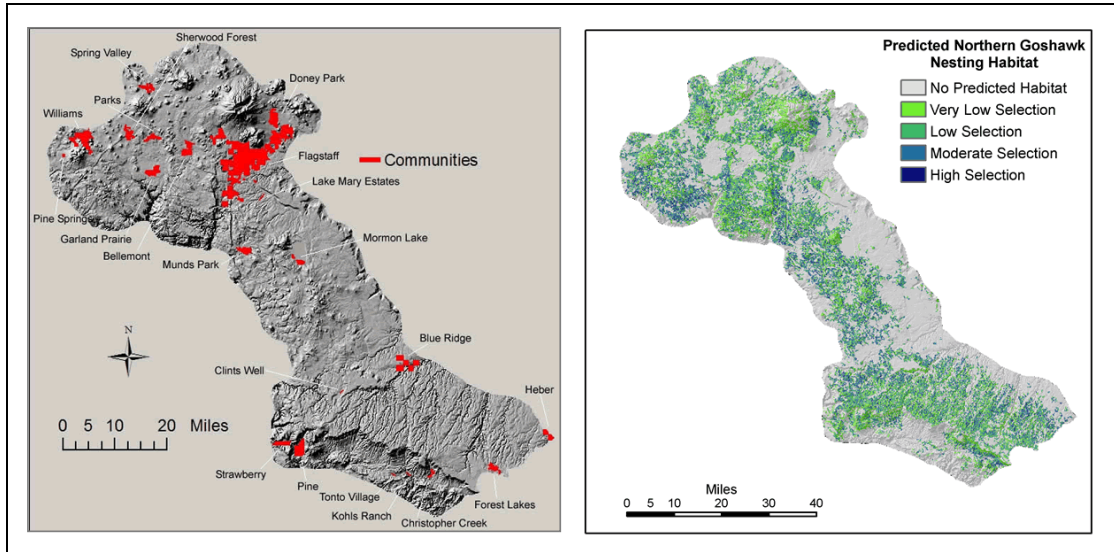
| Low  | High  | Extreme  |
|--|---|--|
| Measures of fire danger are below to somewhat above seasonal averages. Drought status is within seasonal norms with no long-term drought present | Measures of fire danger are well above seasonal averages but not setting new records. The area is in short-term drought (1-2 years of drought) but not considered to be in long-term drought. | Measures of fire danger are setting new records. The area is considered to be in long-term drought (3 or more years of drought). |

**Barriers to Fire Spread** – a measure of the natural defensibility of the fire location and an indication of degree of potential mitigation actions needed.

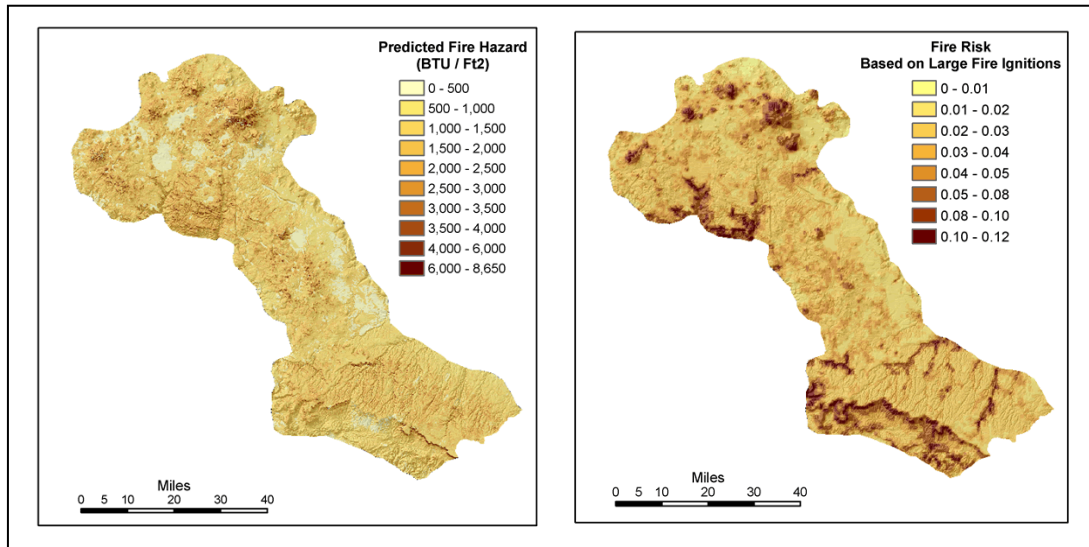
| <b>Numerous</b>  | <b>Moderate</b>  | <b>Few</b>  |
|--|--|---|
| The location of the fire and presence of natural barriers and fuel breaks limit the horizontal fuel continuity, minimal mitigation actions on-the-ground will be needed. | The location of the fire and presence of some natural barriers and fuel breaks limit the horizontal fuel continuity on some, but not all fire flanks, some mitigation actions on-the-ground will be needed to protect threats to boundaries and sensitive areas. | The location of the fire and presence of only limited natural barriers and fuel breaks will permit fire spread across continuous fuels. Mitigation actions on-the-ground will be needed but are expected to be effective. |

## Alternative Risk Assessment Methods

If pre-planning or ongoing planning efforts lead to the development of additional mechanisms for assessing risk, these outputs can be utilized during the relative risk assessment process. Some planning analyses provide indications of values, hazards, and probability that may be used in lieu of completing Steps 1, 2, and 3 of the Relative Risk Assessment. **Step 4, determination of the risk, must be completed, regardless of how the values, hazard, and probability are determined.** Figures 5 and 6 show some examples of preplanning products that could be used for Steps 1, 2, and 3.



**Figure 5.** Geographic information system mapping outputs showing community locations and wildlife species concern areas (courtesy of ForestERA, Northern Arizona University, Flagstaff, AZ).



**Figure 6.** Geographic information system mapping outputs showing predicted fire hazard and fire risk (courtesy of ForestERA, Northern Arizona University, Flagstaff, AZ).

Mapping products like those illustrated in Figure 5 provide locations of communities, wildland-urban interface, infrastructure, natural resource concerns, etc. These maps can be used in conjunction with

Fire Management Units to assess risk from fire to these values and can be directly used in the relative risk chart as levels of values for Step 1 or Step 4.

In Figure 6, fire hazard can be used to evaluate the hazard portion of the relative risk and fire risk could be an indicator of probability. These data can be used in conjunction with Fire Management Unit information to assess the hazard and probability and can be directly used in the relative risk chart as levels of hazard and probability in Step 2, 3, and/or 4.

There are numerous other methods that can be used to help evaluate the relative risk. If an alternative method is used to derive the value, hazard, and probability, that method must be documented on the relative risk rating charts.

### ***Management Actions***

The Management Actions describe activities necessary to manage the fire until the Periodic Fire Assessment indicates a change in WFIP planning stage and activity is required or until objectives are achieved. Management Actions will include monitoring and other actions as appropriate. Monitoring actions are important components of Stage I Management Actions. Monitoring Actions are necessary to track fire movement, fire activity, fire effects, and to provide information vital to completing the Wildland Fire Use Management Assessment. Management Actions should be designed to safely achieve the wildland fire use objectives as detailed in the Fire Management Plan, and be based upon the fire situation and forecasted weather and fire behavior. Within the forecasted weather section, include an initial discussion of assessment of air quality forecasts /allowable burn days, as applicable for the local area.

## ***Periodic Fire Assessment***

|                                   |  |
|-----------------------------------|--|
| <b>Purpose:</b>                   | <b>To evaluate and document:</b> <ul style="list-style-type: none"><li>▪ <b>the capability to manage the fire to meet resource benefits,</b></li><li>▪ <b>relative risk,</b></li><li>▪ <b>management organization, operational, and personnel qualification needs; and</b></li><li>▪ <b>the WFIP planning level required to meet identified needs.</b></li></ul> <p>The Periodic Fire Assessment is completed on a set schedule in conjunction with all three WFIP Stages.</p> |
| <b>Information Source:</b>        | Fire monitoring information, risk assessment results, current fire activity, fire location, fire size, fire danger indicators, time period of fire season, fire behavior and weather forecasts, and Agency Administrator and staff input.  |
| <b>Estimated Completion Time:</b> | ≤ .5 hour  |

For each wildland fire use action, the Agency Administrator (or delegated individual) is required to initially affirm and periodically reaffirm the capability to manage the fire as a WFU event. This process is intended to document and ensure management accountability throughout the duration of the wildland fire use. The Periodic Fire Assessment process:

- affirms continued management of the fire to meet resource objectives or provides rationale for conversion to a suppression response.
- confirms and documents the decision to establish, remain at, or move up, to the next Stage of planning.
- validates the minimum planning and implementation qualifications.

|   |
|---|
| <b>Periodic Fire Assessment:</b> <ul style="list-style-type: none"><li>❑ Decision Criteria Checklist</li><li>❑ Wildland Fire Relative Risk Assessment</li><li>❑ Wildland Fire Use Management Assessment<ul style="list-style-type: none"><li>▪ Part 1: Planning Needs Assessment</li><li>▪ Part 2: Fire Use Manager Decision Chart</li></ul></li><li>❑ Signature Page</li></ul> |
|---|

The Periodic Fire Assessment accomplishes the above-stated purposes by:

- completing a Decision Criteria Checklist (either by reaffirming the Decision Criteria Checklist completed in the previous stage or through completion of a new one),
- assessing the level of risk the fire presents using the Wildland Fire Relative Risk Assessment Process (either by reaffirming the Wildland Fire Risk Assessment completed in the previous stage or through completion of a new one),
- assessing the planning needs of the unit,
- assessing the minimum planning and implementation qualifications for each stage of the WFIP,
- completing a signature table that affirms the Agency Administrator's concurrence to manage the fire for resource benefits and at a particular Stage.

The initial Periodic Fire Assessment is completed as part of the WFIP Stage I. It is then re-done on the recurring timeframe set by the Assessment Frequency.

### **Decision Criteria Checklist**

The Decision Criteria Checklist completed in Stage I or during the most recent Periodic Fire Assessment is reviewed for continued validity. The validity of the Checklist is noted on the Periodic Fire Assessment Signature Page. If the Decision Criteria Checklist is no longer valid, management of the fire for resource benefits can no longer continue. See WFIP Stage I Decision Criteria Checklist procedures for a description of the Decision Criteria Checklist and an example form.

### **Wildland Fire Relative Risk Assessment**

The Wildland Fire Relative Risk Assessment, completed during Stage I or during the most recent Periodic Fire Assessment, is reviewed and updated to remain current and ensure validity. **It is important that this assessment be reviewed and updated as conditions change over time (this review and update is required in the Periodic Fire Assessment).** See WFIP Stage I Wildland Fire Relative Risk Assessment procedures for a description of the Wildland Fire Relative Risk Assessment and example forms.

### **Wildland Fire Use Management Assessment**

The Wildland Fire Use Management Assessment consists of two parts:

- Part 1: Planning Needs Assessment Chart,
- Part 2: Fire Use Manager Decision Chart

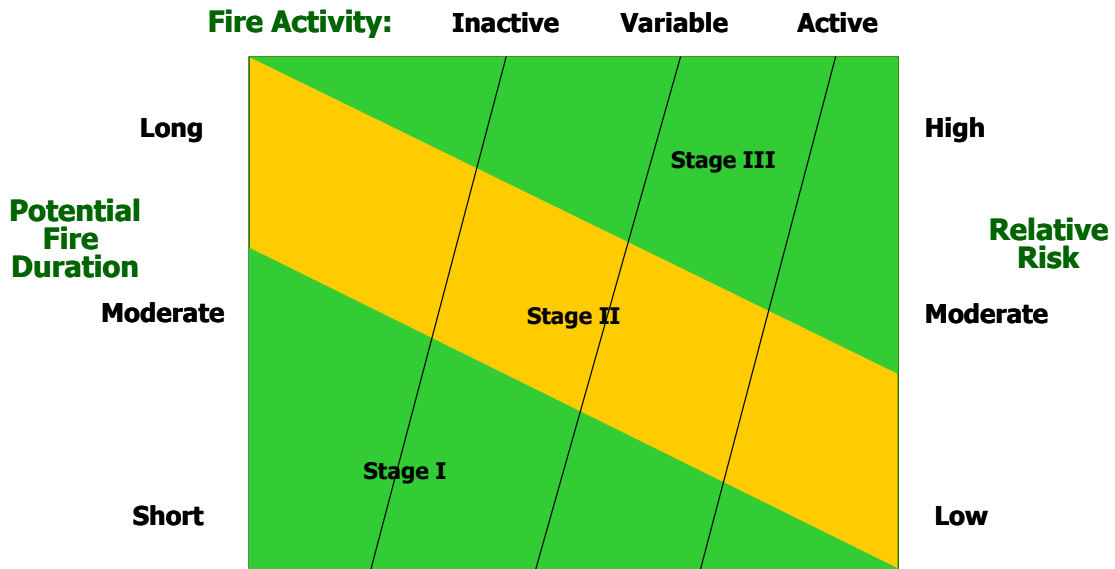
This section is completed to determine if the level of planning and management capability and qualifications are commensurate with the fire activity and management capability.

