From:	Davis, Dawn
To:	Theresa Rabot; Jeff Rupert
Subject:	Fwd:
Date:	Thursday, February 26, 2015 1:06:27 PM
Attachments:	PWR Next Steps and SO 3336 2015 Final.docx 620 DM 3 May 20 2004.doc BLM ESR Manual h1742-1.pdf DRAFT20150217_SO3336-TheInitial Report.pdf GAO Better Information Needed on Es and R d03430.pdf ImplementationPlan_SecretarialOrder3336.pdf Interagency BAER Guidebook.pdf Interagency BAR Guidebook.pdf SecretarialOrder3336.pdf IM 2014-134 - Completion of Wildfire and Invasive Species Assessments in Greater Sage-Grouse Habitat_ DD_ _9_8_2014 & 1_30_2015 A3.pdf Fire Budget wit ESR.docx

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Terry,

Lou Ballard wanted to make sure we were aware of this meeting and asked if we were interested in participating?

---------- Forwarded message ----------
From: **Ballard, Lou** <lou_ballard@fws.gov>
Date: Thu, Feb 26, 2015 at 11:50 AM
Subject: Fwd:
To: Dawn Davis <dawn_davis@fws.gov>

Dawn here is the information for the post wildfire meeting next week in DC. Please let me know if you will have someone participating. The call-in information is at the bottom of the agenda. Thanks. Lou
---------- Forwarded message ----------
From: **Ballard, Lou** <lou_ballard@fws.gov>
Date: Thu, Feb 26, 2015 at 10:35 AM
Subject:
To: "Melvin (Joe) Tague" <jtague@blm.gov>, Joe Freeland <jfreeland@blm.gov>, David Koch <david.koch@bia.gov>, John Segar <john_segar@fws.gov>
Cc: David Repass <drepass@blm.gov>, Myron Hotinger <myron.hotinger@bia.gov>, Richard Schwab <richard_schwab@nps.gov>, Rod Bloms <Rod_Bloms@ios.doi.gov>, "Luehring, Penny A -FS" <pluehring@fs.fed.us>, James Douglas <james_douglas@ios.doi.gov>, Denise Schmitz <denise_schmitz@ios.doi.gov>, Lisa Young <lisa_young@ios.doi.gov>

You have been invited to participate in a meeting to discuss the post fire programs role in restoration. This meeting is being driven by the DOI Secretarial Order 3336 for Rangeland Fire Prevention, Management, and Restoration, but has major implications for all federal lands. The meeting will be held at the AIA building,1735 New York Ave. NW | Washington, DC 20006. March 3-6 from 8am to-5pm EST. AIA is located diagonally to the NE from the Main Interior Building.

Please come prepared with information about your agencies Fire and Natural Resources programs that you manage.

1. What is the program name and annual program budget?
2. What is the authority, scope, and purpose of program funding?
3. How are program targets and accomplishments planned, and redirected to higher priorities?
4. What amount of program budget is available for restoration treatments on the ground?
5. What is the magnitude of impact from wildfire damages to your program(s) that are outside of the current 3 year ES/BAR window (unmet restoration costs)?

Thanks and we look forward to your participation on this effort.

I am attaching the meeting agenda and information that will help you in this process. Please contact me if you have any questions. Thanks and I am looking forward to working with you next week. Lou

--
Lou Ballard
National ES&R Program Coordinator
Office: (208) 387-5584

"Prediction is very difficult, especially about the future" Niels Bohr and Yogi Berra

--
Lou Ballard
National ES&R Program Coordinator
Office: (208) 387-5584

"Prediction is very difficult, especially about the future" Niels Bohr and Yogi Berra

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Dawn Davis, Ph.D.
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Next Steps on Post Wildfire Recovery and SO 3336

March 3-6, 2015

The American Institute of Architects
1735 New York Ave. NW, Washington, DC

Tuesday, March 3, 2015

0800-0815	Welcome and Introductions	Ballard
0815-1015	Rangeland Fire Issues	Douglas
1015-1030	Break	
1030-1200	Agency Desires For Restoration Process	Bureau Resource Managers
1200-1300	Lunch	
1300-1330	Fire Funding Process	Schmitz (Call in)
1330-1430	Resource and Restoration Funding	Resource Staff
1430-1445	Break	
1445-1545	Post Wildfire Recovery Policy and History	Luehring/Schwab
1545-1615	The Restoration Process	Ballard
1615-1630	Daily Wrap-up	

Wednesday, March 4, 2015

0800-0815	Welcome and Check-in	
0815-0845	FIAT Tool	Tague
0845-1000	Options For Continuity of Restoration	All
1000-1015	Break	
1015-1130	Options For Continuity of Restoration (Cont.)	All
1130-1230	Lunch	
1230-1430	SO Order 3336 – Action Item #4	
1430-1445	Break	
1445-1645	SO Order 3336 – Action Item #3	
1645-1700	Daily Wrap-up	

Next Steps on Post Wildfire Recovery and SO 3336

March 3-6, 2015

The American Institute of Architects
1735 New York Ave. NW, Washington, DC

Thursday, March 5, 2015

0800-0815	Welcome and Check-in
0815-1130	SO Order 3336 – Action Item #1
1130-1230	Lunch
1230-1645	Continue with Action Item #1 or #2 and #5 as time allows
1645-1700	Daily Wrap-up

Friday, March 6, 2015

Wrap-up

Out briefing (if needed)

Call in Number: 866-700-8920, Pin #: 3481118#

Go to Meeting (if needed) will be by email invitation

Department of the Interior
Departmental Manual

Effective Date: 5/20/04
Series: Public Lands
Part 620: Wildland Fire Management
Chapter 3: Burned Area Emergency Stabilization and Rehabilitation

Originating Office: Office of Wildland Fire Coordination

620 DM 3

3.1 **Introduction**. This chapter provides Departmental policy for the emergency stabilization and rehabilitation on bureau lands and Indian trust lands following wildland fire.

3.2 **Authority**. The statutes cited herein authorize and provide the means for managing emergency stabilization and rehabilitation following wildland fire on lands or threatening lands under the jurisdiction of the Department of the Interior, or lands adjacent thereto.

A. Protection Act of September 20, 1922 (42 Stat. 857; 16 U.S.C. 594)

B. McSweeney-McNary Act of 1928 (45 Stat. 221; 16 U.S.C. 487)

C. Economy Act of June 30, 1932 (47 Stat. 417; 31 U.S.C. 1535)

D. Taylor Grazing Act of June 28, 1934 (48 Stat. 1269; 43 U.S.C. 315)

E. Oregon and California Act of August 28, 1937 (50 Stat. 875; 43 U.S.C. 1181e)

F. National Park Service Act as amended (67 Stat. 495; 16 U.S.C. 1b)

G. Federal Property and Administrative Service Act of 1949 (40 U.S.C. 471; et seq.)

H. Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66; 42 U.S.C. 1856a)

I. National Wildlife Refuge System Administration Act of 1966 as amended (80 Stat. 927; 16 U.S.C. 668dd through 668ee)

J. Alaska Native Claims Settlement Act of December 18, 1971 (85 Stat. 688; 43 U.S.C. 1601)

K. Disaster Relief Act of May 22, 1974 (88 Stat. 143; 42 U.S.C. 5121)

L. Federal Fire Prevention and Control Act of October 29, 1974 (88 Stat. 1535; 15

U.S.C. 2201)

M. Federal Land Policy and Management Act of 1976 (90 Stat. 2743)

N. Federal Grant and Cooperative Agreement Act of 1977 (P.L. 950224, as amended by P.L. 97-258, September 13, 1982 (96 Stat. 1003; 31 U.S.C. 6301 thru 6308)

O. Alaska National Interest Lands Conservation Act of December 2, 1980 (94 Stat. 2371)

P. Supplemental Appropriation Act of September 10, 1982 (96 Stat. 837)

Q. Wildfire Suppression Assistance Act of 1989 (P.L. 100-428, as amended by P.L. 101-11, April 7, 1989)

R. Indian Self-Determination and Education Assistance Act (PL 93-638) as amended

S. National Indian Forest Resources Management Act (P. L. 101-630 November 28, 1990)

T. Tribal Self-Governance Act of 1994 (P.L. 103-413)

U. Department of the Interior and Related Agencies Appropriations Act, Fiscal Year 1995 (P.L. 103-332)

V. Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds, Federal Register, Vol. 60, No. 154, August 10, 1995, p. 40837

W. Executive Order 13112, Invasive Species, February 3, 1999

X. National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57)

Y. The Reclamation Act of June 17, 1902 (32 Stat. 388; 43 U.S.C. 391)

Z. Soil and Moisture Conservation Act of 1935 (49 Stat 163)

3.3 **Definitions**. (For the purposes of this chapter)

A. Agency Administrator. The line manager having direct organizational responsibility for management of an administrative unit. May include Director, State Director, District Manager or Field Office Manager, Bureau of Land Management (BLM); Director, Regional Director, Complex Manager or Project Leader, U.S. Fish and Wildlife Service (FWS); Director, Regional Director, Park Superintendent, or Unit Manager, National Park Service (NPS); Director, Office of Trust Responsibility, Regional Director, or Superintendent, Bureau of Indian Affairs (BIA); Director - Operations, Regional Director, or Area Manager, Bureau of

Reclamation (BOR).

B. Burned Area Emergency Response Plan (BAER Plan). A document that specifies treatments required to implement post-wildland fire emergency stabilization policies on an individual incident. This plan may be programmatic (prepared in advance and applicable to clearly defined types of incidents and situations) or prepared by an interdisciplinary team of specialists during or immediately following the containment of a wildland fire.

C. Burned Area Emergency Response Team (BAER Team). A standing or ad hoc group of technical specialists (hydrologists, rangeland management specialists, biologists, soil scientists, etc.) that is assigned to prepare an Emergency Stabilization Plan.

D. Burned Area Rehabilitation Plan. A document that specifies treatments required to implement post-fire rehabilitation policies. This plan may be programmatic (prepared in advance) and applicable to clearly defined types of incidents and situations, or prepared by an interdisciplinary team of specialists during or immediately following the containment of a wildland fire.

E. Emergency Stabilization. Planned actions to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life or property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources. Emergency stabilization actions must be taken within one year following containment of a wildland fire.

F. Burned Area Emergency Stabilization Plan. A document that specifies treatments required to implement post-fire emergency stabilization policies. This plan may be programmatic (prepared in advance) and applicable to clearly defined types of incidents and situations, or prepared by an interdisciplinary team of specialists during or immediately following the containment of a wildland fire.

G. Fire Suppression Activity Damage. Damage to resources, lands, and facilities resulting from wildland fire suppression actions, in contrast to damages resulting from a wildland fire.

H. Mitigation. Actions to moderate the intensity or severity of detrimental post-fire effects on natural and cultural resources when preventive treatments are not cost-effective or practical. The scope and cost of mitigation should be the minimum necessary to alleviate meaningful threats.

I. National Burned Area Emergency Response Coordinators (NBAER). The NBAER consists of the Department of the Interior (DOI) National BAER Coordinators and the USDA Forest Service National BAER Coordinator.

J. Non-Native Invasive Species. Species that were not components of pre-European settlement vegetative communities: which have been introduced, either deliberately or inadvertently; which have the capacity to aggressively invade new habitats, displacing and out-

competing native species, and; whose introduction does or is likely to cause economic or environmental harm or harm to human health.

K. Prescribed Fire. Any fire ignited by management actions to meet specific objectives which are authorized by a prescribed fire plan.

L. Prevention. Emergency actions to prevent unacceptable post-fire degradation of natural and cultural resources by stabilizing soil, biotic communities, and critical or significant historic properties, and emergency actions to minimize risks to life and property.

M. Rehabilitation. Efforts undertaken within three years of containment of a wildland fire to repair or improve fire-damaged lands unlikely to recover naturally to management approved conditions, or to repair or replace minor facilities damaged by fire.

N. Restoration. The continuation of rehabilitation beyond the initial three years or the repair or replacement of major facilities damaged by the fire.

O. Suppression. A management action intended to protect identified values from a fire, extinguish a fire, or alter a fire's direction of spread.

P. Wildland Fire. Any non-structure fire that occurs on wildland.

3.4 **Objectives.**

A. Emergency Stabilization. To determine the need for and to prescribe and implement emergency treatments to minimize threats to life or property or to stabilize and prevent unacceptable degradation to natural and cultural resources resulting from the effects of a fire.

B. Rehabilitation.

(1) To evaluate actual and potential long-term post-fire impacts to critical cultural and natural resources and identify those areas unlikely to recover naturally from severe wildland fire damage.

(2) To develop and implement cost-effective plans to emulate historical or pre-fire ecosystem structure, function, diversity, and dynamics consistent with approved land management plans, or if that is infeasible, then to restore or establish a healthy, stable ecosystem in which native species are well represented.

(3) To repair or replace minor facilities damaged by wildland fire.

C. Fire Suppression Activity Damage Repair.

(1) To evaluate and plan fire suppression activity damage repair.

(2) To fund and implement projects that meet the requirements in section 3.10 of

this chapter as well as agency administrator criteria.

3.5 **Responsibilities**.

A. The Office of Wildland Fire Coordination develops, implements and coordinates DOI's wildland fire management policy and programs including the emergency stabilization and rehabilitation programs. The office accomplishes these activities by working in a safe, effective, efficient, and seamless manner to provide for coordinated efforts between the wildland fire management bureaus and other federal and non-federal groups.

B. The Directors of the BLM, FWS, NPS and BIA are responsible for all burned area emergency stabilization and rehabilitation activities on their bureau lands and/or Indian Trust lands. The Commissioner, BOR, is responsible for burned area stabilization and rehabilitation activities on their lands but may obtain assistance through an approved and signed agreement or when contracted for, in whole or in part, with other agencies or tribes under the statutes cited in 620 DM 3.2. Each wildland fire management bureau is responsible for taking prompt and effective action in the burned area emergency stabilization and rehabilitation program and implementing Departmental policies.

C. The Agency Administrator is responsible for developing, implementing, and evaluating emergency stabilization and rehabilitation plans, treatments and activities.

D. Supervisors are responsible for assuring that employees engaged in emergency stabilization and rehabilitation actions follow Departmental and bureau policy, including National Wildfire Coordinating Group (NWCG) standards, when adopted, and that conditions of employment are consistent with provisions of the Occupational Safety and Health Act, as may be required by law.

E. The National Burned Area Emergency Response Coordinators (NBAER) designated by the Bureau of Land Management, Bureau of Indian Affairs, U.S. Fish and Wildlife Service, National Park Service, and the Office of Wildland Fire Coordination will function as an interagency group to coordinate program issues, establish funding priorities, plan development implementation and evaluation guidance, and provide training, oversight, and information. They are also responsible for supporting, managing, and conducting overall performance review and evaluation of emergency stabilization, rehabilitation and Burned Area Emergency Response (BAER) team activities. The coordinators must involve other program areas such as wildland fire management, budget, cultural and natural resources, etc., as necessary and appropriate, to ensure an integrated interagency program.

F. Employees involved in emergency stabilization and rehabilitation work are responsible for knowing, understanding and practicing safe operations.

3.6 **Policy**. The following policies apply to both the emergency stabilization and rehabilitation programs.

A. Plan. Any treatment or activity will have an approved plan developed prior to

implementation. Monitoring specifications will be included in the plan for each treatment or activity. Emergency stabilization and rehabilitation treatments and activities will be written in separate plans.

B. Allowable Actions. All treatments and activities will be specified in a plan. Standard treatments are to be used that have been validated by monitoring data from previous projects, or when there is documented research establishing the effectiveness of such actions.

C. Monitoring. Monitoring and evaluation of emergency stabilization and rehabilitation activities must be implemented to ensure that treatments and activities are properly implemented, effective, and maintained. Monitoring methods may be qualitative or quantitative, and should be commensurate with the level of treatment or activity complexity and extent of treatment. Monitoring will follow established standard protocols. Monitoring and evaluation information will provide adaptive management feedback to improve program performance. Priority should be given to developing a simple interagency electronic mechanism for archiving and broadly disseminating treatment and technique results.

D. Research. Formal research investigations of treatment effectiveness and fire ecology issues will be defined as individual projects (separate from routine emergency stabilization or rehabilitation effectiveness monitoring). These long-term investigations will be submitted to a bureau NBAER Coordinator for approval, and may be funded from Joint Fire Science or other non-emergency funds.

E. BAER Planning Team. Team activities are an integral part of wildland fire incidents. The BAER teams report to the agency administrator. The fire incident management team and the BAER team will work cooperatively. They are supported by the same wildland fire incident mobilization, resource availability, and incident business management procedures as other aspects of the incident. The NWCG training and qualifications for BAER team members will be as technical specialists. Agency administrators will support BAER teams with local personnel as needed by the team throughout the planning preparation.