#### **Part 1: Planning Needs Assessment Chart**

The Planning Needs Assessment Chart is used to determine the level of planning commensurate with the relative risk, potential fire duration, and fire activity. The Planning Needs Assessment Chart indicates the need to establish, remain at, or to move up to the next stage of planning and is the principle guide for transition throughout the WFIP process. This chart aids managers in assessing the need to complete detailed, long-term assessment and implementation plans for a particular fire. The chart also guides agency administrators in setting priorities for planning needs for multiple fires and ensuring that those fires having the greatest need have the necessary planning done within the framework of management capabilities and time constraints. It must be noted that agency administrators and staff have the prerogative to move to and complete the next or all WFIP Stage(s) for any or all wildland fires at any time. The Planning Needs Assessment Chart is shown in Figure 7.

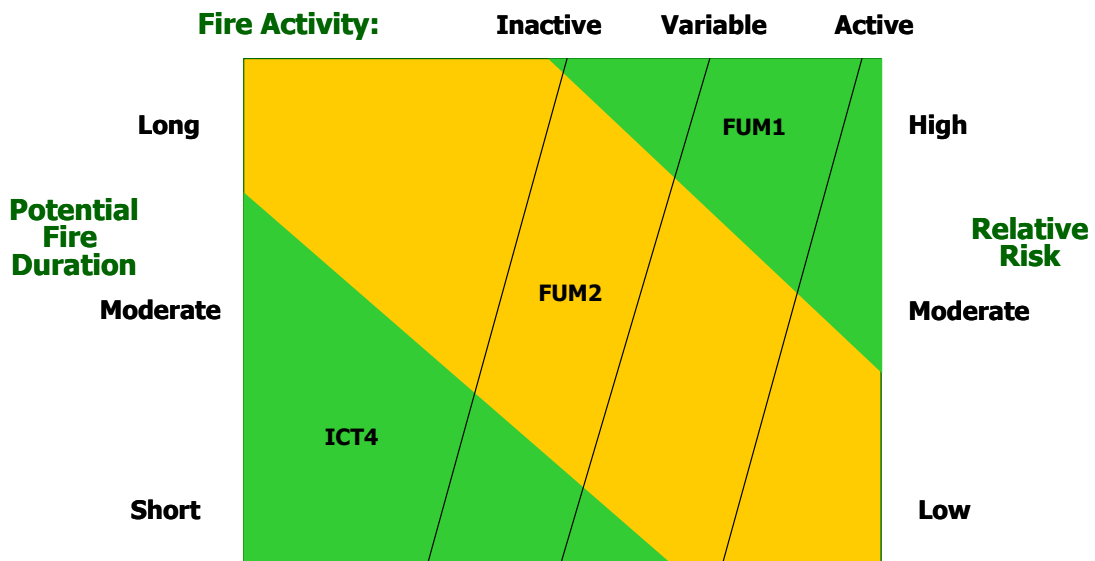
#### **Part 2: Fire Use Manager Decision Chart**

The Fire Use Manager Decision Chart is used during each Stage as part of the Periodic Fire Assessment. This chart aids the Agency Administrator in determining the appropriate qualification levels for implementation of management actions. The Fire Use Manager Decision Chart is shown in Figure 8.



**Figure 7.** Planning Needs Assessment Chart.

To complete the chart in Figure 7, connect the left and right variables with a single line (potential fire duration and relative risk, respectively). Select the appropriate level of fire activity at the top of the chart and follow the line beneath that value down to its intersection with the line connecting the left and right variables. Read the planning need from the background area where the intersection occurs. The Relative Risk values are those obtained from the Wildland Fire Relative Risk Assessment process described above.



**Figure 8.** Fire Use Manager Decision Chart.

To complete the chart in Figure 8, connect the left and right variables with a single line (potential fire duration and relative risk, respectively). Select the appropriate level of fire activity at the top of the chart and follow the line beneath that value down to its intersection with the line connecting the left and right variables. Read the level of Fire Use Manager needed directly from the background area where the intersection occurs. The Relative Risk values are those obtained from the Wildland Fire Relative Risk Assessment process.

Initial information to consider in selecting the value for each variable is provided in the following section and after each of the individual charts in the Appendix (Appendix A). This list is not all inclusive and items on the list can be expected to vary by place and time. Users are expected to exercise their judgment in selecting the values; information is intended to provide both guidance in completion and flexibility in determining exactly what the descriptions mean. **Local information can and should be amended to the lists to better reflect site-specific situations.**

**Guidelines for Planning Needs Assessment Chart and Fire Use Manager Decision Chart (while the charts are different and used for different purposes, the input values are the same and the following information applies to both charts).**

**Potential Fire Duration** – the estimated length of time that the fire may continue to burn in comparison to historical fire durations and amount of fire season available for a given area.

| Short  | Moderate   | Long  |
|--|--|---|
| <p>Fire is expected to persist for only the shortest time in comparison to historical fire durations. This may be as short as only a few days. Fuels may be limiting, weather may be limiting, or time of fire season may be limiting. Generally, this could be referenced as less than the historical average fire length for a given area.</p> | <p>Fire is expected to last for a time period similar to the historical average length of fires.</p> | <p>Fire is expected to last for a time period longer than the historical average length of fires.</p> |

**Relative Risk** – a measure of the relative risk, determined directly from the Wildland Fire Relative Risk Assessment, so no range of values is listed here.

**Fire Activity** - the relative activity of the fire in terms of intensity and spread over time.

| Inactive   | Variable  | Active  |
|--|---|---|
| <p>Fire is burning with very low intensity and little or no spread and little or no increase in burned area. Fire is confined to surface litter and duff layers.</p> | <p>Fire is burning predominantly in surface litter and duff layers, with low intensity and little or no spread but has occasional periods of increased intensity and spread. Growth of burned area is not constant but occurs in response to increased activity. Area increase may be static for moderately long periods and then increase for short periods. Fire size usually increases by less than 50% during active periods.</p> | <p>Fire is burning in all fuel strata (litter, surface, and crown) with periods of sustained flaming fronts, perimeter growth, and area increases that can exceed 100% at times. Infrequent periods of low activity occur but spread is generally constant.</p> |

## Signature Table

Local fire staff review and complete the assessments and checklist. Once these forms are completed they are taken to the Agency Administrator (or his/her designee) and **must be reviewed and confirmed on the specified assessment frequency.**

On the Signature Table, the following must be completed:

- Assessment Frequency,
- Valid Date(s),
- Signatures
- Date
- Confirmation of Decision Criteria Checklist
- Validation of WFIP Planning Stage
- Confirmation of Fire Use Manager level.

## Assessment Frequency and Valid Dates

The assessment frequency is how often the assessment will be reviewed. This frequency can be daily, but each unit can determine the appropriate assessment frequency. It can be less frequent than a daily requirement.

The frequency for completing the Periodic Fire Assessment is established based on the current and expected fire and weather situation. When units set a monitoring and assessment frequency, they should consider developing a "step-up" frequency based on levels of fire activity, external attention and influences, or other critical concerns. Then, as situational concerns escalate, the monitoring and assessment frequency can correspondingly increase. Conversely, as the situational demands lessen, monitoring and assessment can "step-down" and become less frequent. **Units must identify standards and rationale for establishing assessment frequency, especially "step-up" and "step-down" actions.**

The valid dates reflect the length of time that the identified assessment frequency will be used. If the assessment frequency is changed, the valid dates must be changed accordingly.

## Signatures/Delegation

The Agency Administrator or designated individual must sign the Periodic Fire Assessment Signature Page in conformance with the specified assessment frequency. The Periodic Fire Assessment signature authority can be re-delegated to specific positions as allowed by Agency Policy.

When re-delegation occurs, Agency Administrators must document, in writing, the revalidation authority to the designated individuals. This permits the delegated individual to validate that management capability is adequate to continue management of the fire for resource benefit. If or when fire conditions or complexity levels escalate, Periodic Fire Assessment signature authority will automatically and immediately revert to the Agency Administrator who made the initial delegation of authority.



## Wildland Fire Management Plan - Stage II:

|                            |   |
|----------------------------|---|
| <b>Purpose:</b>            | <b>Documents specific management objectives, describes the Fire Situation and associated management concerns, identifies management actions, estimated costs, and documents the Periodic Fire Assessment.</b>   |
| <b>Information Source:</b> | Objectives = developed from staff input and Fire Management Plan.<br><br>Fire Situation = information available from monitoring the fire, weather observations and weather forecasts.<br><br>Risk assessment = the minimum risk assessment required is the output from the wildland fire relative risk assessment completed in the Periodic Fire Assessment.<br><br>Management actions = developed from staff input commensurate with predicted fire behavior, risk assessment, fuel types, fuel continuity, overall objectives, and defined management concerns.<br><br>Estimated Costs = developed from staff input, based on identified management actions and resources needed. |
| <b>Completion Time:</b>    | All elements of WFIP Stage II must be completed within 48 hours of need as indicated from the Periodic Fire Assessment.   |

The WFIP Stage II represents the continuation of management for resource benefits. During this stage, objectives are clearly defined, the Fire Situation is described, Management Actions commensurate with the Fire Situation are established, Cost Estimates are prepared, and the Periodic Fire Assessment is continued to evaluate the need to move to the WFIP Stage III.

Components of the WFIP Stage II and output products are shown in the box to the right.

Completion of this stage is determined by the Periodic Fire Assessment indicating Stage III is needed, the Agency Administrator directing it to be completed, or the objectives being accomplished with no further need to advance through planning stages.

- WFIP Stage II:
- Objectives
  - Fire Situation
    - Current and predicted weather
    - Current and predicted fire behavior
    - Threats
    - Safety considerations
    - Environmental concerns
    - External concerns
  - Management actions (include description of action and expected duration)
  - Estimated costs
  - Periodic fire assessment

## ***Objectives***

Land management is the process of making land-use decisions for the future, setting objectives, implementing the actions to accomplish objectives, achieving outputs, and performing evaluations which compare results to objectives. In land management programs, objectives are used to establish desired outcomes for management actions. Objectives represent the single most influential factor in land management program implementation. They are fundamental to successful management to achieve desired land-use decision conditions.

In wildland fire use, goals and objectives are important. Goals are primary basic products of the long range management plans commonly referred to as land-use decisions. They deal with large areas and long time periods. Land-use decisions establish resource condition objectives; allowable, limited, or excluded uses for an area and the term and conditions for such use; and recommend management actions to achieve desired conditions. Objectives, a necessary component of the planning process, provide a bridge between goals and implementation actions. They identify changes resulting from management actions that move from the current situation to a desired situation. Site-specific treatment objectives must be developed to guide project-level operations in wildland fire use. These are very well-defined statements that describe what one or more wildland fires must accomplish to meet resource management objectives, as stated in land and resource management plans.

Objectives defined in WFIP Stage II represent specific statements of accomplishments for wildland fire use and provide a link back to Fire Management Plans and Land and Resource Management Plans. These objectives must be specific, measurable, achievable, relevant, and trackable. At the Stage II planning level, more detailed tactical implementation of strategic objectives for wildland fire use activities takes place. At this level, the WFIP Stage II is a site-specific plan to guide implementation of fire management activities on the ground. Objectives are formulated from local unit input, Agency Administrator direction, Fire Management Plans, and Land and Resource Management Plans.

## ***Fire Situation***

The Fire Situation section describes what the current conditions surrounding the fire are and includes the following:

- Current and predicted weather
- Current and predicted fire behavior (predictions are vital to initial implementation actions because they provide):
  - estimates of fire size and shape at a given time,
  - models of management alternatives,
  - determinations of resource needs, production rates, and requirements,
  - placement of resources,
  - estimates of behavior under differential weather patterns,
  - estimates of ignition patterns, including spotting,
  - modeling for contingency action planning,
  - developing prescriptions through historical weather records,
  - verifying prediction outputs
- Threats
- Safety considerations
- Environmental concerns
- External concerns

The sum total of these efforts will be information on those factors affecting the fire and how it will burn and what it may affect. This information will support decisions on management actions, resource needs, and overall strategy and tactics concerning the appropriate management response.

Risk assessment during this stage can be quickly assessed through the Wildland Fire Relative Risk Assessment Chart during the Periodic Fire Assessment. However, if the unit has the capability to complete full long-term risk assessments through the use of the Rare Event Risk Assessment Process (RERAP), Fire Area Simulator (FARSITE), or other quantitative methods, they are encouraged to do so. This will provide the best information available. In the event such quantitative methods cannot be completed in a timely manner, the wildland fire relative risk assessment can be used to obtain a subjective assessment of the risk. The Stage II Fire Situation can be updated as the current and forecasted weather and other situational factors change.

## ***Management Actions***

The Stage II planning level represents an escalation of both planning and operational actions over those needed for WFIP Stage I implementation. Management Actions in this stage can vary significantly, depending upon specific circumstances of the particular fire. In cases where the fire may be fuel-limited, surrounded by sparse fuels or natural barriers with limited spread potential in relation to values at risk, monitoring may be specified as the predominant implementation actions. Monitoring is necessary to track fire movement, fire activity, fire effects, and to provide information vital to completing the Wildland Fire Use Management Assessment. In other cases, monitoring plus some form of mitigation actions may be necessary. In still other cases, fuel types in which the fire is burning may require immediate actions to delay, direct, or check the spread of fire on one or more flanks. WFIP Stage II Management Actions should be designed to safely achieve the wildland fire use objectives as detailed in the Fire Management Plan and be based upon the fire situation and forecasted weather and fire behavior. These actions represent operational activities and resources needed to accomplish those activities until monitoring information or the Periodic Fire Assessment indicates a change in management planning and actions is required.

## ***Estimated Costs***

Cost Estimates developed in this stage represent projections of expenditures using the resources identified to accomplish the management actions and assume no escalation to Stage III. If the planning needs transition to Stage III, new Cost Estimates that reflect a new set of management actions and a firefighting resource mix will be prepared.

## ***Periodic Fire Assessment***

Once Stage II is completed, the Periodic Fire Assessment must be completed. The process can be continued from Stage I but the Signature Page must clearly reflect the change in "WFIP Planning Stage Required" from Stage I to Stage II. The Agency Administrator (or delegated individual) is required to periodically verify the capability to continue management of the fire as a WFU event. This process documents and ensures management accountability throughout the duration of the wildland fire use event.

The Periodic Fire Assessment consists of the same elements as described for WFIP Stage I (See WFIP Stage I Periodic Fire Assessment description for more information. These include:

- Decision Criteria Checklist
- Wildland Fire Relative Risk Assessment
- Wildland Fire Use Management Assessment
  - Part 1: Planning Needs Assessment
  - Part 2: Fire Use Manager Decision Chart
- Signature Page

## Wildland Fire Implementation Plan - Stage III:

|                            |  |
|----------------------------|--|
| <b>Purpose:</b>            | <p><b>Document a risk assessment and provide implementation actions necessary for management of a wildland fire to accomplish identified objectives over a potentially long-duration.</b></p> <p>This stage provides a definition of the acceptable management limits of individual or multiple fires, or fire complexes represented by the Maximum Manageable Area (MMA). It considers long-term fire behavior predictions and risk assessments and supports decision making. It identifies threats from the fire and addresses operational actions to mitigate or eliminate those threats.</p> |
| <b>Information Source:</b> | <p>Local expertise, experience, knowledge, maps, monitoring data, fire behavior predictions, risk assessment, and operational evaluation and identification of tactics and resources.</p> <p>MMA = staff negotiated and developed from objectives, maps, on-the-ground evaluation, aerial observation, monitoring, or as set by the FMP.</p>   |
| <b>Completion Time:</b>    | <p>Stage III of the Wildland Fire Implementation Plan must be completed within 7 days from when the Periodic Fire Assessment indicates the need. The Agency Administrator can direct it to be completed before the Periodic Fire Assessment does.</p>  |

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

Stage III consists of the information shown in the box to the right.

This stage details operational activities and documents the planning completed to ensure adequate mitigation actions have been developed to reduce or eliminate threats to values. These actions should reduce the probability that fire behavior or fire effects will exceed acceptable limits.

|  |
|--|
| <p><b>WFIP Stage III:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Objectives and Risk Assessment Considerations             <ul style="list-style-type: none"> <li>▪ Natural and Cultural resource objectives</li> <li>▪ Constraints</li> </ul> </li> <li><input type="checkbox"/> MMA Definition and Maps</li> <li><input type="checkbox"/> Weather Conditions and Drought Prognosis</li> <li><input type="checkbox"/> Long-Term Risk Assessment (describe techniques and outputs, include maps as appropriate)</li> <li><input type="checkbox"/> Threats             <ul style="list-style-type: none"> <li>▪ MMA</li> <li>▪ Public Use and Firefighter Safety</li> <li>▪ Smoke dispersion and effects</li> <li>▪ Other Resources</li> </ul> </li> <li><input type="checkbox"/> Monitoring Actions (actions, frequency, and duration)</li> <li><input type="checkbox"/> Mitigation Actions (describe holding actions, management action points that initiate these actions, and key to map if necessary)</li> <li><input type="checkbox"/> Resources needed to manage the fire</li> <li><input type="checkbox"/> Contingency Actions (describe actions necessary when mitigation actions are unsuccessful)</li> <li><input type="checkbox"/> Information Plan</li> <li><input type="checkbox"/> Estimated costs of long-term implementation actions</li> <li><input type="checkbox"/> Post-burn evaluation</li> <li><input type="checkbox"/> Signatures and Date</li> <li><input type="checkbox"/> Periodic Fire Assessment</li> </ul> |
|--|

## ***Objectives***

Objectives defined in WFIP Stage III represent site-specific statements of accomplishments for wildland fire use and provide a link back to Fire Management Plans and land use plans. These are very well-defined statements that describe what one or more wildland fires must accomplish to meet resource management objectives. They should be specific, measurable, achievable, related/relevant, and trackable. At the Stage III level, the most detailed tactical implementation of strategic objectives for wildland fire use activities takes place. At this level, the WFIP Stage III is a very detailed operational plan to guide implementation of fire management activities on the ground over potentially longer durations than in Stage I or II. Objectives will be formulated from local unit input, Agency Administrator direction, Fire Management Plans, and Land and Resource Management Plans.

## ***Maximum Manageable Area (MMA) Determination***

All wildland fires being managed under appropriate management response strategies identified in a WFIP Stage III will have a defined MMA. The MMA delineates the geographic limits of the fire area as defined by the capability of management actions to meet resource objectives and mitigate risk for a given wildland fire managed for resource benefits. It represents an important tool in the planning process and serves as a planning reference and not as a rigid prescription element. It is based primarily on natural defensibility and facilitates identification of threats to a management boundary and threats to values within and adjacent to that boundary. It provides a planning basis for risk assessment analyses. It provides for closely directed fire management application in a specific area defined by resource objectives, fire and weather prescription elements, social concerns, political considerations, and management capability.

Maximum Manageable Areas have the following attributes:

- All MMAs are developed from pre-determined areas identified in the Fire Management Plan or during the preparation of Stage III of the Wildland Fire Implementation Plan.
- All MMAs serve as a definition of geographic limits of management capability to meet resource objectives and accommodate the social, political, and resource impacts for all wildland fires managed to meet resource objectives.
- A fire exceeding the MMA does not require an automatic change to a different strategy. There will be cases where a change in strategy from Wildland Fire Use to Wildfire Suppression and the formal implementation of the WFS process because a wildland fire use event exceeded an established MMA is not prudent or logical. In these situations, experience may indicate that the MMA will be exceeded by the specific wildland fire on a very small or non-threatening scale. Management options in this situation include:
  - ❖ Constraining the fire spread to the small or non-threatening overrun of the original acceptable area using whatever resources are available to deal with the situation. Containment must be accomplished within 48 hours of the end of that burning period, or the fire must be converted to a wildfire accompanied by a WFS. If containment is successful, management of the fire as a WFU will continue. If the fire is converted to a wildfire, no further acreage gain may be attributed to Wildland Fire Use.
  - ❖ In the case of spotting, any spot occurring outside the MMA from a naturally-ignited fire inside the MMA managed for resource benefits is considered as a natural process and may be treated as a separate fire available to be managed as a WFU. The appropriate management action for this new ignition will be determined separately from the original wildland fire, based on criteria specific to this fire.

- If the Agency Administrator and Fire Management Officer determine that the fire cannot continue to be managed within its original approved boundary, it will be declared a wildfire and a WFSA will be utilized to select a new strategic alternative and appropriate management response.
- An MMA cannot be changed solely on the basis of spread of a single fire toward the MMA in the absence of an imminent season ending event. This type of activity must be anticipated and addressed in the threats and mitigation actions sections of the WFIP Stage III.
- The MMA can be changed to accommodate changes in the management situation. These changes include, but are not limited to, the occurrence of new ignitions managed for resource benefits inside the existing MMA, the occurrence of new fires within and adjacent to the MMA or outside and in close proximity to the existing MMA, the need to prepare a new WFIP based on changing situation and fire duration, a forthcoming season ending event, etc

### ***Weather Conditions and Drought Prognosis***

A discussion of current weather conditions and trends in comparison to historical records provides insight into the relative severity of the current situation, reinforces fire danger indicators, and supports decision making. A review of the drought situation provides additional support to fire danger indicators and supports current and future decisions. This information is available from historical weather records, climatological reviews, research information, wildland fire assessment tools, and National Weather Service archives. Information presented here is valuable in further defining the hazard posed by the specific fire(s) being managed. Kinds of information useful for this discussion include, but are not limited to:

- Historical weather trends and patterns
- General wind patterns
- Historical wind direction analyses
- Climatological probabilities
- Historical length of fire season
- Severity of the current season and comparison with other significant fire years
- Seasonal drought outlook
- Precipitation probability over defined time periods

### ***Long-Term Risk Assessment***

Decision-making associated with managing wildland fire for resource benefits can have critical impacts. Risks and uncertainties relating to wildland fire use must be understood, analyzed, communicated, and managed as they relate to the cost of either doing or not doing an activity. It is important to make high quality and informed decisions. Decision-making is facilitated by factual information and prediction of outcomes or consequences of the decision. Of particular importance is the ability to assess the degree of risk presented by the particular wildland fire.

The importance of risk assessment is reinforced through the Guiding Principles from the Fire Policy and affirmed by the 2003 Implementation Strategy that state, "Sound risk management is a foundation for all fire management activities," and "Fire management plans are based on the best available science."

The qualitative process used in Stage I and the Periodic Fire Assessment affords a quick and simple way to estimate fire risk. This process is based on assessing the values, hazard, and probability from a fire. Since the decision to suppress or manage the fire is time constrained, it is not always possible to complete a quantitative long-term assessment of risk. In lieu of the quantitative long-term risk

assessment, this qualitative assessment process provides the Agency Administrator with a quick and fairly comprehensive assessment of the "relative risk" of the fire

During the most detailed planning stage of the WFIP (Stage III), an assessment of the long-term risk that a particular fire may present is required. This is critical input information to ongoing management activities, development of mitigation strategies and actions, continuing support for decisions about the fire, and future implementation activities. Technological advances in fire behavior prediction, meteorological analysis, fire spread estimation, fire effects prediction, smoke production and dispersal, rare event assessment, and fire area simulation make it possible to obtain better information, reduce uncertainty, assess potential fire outcomes, evaluate consequences of failure, and determine probabilities of success more effectively than ever before. Using these techniques to gain the type of information necessary for consideration in decision-making promotes better management choices and ultimately, more desirable outcomes. As new technology becomes operationally available for application in management situations, it will be utilized to improve operational actions to the greatest degree possible. The Long-Term Risk Assessment is also based on the principles of assessing values, hazard, and probability. These three elements are not directly assessed in the risk assessment, but pervade the entire Stage III planning process. The sum total of this information is used by the Agency Administrator to reduce uncertainty and support management decisions and actions.

Specific assessment outputs useful in evaluating long-term risk include:

- Indications of how the fire may burn; predictions of intensity and severity,
- Fuel conditions, moisture conditions, departures from average conditions,
- Fire dynamics - indicators of potential rapid escalation in fire behavior,
- Analysis and comparison of current fire danger indicators with historical data and trends,
- Fire history reviews, records of past fires in terms of area burned and type of fires (i.e., low - moderate intensity, surface fire, stand replacement, etc.),
- Probability of the fire reaching the planning area boundary (MMA),
- Probability of a season-ending weather event,
- Probability of a fire-slowng weather event,
- Probability of a large spread weather event,
- Indications of where the fire may spread, or total area that may be burned by the fire,
- How fast the fire will travel,
- How soon the fire may reach critical sites or the planning area boundary,
- Predictions of the range of potential fire effects on natural and cultural resources,
- Probability of adverse smoke events and dispersal.
- Review of past precipitation history.

An array of decision-making support aids is available to support wildland fire assessments. The choice of technique will depend on the information needed and the state of knowledge regarding that subject area. Techniques may range from a subjective, descriptive comparison to a very objective in-depth analysis using sophisticated mathematical models and quantitative data as available on the local unit. The Stage III Long-Term Risk Assessment provides quantitative information derived from specific analyses which utilize historic weather data, long-term climatological data, fuel moisture data, fuel conditions, fire danger, seasonal severity, satellite imagery, and simulation modeling. Use of technological tools is appropriate when a specific method can give the decision-maker information that reduces uncertainty associated with possible outcomes and facilitates the best decision possible.