F. Program Review. Periodic emergency stabilization, rehabilitation and BAER team program reviews will be conducted to evaluate consistency of program direction in relationship to other programs, and to identify needs for improved coordination and direction at the bureau, region/state and local levels.

G. Funding. All fire funded personnel (except hazard fuels) will fund their base 8 hours from their base funding when working on fire suppression activity damage or emergency stabilization activities. Fire funded personnel may charge their base 8 hours to the rehabilitation account when performing rehabilitation work.

(1) All non-fire funded and hazard fuels personnel may charge their base 8 hours to fire suppression activity damage, emergency stabilization or rehabilitation accounts when performing those work activities.

(2) All emergency stabilization and rehabilitation funded personnel will charge

their base 8 hours to their base funding and will not charge their base 8 hours to a specific project.

(3) Funding for BOR projects will be from BOR funds only. Selection of projects to be funded will be determined by BOR management.

(4) In cases where BOR personnel assist in ESR projects of other Interior bureaus, BOR personnel may be funded from the wildland fire account if a reimbursable agreement is in effect.

H. Handbook. An interim Emergency Stabilization and Rehabilitation Handbook (Handbook) is available and provides operational guidance for applying emergency stabilization and rehabilitation policy. It includes a common cost-effectiveness analysis for evaluating proposed actions, a standard project accomplishment report format, and a mechanism for archiving and broadly disseminating the results of monitoring treatment effectiveness.

3.7 **Emergency Stabilization**. The following policies apply to all burned area emergency stabilization program activities. Emergency stabilization treatments and activities should be compatible with land management plans.

A. Priorities. Protection priorities are:

(1) human life and safety; and

(2) property and unique or critical biological/cultural resources. If it becomes necessary to prioritize between property and unique or critical biological/cultural resources, this is carried out based on relative values to be protected, commensurate with emergency stabilization costs. All burned area emergency stabilization plans and actions must reflect these priorities.

B. Program. Bureaus will ensure their capability to provide a safe and effective emergency stabilization program in support of land, natural, and cultural resource management plans through appropriate planning, staffing, training, and equipment use. These resource management plans and actions should be on a landscape scale, across bureau boundaries, and will be based upon best available science and techniques.

C. Plans.

(1) The emergency stabilization plan will specify only emergency treatments and activities to be carried out within one year following containment of a wildland fire. If emergency stabilization needs are unknown, the emergency stabilization plan may contain specifications for completing assessments that will be used to later define and implement emergency stabilization needs within one year following containment of a wildland fire. Generally, emergency stabilization activities are prescribed only within the perimeter of a burned area. Acceptable treatments or activities outside a burn perimeter could include such things as emergency stream channel work to protect structures, roads, and other improvements from flood

damage.

(2) Emergency stabilization actions will be based on a plan developed immediately post-fire, or through plan amendments, except where programmatic plans are already in place. The programmatic plans are generally written by a field office unit and include an environmental assessment, and are developed at the landscape level, with public input. The decision to develop the programmatic plan is based on the size and diversity of the ecosystems involved, fire history, resource values, and resource management objectives and decisions in land use plans. For multi-agency fires, joint planning is encouraged. The development and implementation of an emergency stabilization plan and its associated treatments and activities are the responsibility of the local Agency Administrator. In cases where the local Agency Administrator is from the BOR, the administrator may rely on BAER teams and qualified personnel from other bureaus or agencies to perform identified work as established in a signed agreement.

(3) The emergency stabilization plan must contain:

(a) A description of each treatment or activity.

(b) A discussion demonstrating how the specifications are consistent and compatible with approved land use plans, and how the proposed treatments and activities are related to damage or changes caused by the wildland fire.

(c) An explanation of how a treatment or activity is reasonable and cost effective relative to the severity of the burn.

(d) Provisions for monitoring and evaluation of treatments and activities (including criteria for measuring a successful treatment or activity) and techniques, and a procedure for collecting, archiving, and disseminating results.

(e) Clear delineation of funding and responsibilities for implementation, operation, maintenance, monitoring, and evaluation throughout the entire life of the project, and criteria for determining failure of a treatment or activity.

D. BAER Teams. Bureaus may establish national, regional, and local BAER teams as needed to ensure that qualified personnel are available to prepare burned area emergency stabilization plans. They may assign resource advisors to major wildland fire incidents to minimize suppression damage. Bureaus will coordinate to develop interagency training courses for resource advisors, BAER teams, and local project implementation personnel to help build an adequate pool of available, trained personnel.

E. Planting and Seeding. Natural recovery by native plant species is preferable to planting or seeding, either of natives or non-natives. However, planting or seeding should be used only if necessary to prevent unacceptable erosion or resist competition from non-native invasive species. If planting or seeding is necessary, the use of native species is preferable. Use only planted materials that will be effective within three years. To the extent permitted by law and Executive Order 13112, Invasive Species, dated February 3, 1999, introduction of exotic

species into natural ecosystems will be restricted unless the Secretary of the Interior finds that such introduction will not have an adverse effect on natural ecosystems.

F. Compliance. Implementation activities will be conducted in a manner that is compatible with long-term goals and approved land use plans (e.g., goals under the Government Performance and Results Act, forest plans, general management plans, resource management plans, conservation strategies, species recovery plans), in compliance with applicable law, and policy, including the National Environmental Policy Act (see 516 DM 2); Endangered Species Act; Clean Water Act; Comprehensive Environmental Response, Compensation, and Liability Act; the National Historic Preservation Act, etc.

G. Analysis. All decisions will be based on sound analysis of the possible biological, hydrological, geological, cultural, and social consequences of not undertaking treatments or activities. All analysis will comply with bureau policy. Treatments and activities will establish an ecological context, considering watershed condition, limiting factors, and range of natural variability. Treatments and activities will be undertaken only when an analysis shows that treatments or activities are likely to reduce risks. Treatments and activities will be cost-effective. The costs and magnitude of emergency stabilization actions should be commensurate with threats to life, property, or resources as documented by a cost-risk analysis.

H. Monitoring. Monitoring and evaluation to determine the effectiveness of emergency stabilization treatments is funded for up to three years following containment of a wildland fire. Funding beyond the first year of monitoring requires submission of annual accomplishment report(s) on success/failure of treatments during the first or second year. (See also: Monitoring 3.6C)

I. Plan Submittal. The submittal timing of emergency stabilization plans often depends on the environment/landscape of the fire and the complexity; however, initial submission of the emergency stabilization plan must be shortly after the containment of a wildland fire in order to ensure credibility and to document the urgency of the situation. The initial emergency stabilization plan must be submitted within seven calendar days after total containment of the fire. If additional time is needed, extensions may be negotiated with those having approval authority. Approval/disapproval of plans at regional/state offices shall be limited to a maximum of $500,000, and shall be made within six business days of receipt by the approving office. Any plan request larger than the regional/state limit shall be approved by each bureau's national office. Supplemental requests within the first year, or in subsequent years for repair or replacement of structures or treatments, or for monitoring, that would increase the total plan cost beyond $500,000 must receive national approval. The national office shall review the plan concurrently with the regional/state office for approval/disapproval within the same six-day period. Amendments to plans as a result of new information should be prepared and submitted as needed, and the same approval levels and timeframes for initial plans apply.

J. Funding. Funding for emergency stabilization plan development and implementation will be provided by the Wildland Fire Operations Activity, Emergency Stabilization subactivity. Funding for emergency stabilization treatments and activities is provided for no more than one year following containment of a wildland fire, except that emergency stabilization funding may

be used to repair or replace emergency stabilization structures or treatments for up to three years following containment of a wildland fire where failure to do so would imperil watershed functionality or result in serious loss of downstream values and for monitoring (see section 3.7H). However, emergency stabilization funding cannot be used to continue seeding, plantings, and invasive plant treatments beyond one year. In accordance with standard procedures, bureaus may shift personnel costs or backfill for emergency stabilization activities. Wildland fires for resource use are not eligible for emergency stabilization funds.

(1) There will be no billing or reimbursement between bureaus of the Department of the Interior and the Department of Agriculture for personnel and other resources involved in burned area emergency stabilization planning services. Agencies may choose to bill one another by mutual agreement for burned area emergency stabilization implementation of treatments or activities. Funding for BOR projects will be from BOR funds only. Selection of projects to be funded will be determined by BOR management.