No mandatory requirements exist for risk assessment. **However, in the WFIP Stage III, an assessment must be completed that yields some of the information listed in the output list above.** Units are encouraged to acquire input information and data and to utilize available long-term risk assessment techniques such as the Rare Event Risk Assessment Process (RERAP) Fire Area Simulator (FARSITE), fire effects indicators such as those gained from the Fire Order Fire Effects Model (FOFEM),

and smoke emissions models. Risk assessments will both utilize and affect information contained in the Weather Conditions and Drought Prognosis, Threats to the MMA, Threats to Public Use and Firefighter Safety, Threats to Smoke dispersion and effects sections of the WFIP Stage III. Assessment outputs will have a direct bearing on information developed and included in the Monitoring Actions, Mitigation Actions, Resources needed to manage the fire, and Contingency Actions sections of the WFIP Stage III. As the quality of risk assessment increases, the quality of subsequent decisions and probability of desirable outcomes will increase. Units should strive for the highest quality decisions possible.

Table 3 illustrates some common models useful in assessing wildland fire.

**Table 3.** Computer applications for assessing wildland fire.

| <b>Model</b>  | <b>Description</b>  |
|---|---|
| <b>BehavePlus</b>   | <p>BehavePlus can be used to predict a number of different factors given different fuel loadings, arrangements, and weather that describe fire behavior, in terms of rate of spread, flame length, size of fire, and spotting distances.</p> <p>The BehavePlus fire modeling system is a PC-based program that is a collection of models that describe fire and the fire environment. It is a flexible system that produces tables and graphs and can be used for a multitude of fire management applications. BehavePlus is the successor to the <i>BEHAVE fire behavior prediction and fuel modeling system</i>.</p>  |
| <b>CANADIAN FOREST FIRE DANGER RATING SYSTEM (CFFDRS)</b> | <p>The CFFDRS is comprised of two primary subsystems: The FWI, or Fire Weather Index System and The FBP, or Fire Behavior Prediction System. The FWI System depends solely on daily weather measurements, is a good indicator of several aspects of fire activity, and is best used as a measure of general fire danger for administrative purposes.</p> <p>The FBP System allows the user to predict the rate of spread (meters per minute), fuel consumption (kilograms per square meter), and intensity (kilowatts per meter) at the head, back, or flanks of fires that are still accelerating after ignition or have reached a steady-state condition with their environment. A general description of the type of fire is also given (for instance, surface fire or intermittent crowning). A simple elliptical fire growth model is employed in estimating the size and shape of fire originating from a single ignition source as opposed to an established line of fire.</p> |
| <b>CONSUME</b>  | <p>Consume 2.1 is a PC-based, interactive fuel consumption model that predicts total and smoldering fuel/biomass consumption during prescribed fires and wildland fires. Predictions are based on weather data, the amount and fuel moisture of fuels, and a number of other factors.</p>   |
| <b>FARSITE (Fire Area Simulator)</b>                      | <p>A fire growth simulation model that computes fire behavior and spread over a range of time under conditions of heterogeneous terrain, fuels, and weather. This model projects where and how fast a fire may spread and how hot or intense it may burn. It is a fire growth simulation model that uses spatial information on topography and fuels along with weather and wind files. It incorporates the existing models for surface fire, crown fire, spotting, post-frontal combustion, and fire acceleration into a 2-dimensional fire growth model.</p>  |

|   |  |
|---|--|
| <b>FFE-FVS (Fire and Fuels Extension – Forest Vegetation Simulator)</b> | A model developed to simulate forest growth and yield but has been adapted to provide information for fuels reduction. Expected fire behavior and effects if a wildland fire burns through an area over the simulation period.   |
| <b>FireFamilyPlus</b>   | The fire climatology and occurrence program that combines and replaces the PCFIRDAT, PCSEASON, FIRES, and CLIMATOLOGY programs into a single package with a graphical user interface for the PC.   |
| <b>FIREMON</b>  | FIREMON is an inventory and fire effects monitoring package that provides fire managers with sampling methods, data storage, and a data analysis package.  |
| <b>FlamMap</b>  | A software program that creates geographic information system maps of potential fire behavior characteristics and environmental conditions. It is not a replacement for <i>FARSITE</i> or a fire growth simulation model. There is no temporal component in FlamMap. It uses spatial information on topography and fuels to calculate fire behavior characteristics at one instant.  |
| <b>FEIS (Fire Effects Information System)</b>                           | Fire effects Information System-provides up-to-date information on fire effects on plants, animals, and ecosystems.  |
| <b>FOFEM (First Order Fire Effects Model)</b>                           | A computer program for predicting tree mortality, fuel consumption, smoke production, and soil heating caused by prescribed fire or wildfire. First order fire effects are those that concern the direct or indirect or immediate consequences of fire. First order fire effects form an important basis for prediction of secondary effects such as tree regeneration plant succession, and changes in site productivity, but these long-term effects generally involve interaction with many variables (for example, weather, animal use, insects, and disease) and are not predicted by this program. Currently, FOFEM provides quantitative fire effects information for tree mortality, fuel consumption mineral soil exposure, smoke and soil heating. |
| <b>LANDFIRE</b>   | LANDFIRE is a wildland fire, ecosystem, and fuel assessment-mapping project designed to generate consistent, comprehensive, landscape-scale maps of vegetation, fire, and fuel characteristics for the United States. LANDFIRE includes a Rapid Assessment, which will map and model Fire Regime Condition Class (FRCC) at a broad-scale resolution for the entire United States by the summer of 2005. The Rapid Assessment is designed to fill data needs before the entire suite of LANDFIRE products is available and to help refine reference vegetation dynamics models for the LANDFIRE project.  |
| <b>NFDRS (National Fire danger Rating System)</b>                       | This system combines weather, climate, and fuels information to predict the relative fire danger and potential for wildland fires to occur on a daily basis.   |
| <b>NEXUS</b>  | A crown fire hazard analysis software that links separate models of surface and crown fire behavior to compute indices of relative crown fire potential. NEXUS can be used to compare crown fire potential for different stands, and to compare the effects of alternative fuel treatments on crown fire potential. NEXUS includes several visual tools useful in understanding how surface and crown fire models interact.  |

|  |   |
|--|---|
| <b>RERAP (Rare Event Risk Assessment Process)</b>  | Determines probabilities that a wildland fire will reach or exceed an MMA or reach an area of concern due to a rare weather event. It also can provide probabilities of a season-ending event and smoke events.   |
| <b>VCIS</b>  | The ventilation climate information system (VCIS) allows users to assess risks to values of air quality and visibility from historical patterns of ventilation conditions.  |
| <b>VDDT (Vegetation Dynamics Development Tool)</b> | This model uses state in transition models or box and arrow diagrams to show how vegetation can change over time.   |
| <b>WFAS (Wildland Fire Assessment System)</b>      | The Wildland Fire Assessment System is an internet-based information system. The current implementation provides a national view of weather and fire potential, including national fire danger and weather maps and satellite-derived "Greenness" maps. |

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## ***Threats***

Identification of all known and anticipated threats is critical in evaluating values, hazard, and probability for the fire(s). The nature of long-term strategic planning involves anticipating and predicting where the fire may move to, what it may impact, and designing a strategy to minimize or eliminate those impacts. Threats must be defined for the MMA boundary, all sensitive natural and cultural resources inside and immediately outside that boundary, firefighters and the public, air quality, and other concerns as appropriate. Once a threat is defined in this section of the Stage III, it must be linked through subsequent sections and appropriate actions (monitoring and mitigation) must be tied to that identified threat.

## ***Monitoring Actions***

A monitoring plan of action is necessary to ensure successful accomplishment of the objectives and to continually acquire information relevant to the fire situation. Monitoring is useful for documenting observed fire weather, observed fire behavior, fire movement toward management action points (MAP), fire effects, smoke dispersal and volume, and to aid in validating fire behavior and weather forecasts. Monitoring variables that are important can include, but are not limited to: smoke dispersal, live and dead fuel moistures, daily weather observations, fire perimeter and progression mapping, and observed fire behavior. Monitoring frequency will be based on fire activity and location. All monitoring information will be analyzed, applied as needed, and archived as part of the final documentation package.

## ***Mitigation Actions***

Science-based risk assessments, as discussed in the previous section, provide a solid foundation for developing a successful risk management/mitigation strategy. But, it must be clearly understood that risk assessment and risk management are not synonymous. Based on the risk assessment, decision-makers decide what to do about managing the risk. A part of the WFIP Stage III is a detailed plan that identifies mitigation actions, the activities for mitigating or eliminating risk. Risk can be mitigated or eliminated in three central ways: reduce the hazard, reduce the probability of the hazardous event occurring, and reduce the value of potential losses that could occur from the risk.

In wildland fire use, the first two risk mitigation types are the most frequently utilized, identified as mitigation actions in the implementation plan, and implemented as needed. Mitigation actions are on-

the-ground activities that serve to increase the defensibility of a particular point, area, or line, like a planning area boundary (to reduce the probability of the hazardous event occurring); to check, direct, or delay the spread of fire (reduce the hazard); and to minimize threats to life, property, and resources (reduce value of potential losses or impacts). Mitigation Actions serve to mitigate or eliminate identified threats and may include non-fire tasks (such as closures, evacuations, management actions to reduce impacts from smoke, etc.) and specific fire applications.

Management action points are tactical decision points, either geographical points on the ground both inside and outside the MMA or specific points in time where an escalation or alteration of management actions is warranted in response to fire activity, proximity to identified threats, time of season, weather changes, or management decisions. The points are placed on maps that accompany the WFIP. They can be started in Stage II and added to in Stage III for long range needs. These points must be tied to identified threats in the plan. Each management action point will have one or more corresponding mitigation actions described which will need implementation when the fire reaches it or after a specified time period. This documentation stays with the fire through its management and is amended periodically as new management action points and mitigation actions are developed. As management personnel change over the life of a wildland fire, this documentation provides continuity in direction needed when a fire approaches the management action point.

### ***Resources Needed to Manage the Fire***

Based on the Monitoring and Mitigation Actions, the Information Plan, and management oversight and qualifications needed to accomplish the objectives, resources needed to implement the plan and accomplish the objectives must be identified in this section. Resources identified here include those needed for the projected duration of operations as described in Stage III.

### ***Contingency Actions***

Contingency actions are actions necessary when mitigation actions are unsuccessful (impacts to values could occur). They are identified for implementation to control the spread of fire into unwanted areas or to prevent it from adversely impacting a sensitive value (reduce hazard and/or probability). For example, if the fire crosses the MMA at any point along the perimeter and mitigation was unsuccessful, on-site firefighting resources will be utilized to achieve control. If control cannot be accomplished, the fire will be converted to a wildfire. All fires that are converted wildfires will have a WFSA prepared to select the proper strategic alternative and identify necessary resources. Contingency actions may also include pre-planned coordinated actions with air regulatory agencies in the event that forecast or smoke management plans are not accurate.

### ***Information Plan***

Among agency staff, cooperators, and affected publics, fire use objectives, risks, and tradeoffs are not always well understood or well accepted. Communication and education of all agency personnel involved with the planning and implementation of the use of wildland fire is crucial to successful program implementation. An understanding of the guiding principles and objectives by the public and media is essential for full social and political acceptance and endorsement of this program. As a result, it is becoming increasingly important to establish and maintain an aggressive and efficient communication and education effort for wildland fire use programs and for each wildland fire that is managed. In addition, wildland fire use operational actions are often viewed negatively.

This element of the WFIP Stage III provides documentation of the role of Information during the wildland fire use event, the message to be communicated, and operational procedures and processes to ensure that the information reaches all applicable audiences and supports local unit needs.

## ***Estimated Costs***

Cost Estimates developed in this Stage are projections of expenditures expected to be incurred during implementation over the predicted duration of the fire. These estimates will include both costs expended to date and projections from the signed date into the future.

## ***Post-Burn Evaluation***

Post-burn evaluations will be conducted as dictated by Agency Policy to evaluate the degree of accomplishment of stated objectives and desired fire effects. Secondly, an evaluation of the total operation is vital to improvement of programmatic efficiency. Specific areas that may be evaluated include, but are not limited to:

- Management and mitigation of safety,
- Use of best available science, including weather and fire behavior forecasts, long-term risk assessments, fire growth simulations if applicable,
- Short-term fire effects,
- Public information and education, notification of individuals, groups, and areas potentially impacted by fires,
- Consistency with land and resource management plans and fire management plans,
- Attention to resource management issues and concerns.

## ***Signatures and Date***

The WFIP Stage III must be approved by the Agency Administrator or delegated individual upon completion. This approval is documented by signature and date at the end of the Stage III. This approval does not constitute the Periodic Fire Assessment which must be continued on the set frequency after completion of the Stage III.