(2) Funding for a second or third year of monitoring requires submission of annual accomplishment report(s) on success/failure of treatments during the first two years. All monitoring obligations incurred beyond the third year must be funded by other than emergency stabilization funding.

(3) Formal research investigations of treatment effectiveness and fire ecology issues are defined as individual projects (see section 3.6D) and may not be funded by this account.

(4) Emergency stabilization treatments and associated monitoring activities may be funded using the Secretary's emergency transfer authority for wildland fire if annual appropriations plus carryover funds are insufficient to implement emergency treatments.

K. Reporting. Funding accountability, treatment and activity results, and accomplishments will be reported on a project accomplishment report that provides a breakdown of costs for individual treatments (e.g., seeding for slope stabilization). This report may require more detailed information for local management and less detailed information for national office or Departmental use. Summarized accomplishment information will be collected and archived at field and national office level for use in program planning, review, and oversight as necessary. Subsequent funding for projects and activities will not be made available until an annual accomplishment report is received for each plan and recorded in a national interagency database. Guidelines for accomplishment reporting are contained in the interim Handbook.

L. Electronic Dissemination of Information. Plan and report information should be available in an interagency electronic mechanism for archiving and retrieving. The common format as specified in the interim Handbook is recommended, including sections addressing planning, budgeting, implementation, monitoring, and maintenance.

M. Allowable Actions. An emergency stabilization project is a planned event following an unplanned wildland fire. The unpredictability of wildland fires and subsequent emergency stabilization projects require funding on short notice. Allowable actions are limited to the

following items:

(1) Replacing or repairing minor facilities essential to public health and safety when no other protection options are available.

(2) Placing structures to slow soil and water movement.

(3) Stabilize soil to prevent loss or degradation of productivity.

(4) Increasing road drainage frequency and/or capacity to handle additional post-fire runoff.

(5) Installing protective fences or barriers to protect treated or recovering areas.

(6) Conducting assessments of critical habitat and significant heritage sites in those areas affected by emergency stabilization treatments.

(7) Seeding or planting to prevent permanent impairment of designated Critical Habitat for Federal and State listed, proposed or candidate threatened and endangered species.

(8) Stabilizing critical heritage resources.

(9) Patrolling, camouflaging, burying significant heritage sites to prevent looting.

(10) Seeding to prevent establishment of invasive plants, and direct treatment of invasive plants. Such actions will be specified in the emergency stabilization plan only when immediate action is required and when standard treatments are used that have been validated by monitoring data from previous projects, or when there is documented research establishing the effectiveness of such actions.

(11) Using integrated pest management techniques to minimize the establishment of non-native invasive species within the burned area. When there is an existing approved management plan that addresses non-native invasive species, emergency stabilization treatments may be used to stabilize the invasive species.

(12) Monitoring of treatments and activities for up to three years.

3.8 **Rehabilitation**. The following policies apply to all burned area rehabilitation program activities. Post-fire rehabilitation projects implement the types of long-term actions that have already been identified in approved land management plans.

A. Priorities. Protection priorities are:

(1) To repair or improve lands damaged directly by a wildland fire; and

(2) To rehabilitate or establish healthy, stable ecosystems in the burned area. If it

becomes necessary to prioritize, this will be done by the NBAER coordinators based on relative values to be protected, commensurate with rehabilitation costs. All burned area rehabilitation plans and actions must reflect these priorities.

B. Program. Bureaus will ensure their capability to provide a safe and effective rehabilitation program in support of land, natural, and cultural resource management plans through appropriate planning, staffing, training, and equipment use. These resource management plans and actions should be on a landscape scale, across bureau boundaries, and will be based upon best science and techniques.

C. Plans. A rehabilitation plan will be written as a separate plan, independently of an emergency stabilization plan. The rehabilitation plan will specify non-emergency treatments and activities which meet approved land management plans to be carried out within three years following containment of a wildland fire. Rehabilitation plans should be developed with full public involvement and cannot be completed until all assessments are concluded. The rehabilitation plans may use approved programmatic plans when amended for site specific conditions. Generally, rehabilitation activities are prescribed only within the perimeter of a burned area. The rehabilitation plan must contain:

(1) A discussion demonstrating how the specifications are consistent and compatible with approved land use plans, and how the proposed actions are related to damage or changes caused by the wildland fire.

(2) Provisions for monitoring and evaluation of treatments (including criteria for measuring a successful treatment) and techniques, and a procedure for collecting, archiving, and disseminating results.

(3) Clear delineation of funding and responsibilities for implementation, operation, maintenance, monitoring, and evaluation throughout the entire life of the project, including rehabilitation actions and follow-up actions beyond three years that may be necessary to ensure the effectiveness of initial investments, although funding for such activities beyond three years may not be funded from the Wildland fire management account.

D. Rehabilitation Teams. Rehabilitation teams may be established as needed to ensure that qualified personnel are available to prepare burned area rehabilitation plans. Bureaus should coordinate in the development of training courses as needed to qualify individuals.

E. Planting and Seeding. Natural recovery by native plant species is preferable to planting or seeding, either of natives or non-natives. If planting or seeding is necessary, the use of native species is preferable. To the extent permitted by law and Executive Order 13112, Invasive Species, dated February 3, 1999, introduction of exotic species into natural ecosystems will be restricted unless the Secretary of the Interior finds that such introduction will not have an adverse effect on natural ecosystems.

F. Compliance. Implementation activities will be conducted in a manner that is compatible with long-term goals and approved land use plans (e.g., goals under the Government

Performance and Results Act, forest plans, general management plans, resource management plans, conservation strategies, species recovery plans), in compliance with applicable law, and policy, including the National Environmental Policy Act (see 516 DM 2); Endangered Species Act; Clean Water Act; Comprehensive Environmental Response, Compensation, and Liability Act; the National Historic Preservation Act, etc.

G. Analysis. All decisions will be based on sound analysis of the possible biological, hydrological, geological, cultural, and social consequences of not undertaking treatments. All analysis will comply with bureau policy. The analysis will include a summary of current knowledge of the long-term fire effects on species and ecosystems to be treated, and will clearly evaluate the probability of long-term success in restoring or establishing a healthy, stable ecosystem through the proposed actions. This analysis will cite relevant studies and monitoring results from previous or similar treatments. Treatments will be undertaken only when an analysis shows that treatments are likely to succeed in the long-term, and be cost-effective.

H. Monitoring. Monitoring and evaluation to determine the effectiveness of rehabilitation treatments are funded for up to three years following containment of a wildland fire. Funding of monitoring requires submission of annual accomplishment report(s) on success/failure of treatments. (See 3.6C)

I. Plan Submittal. The timing of submittal of rehabilitation plans often depends on the environment/landscape of the fire and the complexity; however when practical, initial submission of the rehabilitation plan should be by the end of the first fiscal year in order to be funded in the next fiscal year. Bureaus will establish plan submittal timeframes, approval authorities, and guidelines. Amendments to plans as a result of new information should be prepared and submitted as needed, and the same approval levels and timeframes for initial plans apply. Peer review of complex and expensive plans is encouraged.

J. Funding. All rehabilitation projects or treatments will be funded on a priority basis as established by the NBAER Coordinators in consultation with the Office of Wildland Fire Coordination. Priority selection for treatments on prior-year fires will occur shortly after the start of the fiscal year. Funding will be distributed upon passage of the Interior Appropriation bill. Funding for rehabilitation plan development and implementation will be provided by the burned area rehabilitation subactivity. Funding for rehabilitation treatments is provided in one-year increments for no more than three years following containment of a wildland fire. Funding for a subsequent year requires submission of accomplishment report(s), monitoring report(s) and must meet established funding selection priority. Funding for BOR projects will be from BOR funds only. Selection of projects to be funded will be determined by BOR management.

(1) Rehabilitation cannot be funded for prescribed fire projects in which fire behavior was within prescription. Rehabilitation actions may be planned and funded only for projects that were declared wildfires or where fire behavior exceeded prescription. Wildland fires for resource use are not eligible for rehabilitation funds.

(2) There may be billing or reimbursement between the DOI bureaus and between DOI and USDA Forest Service for personnel and other resources involved in burned area

rehabilitation planning services and implementation of treatments and activities. On lands administrated by the BOR, rehabilitation activities, as with emergency stabilization activities, must be funded by BOR.