## ***Periodic Fire Assessment***

Once Stage III is completed, the Periodic Fire Assessment is completed. The process can be continued from Stage I or II but the Signature Page must clearly reflect the change in "WFIP Planning Stage Required" to Stage III. The Agency Administrator (or delegated individual) is required to periodically affirm the capability to continue management of the fire as a WFU event. This process will document and ensure management accountability throughout the duration of the wildland fire use event.

The Periodic Fire Assessment consists of the same elements as described for WFIP Stage I (See WFIP Stage I Periodic Fire Assessment description for more information. These include:

- Decision Criteria Checklist
- Wildland Fire Relative Risk Assessment
- Wildland Fire Use Management Assessment
  - Part 1: Planning Needs Assessment
  - Part 2: Fire Use Manager Decision Chart
- Signature Page

## **Chapter 4: Wildland Fire Use Management Organizations**

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### **Organizational Needs**

Managing wildland fire for a wide range of objectives across diverse land uses and vegetative complexes subject to a mixture of fire regimes is one of the highest risk and complex programs facing natural resource managers. Organizational needs to complete this management vary significantly with site-specific circumstances. All wildland fires managed for resource benefits (wildland fire use) will have a position commensurate with the fire situation and needs (see Wildland Fire Use Assessment) assigned. The additional personnel necessary to accomplish the objectives and implement the WFIP will be determined for the specific situation locally.

No interagency standards exist for the configuration of teams responsible for preparation of Wildland Fire Implementation Plans, the duration of time that they must be in place, and what products they must create. Use of an Incident Action Plan is appropriate for all fires that exceed the first few days when actions must be performed by on-the-ground personnel. This is a safety concern and is necessary to provide clear and concise direction, to document assigned resources and mitigation actions and other safety issues like frequency assignments and emergency medivac procedures. Long term management of wildland fires include periods of fire behavior that range from extremely active to inactive. Fire activity will cycle with weather, fuel moisture and availability, and successful implementation of mitigating actions. Having someone with expert fire behavior knowledge in the management organization is advised.

As conditions escalate, management needs will increase; additional personnel can be added to support and assist the Fire Use Manager, and, if conditions extend to the highest difficulty levels, a formal management team can be ordered. These formalized teams may make the most significant contribution in support of local units and management of the fire. These teams may be developed locally from unit and cooperator personnel or be formal, established Fire Use Management Teams (FUMT) obtained through the established resource ordering process. A Fire Use Management Team has a minimum standard of Type II qualified personnel, with the IC having attended S-580 Advanced Fire Use Applications. The FUMT includes an Incident Commander, Planning Section Chief, Operations Section Chief, Logistics Section Chief, Safety Officer, Information Officer and Long Term Fire Behavior Analyst (LTAN). Normally at least three additional positions are filled which may be different on each assignment and are determined by the Incident Commander and the Agency Administrator.

The capability to predict fire behavior and assess long term management considerations is critical and in most situations is done by the LTAN who is trained in using fire behavior and risk assessment models and familiar with information technology. The LTAN is critical in predicting the potential area and extent of burning, assessing long-term risk, and validating the maximum manageable area (MMA). He/she also predicts the potential of a fire to reach certain values that may be threatened over the long term and the potential timing of a fire ending event. An FBAN provides tactical fire behavior predictions, obtains weather observations and forecasts, and assesses short-term risk.

Amending the WFIP is important. In the Stage I and Stage II levels the WFIP will require amending as often as the current and forecasted weather expires, which is an element of those Stages. This can be expected to happen every 5-7 days at a minimum. Stage III may be more encompassing in regard to long-term assessment and mitigation planning but will also require periodic amendments. Normally as

the fire season progresses, new mitigation actions are developed and new fires may be authorized in the original MMA. Mapping, weather predictions and seasonal severity assessments will change over the life of the fire which need to be included as updated information becomes available. Agency Administrators are required to approve any amendments to the plan as they occur.

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## Appendix A:

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### Wildland Fire Implementation Plan

Standardized, reproducible forms for the WFIP process are included in this Appendix. While a standardized format is provided for the WFIP (in Word format) that can be used to prepare the document, an electronic version similar to the WFSA electronic program will be available. Users can choose to prepare a WFIP by using the forms presented in this Appendix or by using the electronic version when available.

Specific forms are included for the complete WFIP:

#### WFIP Stage I:

- Strategic Fire Size-Up
- Decision Criteria Checklist
- Relative Risk Rating
  - Wildland Fire Relative Risk Assessment: Step 1: Determining Values
  - Wildland Fire Relative Risk Assessment: Step 2: Determining Hazard
  - Wildland Fire Relative Risk Assessment: Step 3: Determining Probability
  - Wildland Fire Relative Risk Assessment: Step 4: Determining Wildland Fire Relative Risk
- Planning Needs Assessment Chart
- Fire Use Manager Decision Chart

#### WFIP Stage II:

#### WFIP Stage III



# WFIP Stage I:

## *Strategic Fire Size-Up:*

|   |                       |                  |
|---|-----------------------|------------------|
| <b>Fire Name</b>                              |                       |                  |
| <b>Fire Number</b>                            |                       |                  |
| <b>Administrative Unit(s)</b>                 |                       |                  |
| <b>Start Date/Time</b>                        |                       |                  |
| <b>Discovery Date/Time</b>                    |                       |                  |
| <b>Current Date/Time</b>                      |                       |                  |
| <b>Current Size</b>                           |                       |                  |
| <b>Fuel Model</b>                             |                       |                  |
| <b>Current Weather</b>                        |                       |                  |
| <b>Observed Fire Behavior</b>                 |                       |                  |
| <b>Location:<br/>Legal Description(s)</b>     |                       |                  |
| <b>Latitude<br/>Longitude</b>                 |                       |                  |
| <b>Local Description</b>                      |                       |                  |
| <b>FMU</b> (circle appropriate FMU situation) | WFU not Approved      | WFU Approved     |
| <b>Cause</b> (circle fire cause)              | Human Caused Ignition | Natural ignition |

|   |                    |   |                 |                  |
|---|--------------------|---|-----------------|------------------|
| <b>Suitability for Wildland Fire Use</b><br>(circle situation, initials of person preparing, date/time) | <b>Suppression</b> | <b>Wildland Fire Use Candidate –</b><br>Continue with Decision Criteria Checklist | <b>Initials</b> | <b>Date/Time</b> |
|   |                    |   |                 |                  |

# Decision Criteria Checklist

## Decision Element

**Is there a threat to life, property, or public and firefighter safety that cannot be mitigated?**

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

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

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

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

| Yes | No |
|-----|----|
|     |    |
|     |    |
|     |    |
|     |    |
|     |    |

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

| Recommended Response Action (check one) |  | Signature/Position | Date |
|---|--|--------------------|------|
| Suppression Response                    |  |                    |      |
| Wildland Fire Use Response              |  |                    |      |

### Justification for Suppression Response:

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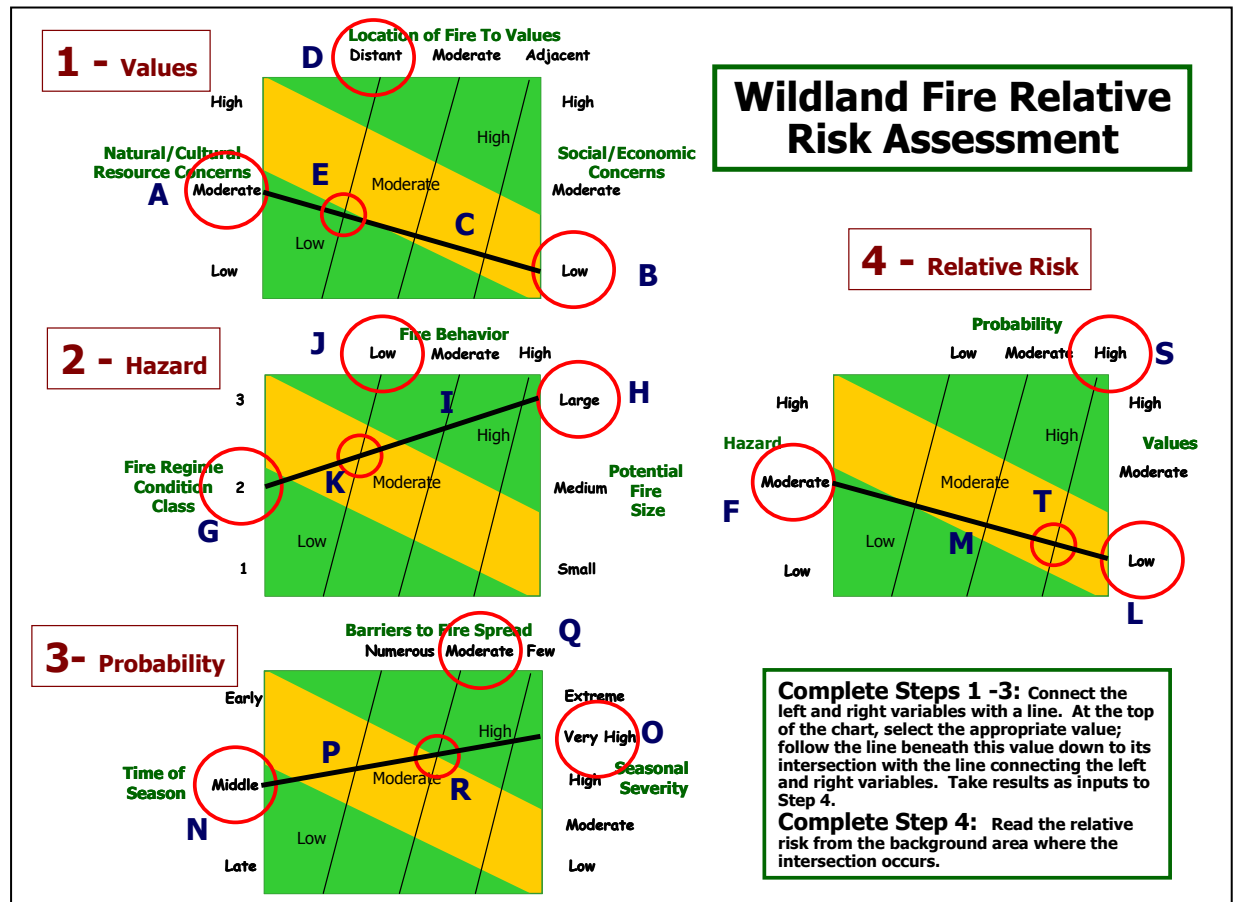
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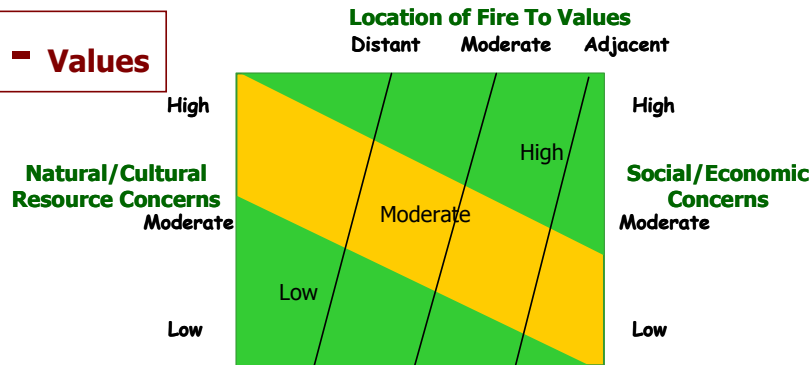
|          |        |   |
|----------|--------|---|
| <b>A</b> | Step 1 | Locate Natural/Cultural Resource Concern level  |
| <b>B</b> | Step 1 | Locate Social/Economic Concern level  |
| <b>C</b> | Step 1 | Draw line connecting left and right variables   |
| <b>D</b> | Step 1 | Locate Location of Fire to Values level   |
| <b>E</b> | Step 1 | Follow interior line down to intersection with line connecting left and right variables, locate Value Assessment output (Low, Moderate, High)       |
| <b>F</b> | Step 4 | Take Step 1 - Value Assessment output to Step 4 as Value input  |
| <b>G</b> | Step 2 | Locate Fire regime condition class level  |
| <b>H</b> | Step 2 | Locate Potential Fire Size level  |
| <b>I</b> | Step 2 | Draw line connecting left and right variables   |
| <b>J</b> | Step 2 | Locate Fire Behavior level  |
| <b>K</b> | Step 2 | Follow interior line down to intersection with line connecting left and right variables, locate Hazard Assessment output (Low, Moderate, High)      |
| <b>L</b> | Step 4 | Take Step 2 - Hazard assessment output to Step 4 as Hazard input  |
| <b>M</b> | Step 4 | Draw line connecting Value and Hazard levels  |
| <b>N</b> | Step 3 | Locate Time of Season level   |
| <b>O</b> | Step 3 | Locate Seasonal Severity level  |
| <b>P</b> | Step 3 | Draw line connecting left and right variables   |
| <b>Q</b> | Step 3 | Locate Barriers to Fire Spread level  |
| <b>R</b> | Step 3 | Follow interior line down to intersection with line connecting left and right variables, locate Probability Assessment output (Low, Moderate, High) |
| <b>S</b> | Step 4 | Take Step 3 – Probability assessment output to Step 4 as Probability input  |
| <b>T</b> | Step 4 | Follow interior line down to intersection with line connecting left and right variables, locate Relative Risk Assessment (Low, Moderate, High)      |

## Step-By-Step Instructions for Completing the Wildland Fire Relative Risk Assessment

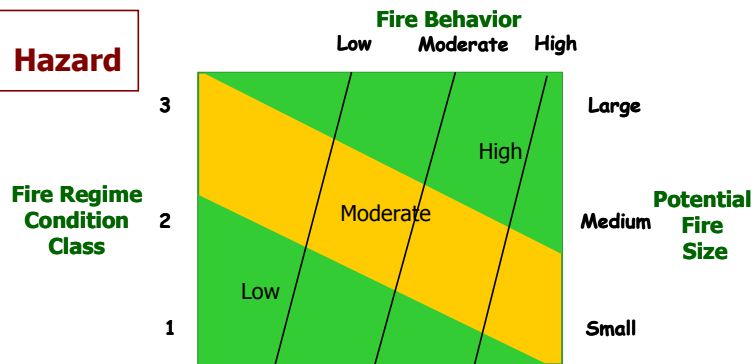


# Wildland Fire Relative Risk Assessment

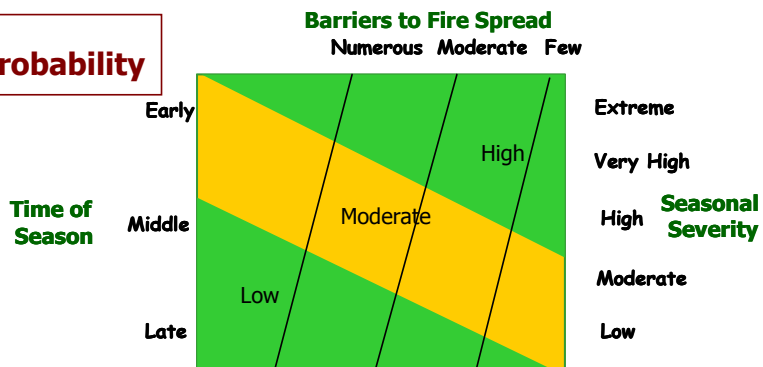
## 1 - Values



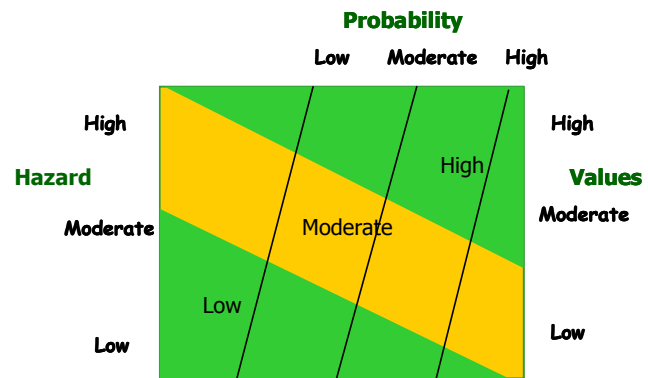
## 2 - Hazard



## 3 - Probability



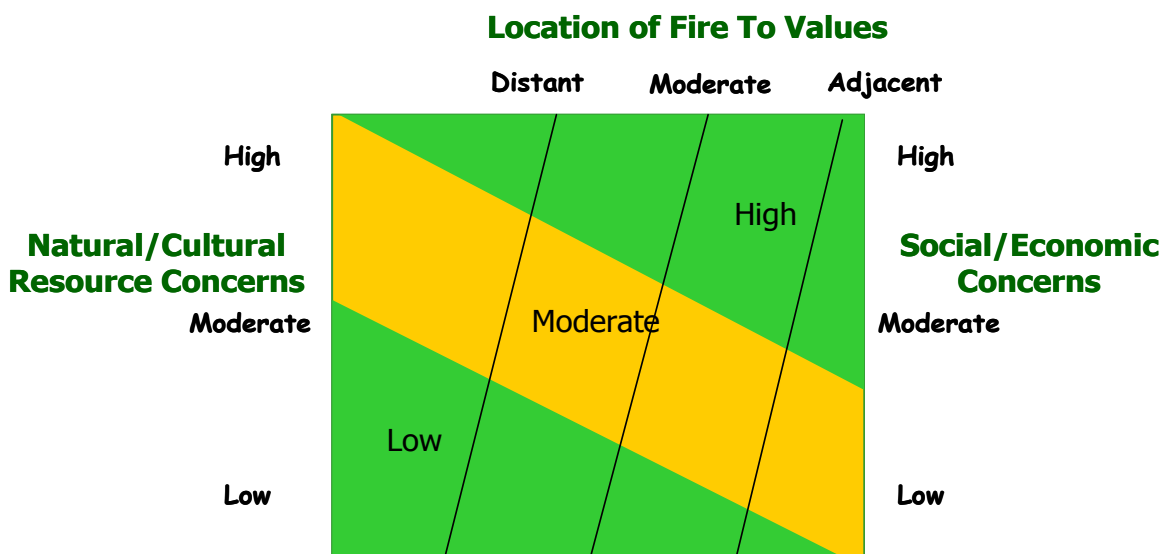
## 4 - Relative Risk



**Complete Steps 1 -3:** Connect the left and right variables with a line. At the top of the chart, select the appropriate value; follow the line beneath this value down to its intersection with the line connecting the left and right variables. Take results as inputs to Step 4.

**Complete Step 4:** Read the relative risk from the background area where the intersection occurs.

# Wildland Fire Relative Risk Assessment: Step 1: Determining Values



Connect the left and right values with a line. At the top of the chart, select the appropriate value; follow the line beneath this value down to its intersection with the line connecting the left and right variables. Read the Value Assessment from the background area where the intersection occurs.

## Notes:

**PART 1: VALUE ASSESSMENT:** Values are those ecologic, social, and economic effects that could be lost or damaged because of a fire. Ecologic values consist of vegetation, wildlife species and their habitat, air and water quality, soil productivity, and other ecologic functions. Social effects can include life, cultural and historical resources, natural resources, artifacts, sacred sites. Economic values make up things like property and infrastructure, economically valuable natural and cultural resources, recreation, and tourism opportunities. This assessment area allows opportunity for the local agency administrator to identify particular local concerns. These concerns may be identified in the fire management plan or other planning documents.

**Natural/Cultural Resource Concerns** - key resources potentially affected by the fire. Examples include, but are not limited to habitat or populations of threatened, endangered, or sensitive species, water quality, erosion concerns, and invasive species.

| Low   | Moderate  | High   |
|---|---|--|
| Resource concerns are few and generally do not conflict with management of the fire. Mitigation measures are effective. | Significant resource concerns exist, but there is little conflict with management of the fire. Mitigation measures are generally effective. | Multiple resource concerns exist, some of which may conflict with management of the fire. The effectiveness of needed mitigation measures is not well established. |

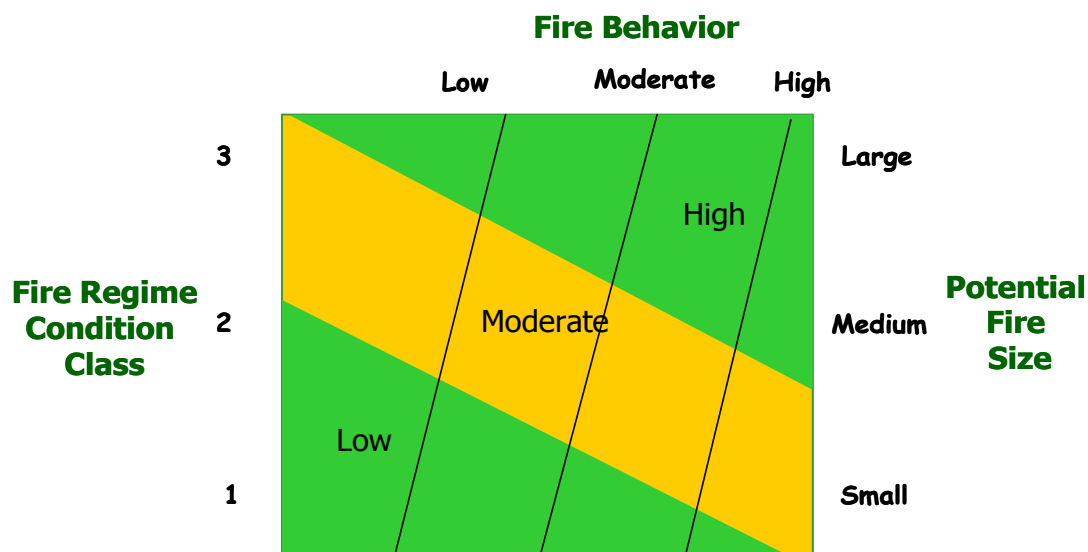
**Social/Economic Concerns** - the risk of the fire, or effects of the fire, impacting the social or economic concerns of an individual, business, community or other stakeholder involved with or affected by the fire. Social concerns may include degree of support for the Wildland Fire Use program or resulting fire effects, potential consequences to other fire management jurisdictions, impacts to tribal subsistence or gathering of natural resources, air quality regulatory requirements and public tolerance of smoke. Economic concerns may include potential financial impacts to property, business, or infrastructure. Infrastructure impacts may be costs to repair or replace sediment catchments, wildlife guzzlers, corrals, roads, culverts, power lines, domestic water supply intakes, and similar items.

| Low   | Moderate   | High  |
|---|--|---|
| Local support for wildland fire use is high. The fire should have little or no impact on subsistence or tribal activities involving treaty rights. The fire is expected to remain within a single jurisdiction or agreements are in place to allow the fire to move across several jurisdictions. Media coverage is favorable. Few structures or business ventures are potentially affected by the fire. There are few impacts to recreation and tourism. | Local support of wildland fire use is clearly divided between supporters and opponents. The fire will have some impacts on subsistence or tribal activities involving treaty rights. The fire is expected to involve more than one jurisdiction, cooperator, or special interest group and agreements need to be developed. Media coverage tends to be a mix of favorable and unfavorable views. Some structures may be threatened by the fire or some business ventures have been affected by the fire. | Local support for wildland fire use is low. The fire will have significant impacts on subsistence activities or tribal activities involving treaty rights. Smoke impacts may become a concern for higher level air quality regulatory agencies. The fire is expected to involve several jurisdictions, cooperators, and special interest groups and agreements requiring significant negotiation need to be developed. Media coverage tends to be unfavorable. Many structures or private properties could be threatened. |

**Location of Fire to Values**

| Distant   | Moderate  | Adjacent  |
|---|---|---|
| Fire location is not proximate to values to be protected or fire is located where it is highly unlikely that it would reach the values. | Fire location is moderately proximate to values. Location is such that, based on historical data, fire could potentially reach the values but will take multiple burning periods and sustained fire activity to reach the values. | Fire location is in close proximity to values. Without mitigation actions, fire will be expected to reach the values. |

## Wildland Fire Relative Risk Assessment: Step 2: Determining Hazard



Connect the left and right values with a line. At the top of the chart, select the appropriate value; follow the line beneath this value down to its intersection with the line connecting the left and right variables. Read the Hazard Assessment from the background area where the intersection occurs.

### Notes:

**PART 2: HAZARD ASSESSMENT:** The hazard in wildland fire is made up of the conditions under which it occurs and exists, its ability to spread and circulate, the intensity and severity it may present, and its spatial extent.