(3) Monitoring and evaluation to determine the effectiveness of rehabilitation treatments is funded for up to three years following containment of a wildland fire. Monitoring will be funded from the burned area rehabilitation subactivity. All monitoring obligations incurred beyond the third year must be funded by other than burned area rehabilitation subactivity funding.

(4) Formal research investigations of treatment effectiveness and fire ecology issues are defined as individual projects (see section 3.6D) and may not be funded by this account.

(5) Rehabilitation treatments and monitoring will not be funded using the Secretary's emergency transfer authority.

K. Reporting. Funding accountability, plan results, and accomplishments will be reported on a project accomplishment report that provides a breakdown of costs for individual treatments. This report may require more detailed information for local management and less detailed information for national office or Departmental use. Summarized accomplishment information will be collected and archived at the field and national office level for use in program planning, review, and oversight as necessary. Subsequent funding for projects and activities will not be made available until an annual accomplishment report is received for each plan and recorded in a national interagency database. Guidelines for accomplishment reporting are contained in the interim Handbook.

L. Electronic Dissemination of Information. Information should be available in an interagency electronic mechanism for archiving and retrieving. The common format as specified in the interim Handbook is recommended, including sections addressing planning, budgeting, implementation, monitoring, and maintenance.

M. Allowable Actions. Rehabilitation treatments include only the following:

(1) Repair or improve lands unlikely to recover naturally from wildland fire damage by emulating historical or pre-fire ecosystem structure, function, diversity, and dynamics consistent with existing land management plans.

(2) Chemical, manual, and mechanical removal of invasive species, and planting of native and non-native species, consistent with 3.8F, restore or establish a healthy, stable ecosystem even if this ecosystem cannot fully emulate historical or pre-fire conditions.

(3) Tree planting to reestablish burned habitat, reestablish native tree species lost in fire, prevent establishment of invasive plants, and regenerating Indian trust commercial timberland as prescribed by a certified silviculturalist to not regenerate for ten years following the fire.

(4) Repair or replace fire damage to minor operating facilities (e.g., campgrounds, interpretive signs and exhibits, shade shelters, fences, wildlife guzzlers, etc.). Rehabilitation may not include the planning or replacement of major infrastructure, such as visitor centers, residential structures, administration offices, work centers and similar facilities. Rehabilitation does not include the construction of new facilities that did not exist before the fire, except for temporary and minor facilities necessary to implement burned area rehabilitation efforts.

3.9 **Burned Area Emergency Stabilization and Rehabilitation Assistance**. Bureaus will cooperate with other international, federal, tribal, State, or local organizations to provide burned area emergency stabilization and rehabilitation assistance as authorized by a formal signed agreement. Formal agreements shall be made under authorities cited in paragraph 3.2 of this chapter. These agreements may take the form of Interagency Agreements, Memoranda of Understanding, Cooperative Agreements, mutual aid agreements, compacts, or contracts. Bureaus may provide assistance, when authorized by the President, to any State and local government for management of a wildland fire officially declared as a disaster. For funding between fire management bureaus and the Department of Agriculture see sections 3.7J Funding and 3.8J Funding respectively.

3.10 **Fire Suppression Activity Damage Repair**.

A. Fire suppression activity damage repair actions are planned and performed primarily by the suppression incident organization as soon as possible prior to demobilization. Some actions may need to be conducted by the local unit following containment of wildland fire and incident management team demobilization, when conditions are appropriate. For fires where the local Agency Administrator delegates fire suppression repair to an incident management team, the incident management team must, during transition back to the local unit, document the fire suppression activity repair actions accomplished and those still needed to ensure that all planned actions are completed.

B. Funding for fire suppression activity damage repair actions will come from the Wildland Fire Operations, Emergency Suppression subactivity and will be charged to the project code for the wildland fire suppression effort that resulted in the damage. Fire suppression activity damage repair will not be charged to the Emergency Stabilization or Rehabilitation subactivity accounts. Funding for BOR projects will be from BOR funds. Selection of projects to be funded will be determined by BOR management.

C. Fire suppression activity damage repair will be documented by the fire suppression incident management team.

Form 1221-2
(June 1969)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MANUAL TRANSMITTAL SHEET

Release
1-1702

Date
2/12/07

Subject

H-1742-1 – BURNED AREA EMERGENCY STABILIZATION AND REHABILITATION HANDBOOK - (Public)

1. Explanation of Material Transmitted: This Handbook provides specific guidance for policies, standards, and procedures used in the Burned Area Emergency Stabilization and Rehabilitation (ES&R) programs. It is intended to be the primary guidance for activities related to the objectives, authorities, responsibilities, and policy considerations outlined in the Department of the Interior Departmental Manual 620 DM 3 Wildland Fire Management Burned Area Emergency Stabilization and Rehabilitation.

2. Reports Required: None.

3. Material Superseded: Manual pages superseded by this release are listed under "REMOVE" below. No other directives are superseded.

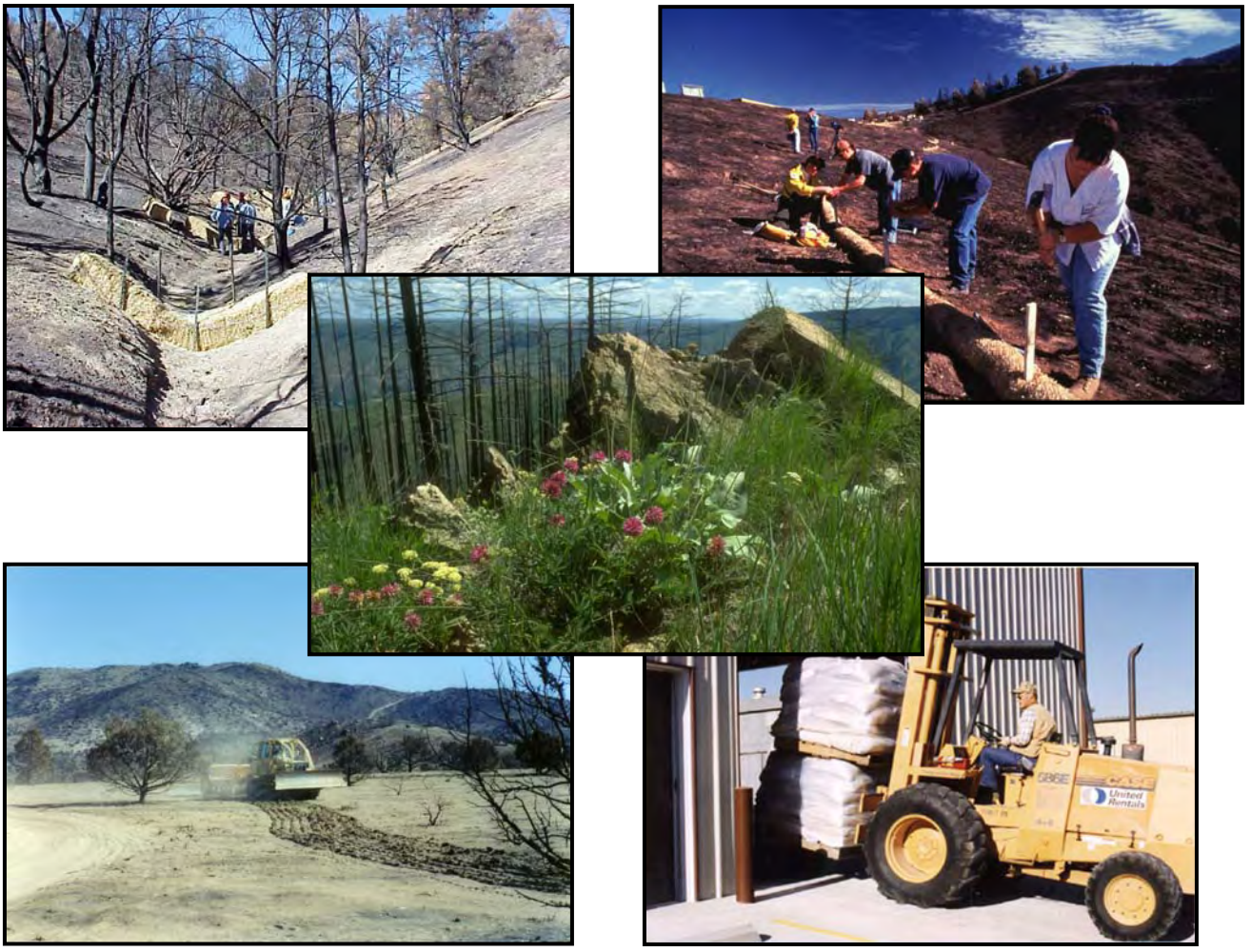
4. Filing Instructions: File as directed below.