**Current Fire Behavior** – the current fire behavior or that most recently observed. Changing fire behavior is addressed through repeated completion of the Periodic Fire Assessment.

| Low   | Moderate  | High   |
|---|---|--|
| Short duration flaming front with occasional torching. Fuels are uniform and fire behavior can be easily predicted and tactics implemented. | Short range spotting occurring. Moderate rates of spread are expected with mainly surface fire and torching. Fuels and terrain are varied but don't pose significant problems in holding actions. | Long range spotting > ¼ mile. Extreme rates of spread, and crown fire activity are possible. Fuels, elevation, and topography vary throughout the fire area creating high resistance to control. |

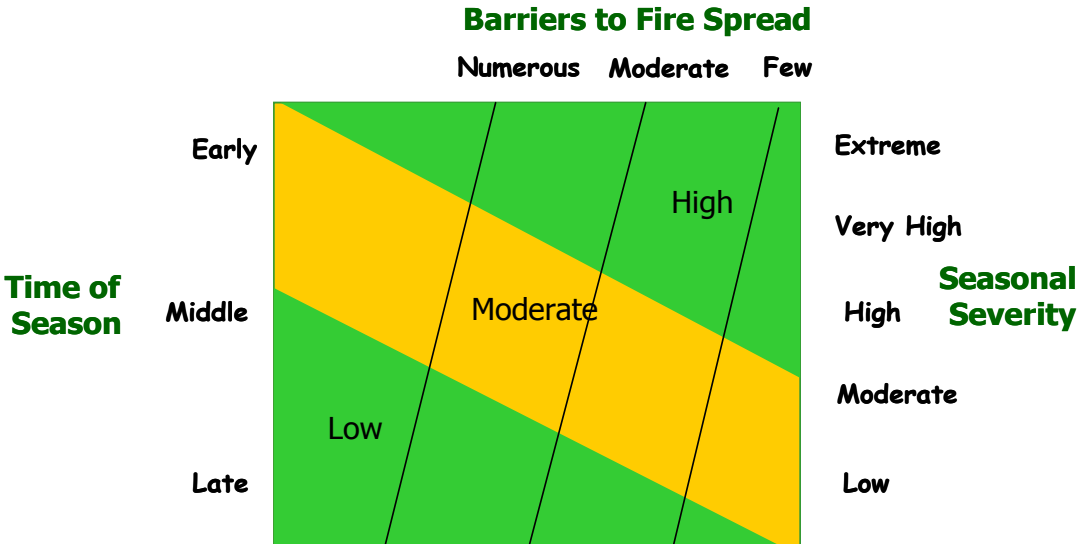
**Fire Regime Condition Class** – a measure of ecological functions at risk based on changes in vegetation.

| 1   | 2   | 3   |
|---|---|---|
| Vegetative composition and structure are resilient and key components are at low risk of loss. Few, if any, fire return intervals have been missed and fuel complexes are similar to historic levels. | Both the composition and structure of vegetation has shifted towards conditions that are less resilient and more at risk of loss. Some fire return intervals have been missed, stand structure and composition, and fuel complexes have been altered and present potential for fires of severity and intensity levels in excess of historic levels. | The highly altered composition and structure of the vegetation predisposes the landscape to fire effects well outside the range of historic variability, potentially producing changed fire environments never before measured. |

**Potential fire size** - the potential fire size by the end of the season in comparison to historical fire occurrence.

| Small   | Medium   | Large  |
|---|--|--|
| Fire size is expected to be small for the dominant fuel type involved | Fire size is expected to be in the mid-range for the dominant fuel type involved | Fire size is expected to be large for the dominant fuel type involved. |

# Wildland Fire Relative Risk Assessment: Step 3: Determining Probability



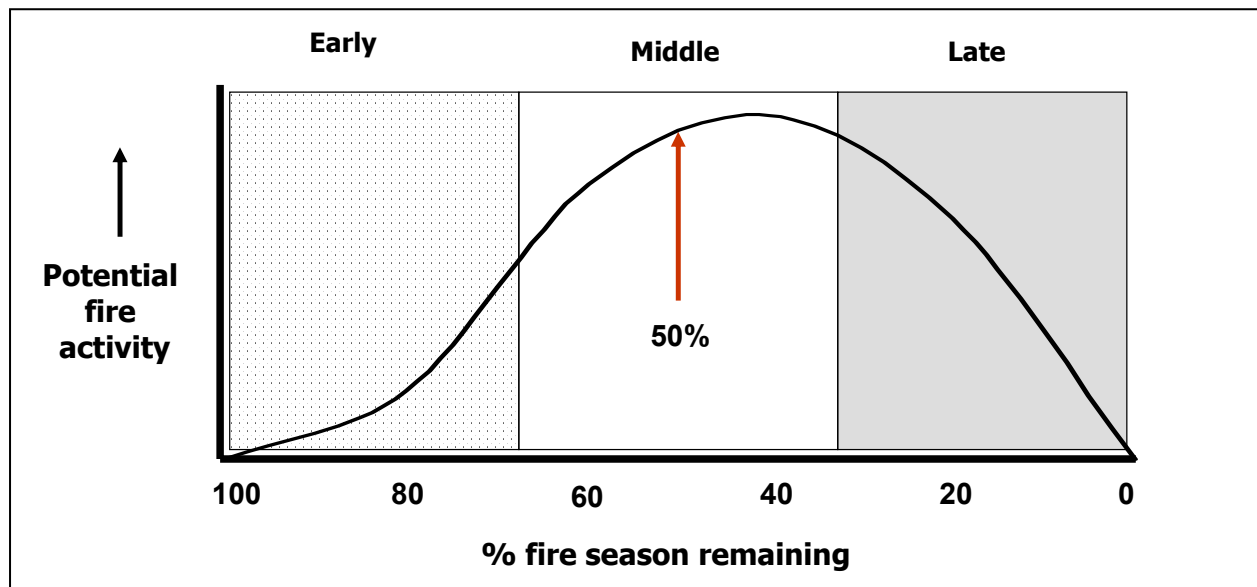
Connect the left and right values with a line. At the top of the chart, select the appropriate value; follow the line beneath this value down to its intersection with the line connecting the left and right variables. Read the Probability Assessment from the background area where the intersection occurs.

**Notes:**

**PART 3: PROBABILITY ASSESSMENT:** Probability refers to the likelihood of a fire becoming an active event having potential to adversely affect values.

**Time of Season** - the current time in relation to the historical fire season. The chart below the guidelines reinforces the importance of time of season. During the early part of the fire season, the peak of burning activity is still to come, thus the fire could present substantial variation in behavior and activity. In the middle of the season, the peak of burning activity may or may not have occurred while in the late part of the season, the peak of fire activity generally has occurred and managers can reasonably expect diminishing fire activity and behavior as time progresses. As the amount of fire season remaining decreases or as the time of season progresses from early to late, management concerns and issues associated with potential fire activity decrease.

| Early  | Middle   | Late  |
|--|--|---|
| The current date is in the early portion of the historic fire season, at least 2/3 of the established fire season remains and the peak of burning activity is still to come. | The current date is in the middle of the historic fire season, at least 1/3 of that period has passed and no less than 1/3 remains. The peak burning activity period either has occurred, is occurring now, or will occur very soon. | The current date is in the latter part of the historic fire season. At least 2/3 of the historic period has passed, the peak burning activity period has occurred, and the probability of a season-ending or fire-ending event is increasing quickly. |



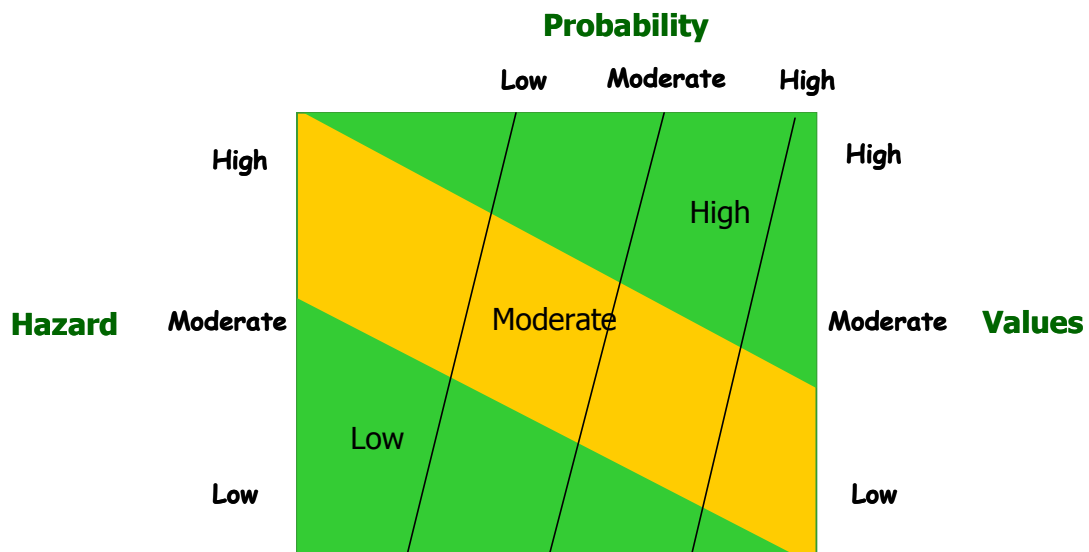
**Seasonal Severity** - a measure of the potential burning conditions as expressed by factors such as ERC, drought status, live fuel moistures, dead fuels moistures, soil moisture, stream discharge, and similar types of measures.

| Low  | High  | Extreme  |
|--|---|--|
| Measures of fire danger are below to somewhat above seasonal averages. Drought status is within seasonal norms with no long-term drought present | Measures of fire danger are well above seasonal averages but not setting new records. The area is in short-term drought (1-2 years of drought) but not considered to be in long-term drought. | Measures of fire danger are setting new records. The area is considered to be in long-term drought (3 or more years of drought). |

**Barriers to Fire Spread** – a measure of the natural defensibility of the fire location and an indication of degree of potential mitigation actions needed.

| <b>Numerous</b>  | <b>Moderate</b>  | <b>Few</b>  |
|--|--|---|
| The location of the fire and presence of natural barriers and fuel breaks limit the horizontal fuel continuity, minimal mitigation actions on-the-ground will be needed. | The location of the fire and presence of some natural barriers and fuel breaks limit the horizontal fuel continuity on some, but not all fire flanks, some mitigation actions on-the-ground will be needed to protect threats to boundaries and sensitive areas. | The location of the fire and presence of only limited natural barriers and fuel breaks will permit fire spread across continuous fuels. Mitigation actions on-the-ground will be needed but are expected to be effective. |

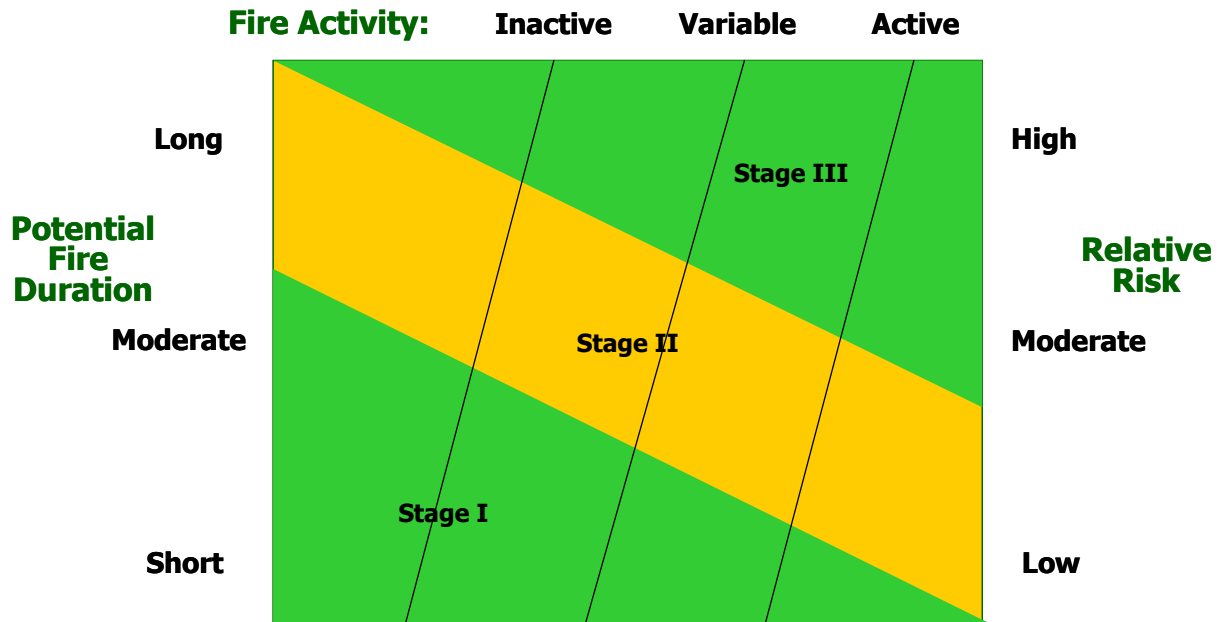
## Wildland Fire Relative Risk Assessment: Step 4: Determining Wildland Fire Relative Risk



Connect the left and right values with a line. At the top of the chart, select the appropriate value; follow the line beneath this value down to its intersection with the line connecting the left and right variables. Read the Relative Risk from the background area where the intersection occurs.

### Notes:

# Planning Needs Assessment Chart



To complete the chart, connect the left and right variables with a single line (potential fire duration and relative risk, respectively). Select the appropriate level of fire activity at the top of the chart and follow the line beneath that value down to its intersection with the line connecting the left and right variables. Read the planning need from the background area where the intersection occurs. The Relative Risk values are those obtained from the Wildland Fire Relative Risk Assessment process (Wildland Fire Relative Risk Assessment).

**Guidelines for Planning Needs Assessment Chart.**

**Potential Fire Duration** – the estimated length of time that the fire may continue to burn in comparison to historical fire durations and amount of fire season available for a given area.

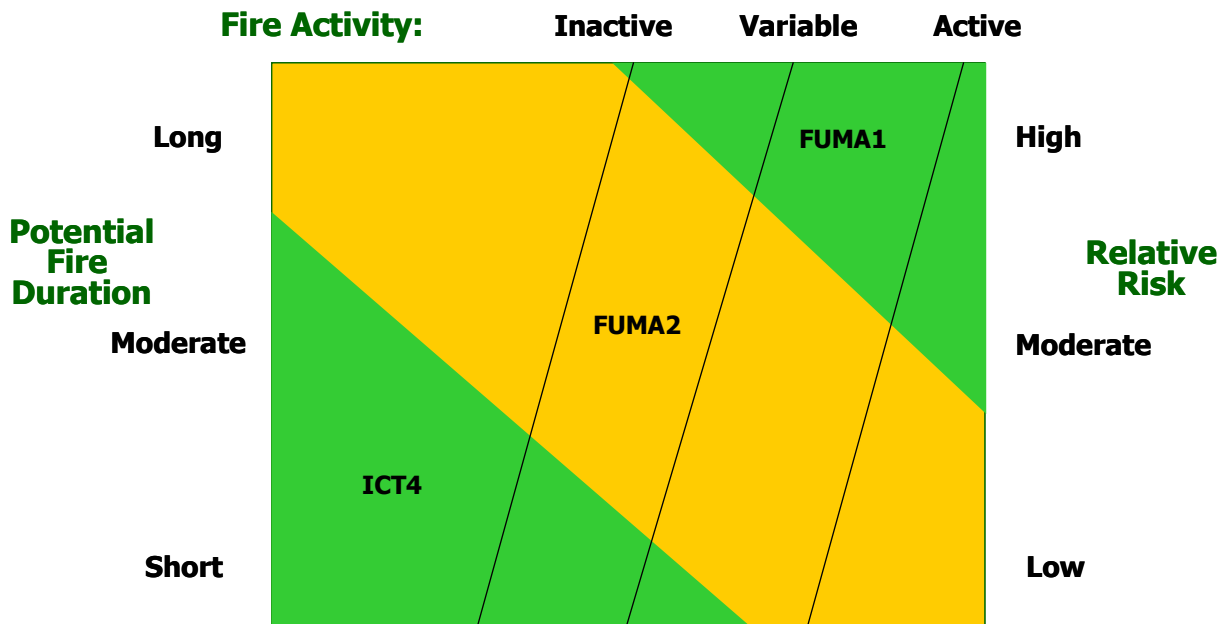
| Short  | Moderate   | Long  |
|--|--|---|
| <p>Fire is expected to persist for only the shortest time in comparison to historical fire durations. This may be as short as only a few days. Fuels may be limiting, weather may be limiting, or time of fire season may be limiting. Generally, this could be referenced as less than the historical average fire length for a given area.</p> | <p>Fire is expected to last for a time period similar to the historical average length of fires.</p> | <p>Fire is expected to last for a time period longer than the historical average length of fires.</p> |

**Relative Risk** – a measure of the relative risk, determined directly from the Wildland Fire Relative Risk Assessment, so no range of values is listed here.

**Fire Activity** - the relative activity of the fire in terms of intensity and spread over time.

| Inactive   | Variable  | Active  |
|--|---|---|
| <p>Fire is burning with very low intensity, little or no spread, and little or no increase in burned area. Fire is confined to surface litter and duff layers.</p> | <p>Fire is burning predominantly in surface litter and duff layers, with low intensity and little or no spread but has occasional periods of increased intensity and spread. Growth of burned area is not constant but occurs in response to increased activity. Area increase may be static for moderately long periods and then increase for short periods. Fire size usually increases by less than 50% during active periods.</p> | <p>Fire is burning in all fuel strata (litter, surface, and crown) with periods of sustained flaming fronts, perimeter growth, and area increases that can exceed 100% at times. Infrequent periods of low activity occur but spread is generally constant.</p> |

# Fire Use Manager Decision Chart



To complete the chart, connect the left and right variables with a single line (potential fire duration and relative risk, respectively). Select the appropriate level of fire activity at the top of the chart and follow the line beneath that value down to its intersection with the line connecting the left and right variables. Read the level of Fire Use Manager needed directly from the background area where the intersection occurs. The Relative Risk values are those obtained from the Wildland Fire Relative Risk Assessment process (Wildland Fire Relative Risk Assessment).

**Guidelines for Fire Use Manager Decision Chart.**

**Potential Fire Duration** – the estimated length of time that the fire may continue to burn in comparison to historical fire durations and amount of fire season available for a given area.

| Short  | Moderate   | Long  |
|--|--|---|
| <p>Fire is expected to persist for only the shortest time in comparison to historical fire durations. This may be as short as only a few days. Fuels may be limiting, weather may be limiting, or time of fire season may be limiting. Generally, this could be referenced as less than the historical average fire length for a given area.</p> | <p>Fire is expected to last for a time period similar to the historical average length of fires.</p> | <p>Fire is expected to last for a time period longer than the historical average length of fires.</p> |

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***Management Actions:***

|  |  |
|--|--|
| <b>Forecasted Weather<br/>(Include an initial<br/>assessment of air<br/>quality forecasts /<br/>allowable burn days<br/>as applicable)</b> |  |
| <b>Forecasted Fire<br/>Behavior</b>  |  |
| <b>Hazards and Safety<br/>Concerns</b>   |  |
| <b>Management Actions</b>  |  |
| <b>Availability of<br/>Resources</b>   |  |

## **Periodic Fire Assessment**

Insert the following sections, either by completing new versions or by using those already completed as part of the WFIP Stage I:

- Decision Criteria Checklist
- Wildland Fire Risk Assessment
  - Part 1: Planning Needs Assessment
  - Part 2: Fire Use Manager Decision Chart
- Signature Page



## WFIP Stage II:

Attach Stage I information.

### *Objectives:*

**Objectives**

|  |
|--|
|  |
|--|

### *Fire Situation:*

**Current and  
Predicted Fire  
Behavior**

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|--|
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**Current and  
Predicted Weather**

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**External Concerns**

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**Environmental  
Concerns**

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**Safety Considerations**

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**Threats**

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### *Management Actions:*

**Management Actions**

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### *Estimated Costs:*

**Estimated Costs**

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|--|
|  |
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## **Periodic Fire Assessment**

Insert the following sections, either by completing new versions or by using those already completed as part of the WFIP Stage I:

- Decision Criteria Checklist
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- Signature Page



## WFIP Stage III:

Attach Stage I and Stage II information. Update and/or revise Stage I and II as necessary.

### *Objectives:*

Natural and Cultural  
Resource Objectives

Constraints

### *Maximum Manageable Area (MMA) – Definition and Maps*

Acres in MMA:

Definition of MMA:

Attach Map of MMA

### *Weather Conditions and Drought Prognosis*

Weather  
Conditions/Drought:  
Discussion and  
Prognosis

### *Long-term Risk Assessment and Map (if applicable)*

Risk Assessment  
(Describe techniques  
utilized and outputs,  
include maps as  
appropriate)

***Threats***

**Threats to MMA**

**Threats to Public Use and Firefighter Safety**

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|--|
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|  |

**Smoke Dispersion and Effects**

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|--|

**Other Threats**

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***Monitoring Actions***

**Describe Monitoring Actions, Frequency, Duration**

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|--|
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|--|

***Mitigation Actions***

**Describe Holding Actions and Other Mitigation Actions, and Management Action Points that initiate these actions, and Key to Map if necessary**

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|--|

***Resources Needed to Manage the Fire Under Expected Weather Conditions***

**Describe resources necessary to accomplish ignition, holding, other mitigation actions, and monitoring actions**

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***Contingency Actions***

**Describe Contingency actions, management action points that initiate them, resources needed, etc.**

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***Information Plan***

**Describe Information Plan, Contacts, Responsibilities, etc.**

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***Estimated Costs of Managing the Fire***

**Describe costs in terms of resources needed, projected duration, etc.**

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***Post-burn Evaluation***

**Describe post-burn evaluation procedures, resource requirements, costs, duration, etc.**

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***Signatures***

**Include signatures/titles/dates for preparing, approving, and any concurring individuals**

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## **Periodic Fire Assessment**

Insert the following sections, either by completing new versions or by using those already completed as part of the WFIP Stage I:

- Decision Criteria Checklist
- Wildland Fire Risk Assessment
  - Part 1: Planning Needs Assessment
  - Part 2: Fire Use Manager Decision Chart
- Signature Page



# Appendix B:

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## Preplanning WFIP Elements

Parts of the WFIP can be planned well in advance of the fire season. Preplanning is especially critical in those fuel types where fires develop rapidly and a “long duration” fire is only a few days. In many cases, these elements can be part of the fire management unit information in the fire management plan. The following items from the WFIP can be preplanned:

- Objectives – all or most of these should be known in advance and based on the resource objectives in the land use plan and the fire management unit objectives.
- Constraints – standards and guidelines within the land use plan and fire management unit are the basis for any operational constraints. These constraints typically affect which types of activities may occur where or when.
- Safety Considerations – document those safety considerations associated with various aspects of the environment, such as cliffs or mineshafts; with well known and generally regular weather events, such as foehn winds; and with particular times of the year, such as hunting seasons.
- Values at Risk – document those values threatened by either the simple presence of fire, and certain fire intensity, or any appropriate management response actions that may be taken. These values may consist of different types of natural and cultural resources or physical features such as campgrounds or private property.
- External Concerns – these consist of concerns known to exist for cooperators, adjacent owners or land managers, communities, regulatory agencies, and other stakeholders (i.e. the critical concerns discussed as part of the relative risk rating). Not all concerns can be known in advance since some are situational and not tied to a particular fire management unit. The Objectives and Constraints should adequately cover internal concerns.
- Implementation Actions – some preliminary implementation actions, or appropriate management responses, can be developed in advance, particularly for Stage I and Stage II. Most often, these will consist of different levels of monitoring to some holding or checking actions. Units that expect to develop Stage III without the aid of a Fire Use Management Team may develop more detailed descriptions of the allowable responses or a list of response options.
- Maximum Manageable Area – preliminary MMAs can be designated based on roads, jurisdictional or land allocation boundaries, watershed boundaries, or similar features. These MMAs are not finalized until a wildland fire use event occurs and management is elevated to Stage III. Preliminary MMAs can include information on which segments are naturally defensible and which are not, as well as what types of actions may be needed to increase the defensibility of the those segments. Preplanned MMAs may be the only option for some fire management units.
- Management Action Points – preliminary management action points may be identified to address certain types of values at risk or preliminary MMA boundaries. Full development may not happen until the fire occurs since the appropriate management response often depends on fire behavior.
- Monitoring Plan – do not confuse the monitoring plan with monitoring as an appropriate management response. The monitoring plan is intended to determine if the fire is meeting or has met the management objectives. Since nearly all the management objectives should be known in advance, this plan can also be prepared in advance.

- Information Plan – use experience from past fires, both suppression and wildland fire use, to develop many elements of the information plan. Some elements may be more situational or new contacts or contact methods may occur between the development of this preliminary plan and an actual fire.
- Agreements – although not technically part of the WFIP, fully implementing a WFIP may require that cross-jurisdiction agreements be in place to allow the fire to move from one jurisdiction to another. These jurisdictions may be other land management agencies; state or local fire protection agencies or districts; or private landowners.

In addition to WFIP elements, several types of data are recommended for advanced development or for addition to the fire management plan as data are developed from different fires. As appropriate, update data each year. The following list is not exhaustive but intended as a tickler.

- Weather Data
  - NFDRS station catalogs and weather files
  - Definitions for:
    - Season or fire ending event
    - Fire slowing events (event plus number of days the event is effective)
    - Large fire growth events or key weather events that result in large fire growth
- Term files for use in RERAP
- Preliminary RERAP assessments for individual FMUs with assumptions (risk of fire movement over set distances by time of year and general direction)
- FARSITE layers, including changes resulting from the previous year's fires and vegetation management actions
- Structure protection plans
- Potential evacuation needs, routes and responsibilities, which should be shared with the appropriate authority in advance of an ignition.
- Mitigation measures for TES species (plants, animals, and fish) that have been successful in the past
- Data Layers (actual data or location of data)
  - Fuels
  - Roads and trails
  - Streams
  - Values to be protected (some of this data may be protected).
  - Land status
  - Fire history
  - Fuels treatment history
  - Vegetation type or dominant species
  - Vegetation structure
  - Potential vegetation
  - Fire regime or fire regime condition class
  - Smoke sensitive areas