REMOVE:	INSERT:
All of Rel. 1-1661	All of H-1742-1
(Total: 59 sheets)	(Total: 43 sheets)

Ed Shepard
Assistant Director
Renewable Resources and Planning

United States
Department of the Interior
Bureau of Land Management

BURNED AREA EMERGENCY STABILIZATION and REHABILITATION



BLM Handbook H-1742-1

United States
Department of the Interior
Bureau of Land Management

BURNED AREA EMERGENCY STABILIZATION and REHABILITATION

BLM Handbook H-1742-1

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I. Introduction

A. Purpose of this Handbook

This handbook provides detailed information specific to Bureau of Land Management (BLM) policies, standards, and procedures used in the Burned Area Emergency Stabilization and Rehabilitation (ES&R) programs. This Handbook is intended to be the primary guidance to BLM ES&R activities. It is tiered to the Department of the Interior (DOI) Departmental Manual 620 DM 3 Wildland Fire Management Burned Area Emergency Stabilization and Rehabilitation relative to planning and implementing ES&R projects on public lands administered by the BLM. This guidance incorporates all pertinent information from the Interagency Burned Area Emergency Response and the Interagency Burned Area Rehabilitation Guidebooks.

B. Program Objectives, Priorities, and Allowable Actions

Emergency Stabilization

Emergency stabilization is defined as "Planned actions to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life and property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources. Emergency Stabilization actions must be taken within one year following containment of a wildland fire." (620 DM 3.3E)

The objective of emergency stabilization is: "To determine the need for and to prescribe and implement emergency treatments to minimize threats to life or property or to stabilize and prevent unacceptable degradation to natural and cultural resources resulting from the effects of a fire." (620 DM 3.4A)

The protection priorities of emergency stabilization are: 1) Human Life and Safety, and 2) Property and unique biological resources (designated Critical Habitat for Federal and State listed, proposed or candidate threatened and endangered species) and significant heritage sites. (620 DM 3.7A)

Allowable emergency stabilization actions are limited to the following items, grouped by issue topic:

Human Life and Safety

- Replacing or repairing minor facilities essential to public health and safety when no other protection options are available.

Soil/Water Stabilization

- Placing structures to slow soil and water movement.
- Stabilizing soil to prevent loss of degradation or productivity.
- Increasing road drainage frequency and/or capacity to handle additional post-fire runoff.
- Installing protective fences or barriers to protect treated or recovering areas.

Designated Critical Habitat for Federal/State Listed, Proposed, or Candidate Species

- Conducting assessments of critical habitat in those areas affected by emergency stabilization treatments.
- Seeding or planting to prevent permanent impairment of designated Critical Habitat for Federal and State listed, proposed or candidate threatened and endangered species.

Critical Heritage Resources

- Conducting assessments of significant heritage sites in those areas affected by emergency stabilization treatments.
- Stabilizing critical heritage resources.
- Patrolling, camouflaging, burying significant heritage sites to prevent looting.

Invasive Plants

- Seeding to prevent establishment of invasive plants, and direct treatment of invasive plants. Such actions will be specified in the emergency stabilization plan only when immediate action is required and when standard treatments are used that have been validated by monitoring data from previous projects, or when there is documented research establishing the effectiveness of such actions.
- Using integrated pest management techniques to minimize the establishment of non-native invasive species within the burned area. When there is an existing approved management plan that addresses non-native invasive species, emergency stabilization treatments may be used to stabilize the invasive species.

Monitoring

- Monitoring of treatments and activities for up to three years from date of fire containment.

Burned Area Rehabilitation

Rehabilitation is defined as "Efforts undertaken within three years of containment of a wildland fire to repair or improve fire-damaged lands unlikely to recover naturally to management approved conditions, or to repair or replace minor facilities damaged by fire." (620 DM 3.3M)

The objectives of rehabilitation are: 1) To evaluate actual and potential long-term post-fire impacts to critical cultural and natural resources and identify those areas unlikely to recover naturally from severe wildland fire damage; 2) To develop and implement cost-effective plans to emulate historical or pre-fire ecosystem structure, function, diversity, and dynamics consistent with approved land management plans, or if that is infeasible, then to restore or establish a healthy, stable ecosystem in which native species are well represented; and 3) To repair or replace minor facilities damaged by wildland fire. (620 DM 3.4B)

The protection priorities of rehabilitation are: 1) To repair or improve lands damaged directly by a wildland fire; and 2) To rehabilitate or establish healthy, stable ecosystems in the burned area. (620 DM 3.8A)

Allowable rehabilitation actions are limited to the following items, grouped by issue topic:

Lands Unlikely to Recover Naturally

- Repair or improve lands unlikely to recover naturally from wildland fire damage by emulating historical or pre-fire ecosystem structure, function, diversity, and dynamics consistent with existing land management plans.

Weed Treatments

- Chemical, manual, and mechanical removal of invasive species, and planting of native and non-native species, restore or establish a healthy, stable ecosystem even if this ecosystem cannot fully emulate historical or pre-fire conditions.

Tree Planting

- Tree planting to reestablish burned habitat, reestablish native tree species lost in fire, prevent establishment of invasive plants.

Repair/Replace Fire Damage to Minor Facilities

- Repair or replace fire damage to minor operating facilities (e.g., fences, campgrounds, interpretive signs and exhibits, shade shelters, wildlife guzzlers, etc.) Rehabilitation may not include the planning or replacement of major infrastructure, such as visitor centers, residential structures, administration offices, work centers and similar facilities. Rehabilitation does not include the construction of new facilities that did not exist before the fire, except for temporary and minor facilities necessary to implement burned area rehabilitation efforts.

Monitoring

- Monitoring of treatments and activities for up to three years from date of fire containment.

C. Safety

Employee and public safety is the first priority in every fire management activity. All ES&R activities must reflect this commitment. Employees involved in ES&R work are responsible for knowing, understanding, and practicing safe operations. Prior to control of the fire, ES&R assessment activities must be closely coordinated with fire management activities to avoid conflicts. During that time, all assessment efforts must conform to National Wildfire Coordinating Group (NWCG) safety, training, qualifications (NWCG-PMS 310-1, Wildland Fire Qualifications), Interagency Standards for Fire and Fire Aviation Operations, and incident business management standards. Burned area assessments can only be conducted in areas within the perimeter of an “uncontrolled” fire where suppression activities have been successfully

completed and fireline hazards mitigated. Also see physical requirements for fireline access, in Fireline Handbook (NFES 0065/PMS 410-1).

A risk assessment must be prepared for pertinent ES&R activities.

II. Planning Process

A. Overview of Planning and Funding Process

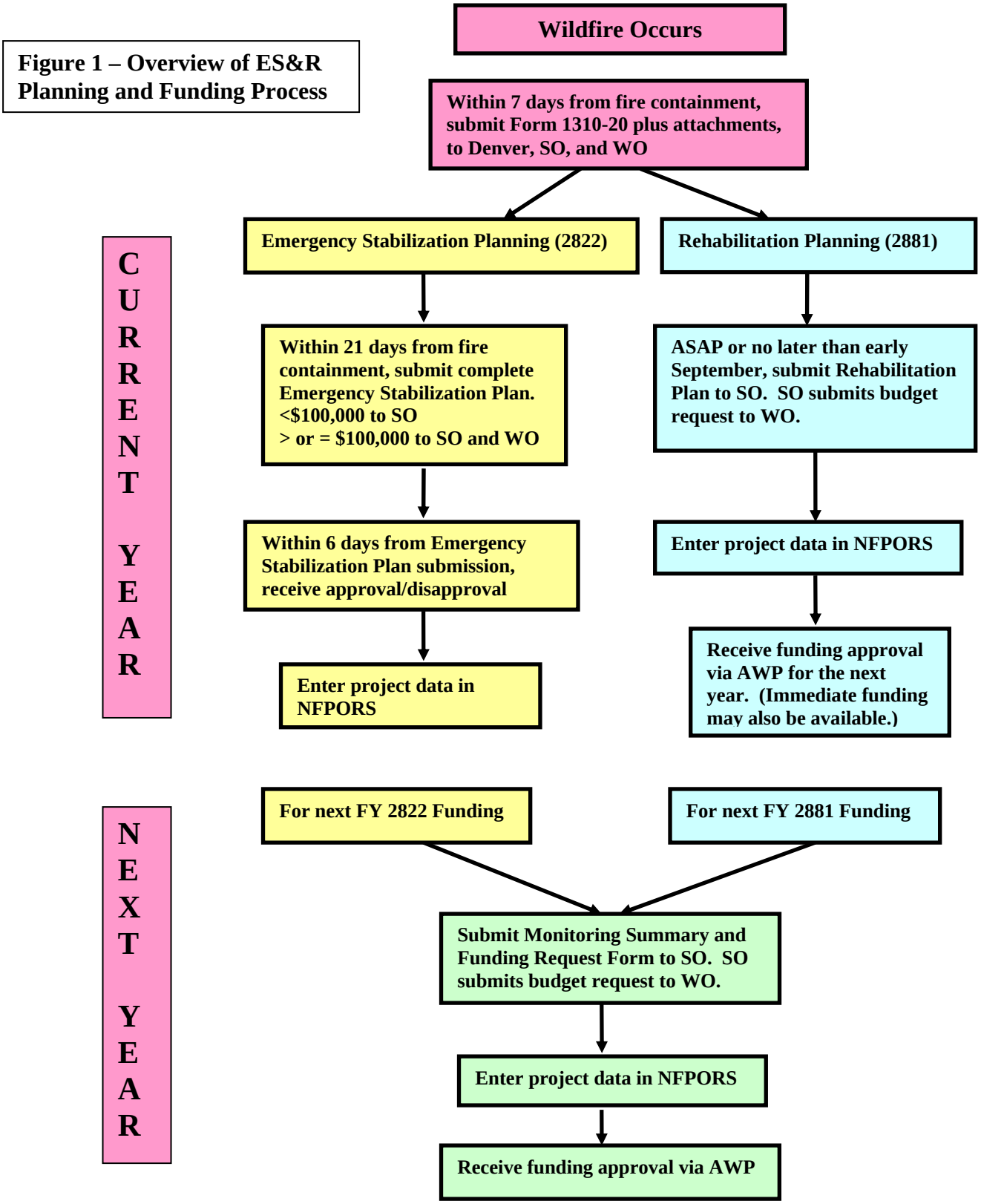
Policy changes in 2004 separated ES&R into two programs with separate planning and funding processes. Emergency stabilization and rehabilitation activities are developed in separate plans and are funded through separate processes. Figure 1 illustrates an Overview of the ES&R Planning and Funding Process.

Emergency Stabilization (ES) Plans are prepared immediately following a wildfire when stabilization activities are determined to be needed. Efficiencies are gained by preparing the Burned Area Rehabilitation (BAR) Plans concurrently with the ES Plan. Funding of rehabilitation treatments usually occurs in the following fiscal year, but may be authorized sooner if funding is available.

The emergency stabilization subactivity (2822) is funded through the Wildland Fire Operations Account. ES Plans for $100,000 or more are approved at the Washington Office administrative level, while funding for plans less than $100,000 may be approved by the State Director.

The burned area rehabilitation subactivity (2881) is funded through the Other Fire Operations Account, Burned Area Rehabilitation. Funded is on a priority basis as established by the Interior Burned Area Emergency Rehabilitation (IBAER) Working Group in consultation with the Office of Wildland Fire Coordination. Priority selection for treatments identified in BAR Plans on prior-year fires occurs shortly after the start of the fiscal year, but may be funded sooner depending upon the availability of funds.

Figure 1 – Overview of ES&R Planning and Funding Process



The five types of plans used in the ES&R program are shown in Figure 2. These plans must be consistent with the Land Use Plans (LUPs); e.g., Resource Management Plans (RMPs) or Management Framework Plans (MFPs), as well as any applicable activity level plans i.e., Wilderness Plans, Area of Critical Environmental Concern Plans, Fire Management Plans, etc. Development of ES&R plan objectives is guided by resource management objectives, general management practices, and constraints identified in the appropriate LUP. Land use plan objectives may not be immediately accomplished by implementing ES&R treatments after a wildfire; however, ES&R treatments should facilitate the process toward meeting LUP objectives.

Figure 2 – Types of ES&R Program Plans

PLAN	PURPOSE
Initial ES Plan (Form 1310-20, plus attachment)	To provide an initial overview of the fire and anticipated treatments, and to assign the project number to the subactivities.
Programmatic ES&R Plan (PESRP)	A programmatic plan with NEPA documentation, prepared in advance, clearly defining normal types of wildfire incidents and typical ES&R treatments for a given planning area.
Emergency Stabilization Plan (ES Plan)	A site-specific plan that specifies treatments required to implement post-fire emergency stabilization activities within one year of containment of the wildfire.
Burned Area Rehabilitation Plan (BAR Plan)	A site-specific plan that specifies treatments required to implement post-fire rehabilitation activities within three years of containment of the wildfire.
Burned Area Emergency Response Plan (BAER Plan)	A plan that involves multiple agency ownership or on large complex wildfires where preparation of a plan is beyond the capability of the local staff and values-at-risk are extremely high, often prepared by an activated DOI BAER team.

Understanding the planning and budget processes is essential in managing an effective ES&R program. Conducting pre-planning to anticipate the upcoming fire season and resulting ES&R needs is critical for the timely receipt of funding and the prompt implementation of treatments. In an office where ES&R is a frequent activity it may be advisable to hold a pre-season meeting to address issues and review the plan preparation process. The ES&R program must coordinate closely with the renewable resources staff in the office, such as rangeland management specialists and wildlife biologists, to insure that any potential plans or proposals do not conflict with other programs or plans. Appendix 1 shows a checklist of the principle steps of ES&R pre-planning, planning, implementation, and monitoring phases.

Policies on timeframes for ES&R planning, funding, and implementation are very specific. ES&R treatments must be implemented, to the extent possible, before additional damage occurs to the burned area, immediately down slope of the burned area, or before undesirable vegetation becomes established. Treatments must be implemented at a time that will ensure a high or maximum probability of success. The **initial** ES Plan (Form 1310-20 plus attachments) must be submitted to the State Office, the Washington Office, and Denver Budget Office **within seven calendar days** of wildfire containment. At that time the Denver Budget Office allocates two

work months for the writing of the ES Plan. Both 2822 and 2881 may be indicated on Form 1310-20, though funding under 2881 may not occur until the following fiscal year. The **complete** ES Plan must be submitted **within 21 calendar days** to the State ES&R Program Lead (for Plans below $100,000) or to the State ES&R Program Lead and the National ES&R Program Lead (for Plans of $100,000 and above). In rare circumstances, the approving office may grant an additional 14 day extension for the completion of the ES Plan. Review and approval at the appropriate administrative level (SO if below $100,000; WO if $100,000 or above) must be completed **within six calendar days** of receiving the ES Plan. If a plan is not approved or changes are required, the initiating office has 10 working days to make the requested changes and the approval office has 5 working days to either approve or disapprove the revised plan. The ES&R Program timeframes in relation to tasks are shown in Figure 3.

Figure 3 – ES&R Program Timeframes

Event	Timeframe	Task
Wildfire occurs	Immediately	Manager assigns a Resource Advisor from the local office to the fire. Notify State Office ES&R Program Lead of the scope of the fire and the anticipated fire containment date.
Initial ES Plan needed. Submit Form 1310-20 plus supplemental attachments (Both 2822 and 2881 may be indicated on Form, though funding under 2881 may not occur until the following fiscal year.)	Within 7 days of fire containment	Concurrently to State ES&R Program Lead, National ES&R Program Lead, and Denver Budget Office (BC-612).
Complete ES Plan needed. Prepare/Submit complete ES Plan.	Within 21 days of fire containment	<$100,000 submit to State ES&R Program Lead. > or = $100,000 submit to State ES&R Program Lead (for review) and concurrently to National ES&R Program Lead.
Receive approval/disapproval of ES Plan	Within 6 working days of receipt by Approval Office	Requesting Office receives memo approving funding, or need for revision on a plan by plan basis. State Director or acting has funding approval authority for plans < $100,000. Bureau Budget Officer, after concurrence with Assistant Director WO-200 or their designee, has funding approval authority for plans > or = $100,000.
Receive notification of ES funding approval	Immediately	ES&R Project Lead enters project data into NFPORS
BAR Plan needed. Prepare/Submit BAR Plan	Timely, ideally soon after submitting ES Plan but no later than Sept 5 annually	To State ES&R Program Lead and National ES&R Program Lead. Field Office ES&R Project Lead enters project data into NFPORS.
Receive approval/disapproval of BAR Plan funding.	Before October 31 annually	Funding for BAR Plans is approved via the Annual Work Plan.
Accomplishment Report and Funding Request Form for next FY 2822 and 2881 funds	Early September	To State ES&R Program Lead for review and submission to National ES&R Program Lead for concurrence. Funding for years 2 and 3 is approved via the Annual Work Plan.
Close-out Report	Early September of 3rd year	To State ES&R Program Lead for review and submission to National ES&R Program Lead.

B. Relationship of the ES&R Program to Fire Management Plans

The Fire Management Plan (FMP) identifies and integrates wildland fire management and related activities within the context of the approved LUPs and defines a program to manage wildland fires (wildfire, prescribed fire, and wildland fire use). The FMP is supplemented by operational plans, including but not limited to preparedness plans, preplanned dispatch plans, prescribed fire burn plans, and prevention plans. Fire Management Plans assure that wildland fire management goals and components are coordinated.

The "Rehabilitation and Restoration" section of the FMP summarizes the fire planning unit's ES&R program and the longer term goals of restoration which may provide guidance beyond the three year period applicable to ES&R. It should describe the historic annual workload necessary to plan and implement the program. The ES&R section should include a discussion on collaborative processes in planning, priority setting, and implementation. Any unit-wide plan, such as a Programmatic Fire ES&R Plan (PESRP), developed to guide ES&R activities should be included in the appendix of the FMP.

The ES&R program must coordinate closely with the fire program and participate in the preparation and review of FMPs to insure identification, documentation, and integration of common goals and objectives.

C. Types of Plans

1. Programmatic ES&R Plan (PESRP)

The PESRP is a programmatic ES&R plan, with an associated Environmental Assessment (EA) or Environmental Impact Statement (EIS), which is developed at the landscape level prior to wildfire occurrence. See Appendix 2 for a sample PESRP outline. The PESRP contains a description of ES&R treatments that would be implemented under normal conditions in the event of a wildfire and documentation of the potential treatment impacts. A PESRP should be prepared on a landscape basis at the District or Field Office level by an interdisciplinary team with public input. By addressing techniques and species that may be used, the process of developing the site specific plans will be made considerably easier. Because the PESRP is analyzed through the NEPA process, procedures for public review and comment will also apply, thus insuring ample opportunity has been given to those that are interested to be involved in the process of developing the plan. The decision to prepare a PESRP is based on the size and diversity of the ecosystems involved, fire history (wildfire occurrence and size), resource values, and values-at-risk. State Directors may require that PESRPs be prepared for all or part of the public lands within their jurisdiction and have approval authority for PESRPs that cannot be delegated.

The PESRP contains information about those areas where wildfires are most likely to occur, where and what type of ES&R treatments could be used, and a NEPA document disclosing the potential impacts of those proposed ES&R treatments. Review of previous ES&R Plans and monitoring data from previous efforts is essential during PESRP development. A map showing

previous 10-year wildfire occurrence by fire size should be prepared to assist in determining if a PESRP is warranted for an administrative unit. A review of fire management activity plans and wildfire reports for the unit under study may also assist in the analysis process. The PESRP reduces the repetitive preparation of individual NEPA documents for ES&R treatments following wildfires, thereby reducing time and costs, especially where wildfire occurrence is typically high. A PESRP assists in the timely and cost-effective implementation of ES&R treatments. A PESRP anticipates typical post-fire conditions and is used to develop site-specific ES&R plans.

After a wildfire occurs, an ES Plan and/or a BAR Plan are prepared by an interdisciplinary team to mitigate the adverse affects of wildfire on public lands. The ES Plan and BAR Plan are separate plans with distinct treatments and activities and describe the site-specific ES&R actions to be taken.

The ES Plan and BAR Plans, when based on information in the PESRP, may document NEPA compliance by completing a Documentation of National Environmental Policy Act Adequacy (DNA). See current BLM guidance for preparing the DNA worksheet. Since site-specific ES&R treatments and areas have not been identified in the PESRP NEPA document, there is a need to ensure consistency with the analysis at the site-specific project level. Site-specific ES&R treatments would be addressed using the DNA review process. This internal review process allows the BLM to base site-specific proposed actions on previous NEPA documents. A decision record is written based on the existing PESRP NEPA document if the proposed action has been adequately covered, and there are no changed circumstances. If the site-specific proposed action meets these criteria, the DNA worksheet documents the NEPA adequacy of the programmatic PESRP. A discovery of a new circumstance may require the development of a new EA or EIS if the circumstances are outside the scope of the PESRP analysis.

Existing PESRPs should be reviewed annually for consistency with most recent guidance, policy, and regulations. (Earlier versions of the PESRP were called Normal Year Fire Plans – NYRPs or NFRPs, etc.).

2. Emergency Stabilization Plans (ES Plans)

In accordance with Department policy, **initial** ES Plans must be submitted within seven days of wildfire containment. To meet this requirement, submit Form 1310-20 (use current BLM template) adding the additional information requested to the State Office, the Washington Office, and the National Business Center in Denver **within seven calendar days** of wildfire containment. When the National Business Center receives this form, they will assign two work months to the project number for use with the ES&R subactivities for the writing of the ES and BAR Plans. Both 2822 and 2881 may be indicated on Form 1310-20, though funding under 2881 may not occur until the following fiscal year.

The **complete** ES Plan, using the current BLM template, must be submitted **within 21 calendar days** to the State ES&R Program Lead (for Plans below $100,000) or to the State ES&R Program Lead and the National ES&R Program Lead (for Plans of $100,000 and above).

Complete ES Plans are site-specific documents that specify treatments required to implement post-fire emergency stabilization treatments. At a minimum, ES Plans must address:

a) A description of each treatment or activity.

b) A discussion demonstrating how the specifications are consistent and compatible with approved LUPs, and how the proposed treatments and activities are related to damage or changes caused by the wildfire (why it is being recommended), and the goals and objectives of the ES Plan.

c) An explanation of how a treatment or activity is reasonable and cost effective relative to the severity of the burn.

d) A monitoring plan which contains provisions for monitoring and evaluation of treatments and activities (including criteria for measuring a successful treatment or activity), techniques, and a procedure for collecting, archiving, and disseminating results. The monitoring plan must have clearly stated and measurable goals and objectives.

e) Clear delineation of funding and responsibilities for implementation, operation, maintenance, monitoring, and evaluation throughout the entire life of the project, and criteria for determining failure of a treatment or activity.

f) Clear, concise, and measurable (measurable quantitatively, qualitatively, and with a time frame) objectives based on the LUP goals and objectives.

Emergency stabilization treatments must be designed to address the protection priorities of: 1) Human Life and Safety, and 2) Property and unique biological resources (designated Critical Habitat for Federal and State listed, proposed or candidate threatened and endangered species) and significant heritage sites (620 DM 3.7A).

An ES Plan may be amended at any time as long as the treatment implementation can be accomplished within one year from the fire containment date.

Emergency Stabilization Objectives
Each treatment description in ES Plans must include stated objectives to be met through implementation and how the treatment relates to damage or changes caused by the fire. All treatment objectives must be **SMART**:

1. **S**pecific yet understandable.
2. **M**easurable with appropriate monitoring protocols.
3. **A**ttainable relative to site potential.
4. **R**easonable given social-economic constraints.
5. **T**imeframe to accomplish.

Examples of objectives that meet these criteria include:

Example of seeding establishment objective:

- *Establish densities (on ten random 1m2 plots): 1) Seeded grasses of 5 plants/m2, 2) Seeded forbs of 1 plant/m2, and 3) Seeded sagebrush of ½ plant/m2 by the end of the second full growing season following seeding.*

Example of cover objective to minimize soil erosion:

- *Obtain total cover values of between 70-80% of adjacent unburned land on the same ecological site by the end of the second full growing season following the fire. Total cover is comprised of plant canopy, litter, standing dead, biological crust, and rock/gravel as determined by point cover sampling.*

Example of invasive treatment objective:

- *Prevent cheatgrass from exceeding pre-burn or adjacent unburned densities of 100 plants/m2 by the end of the second growing season.*
- *Spotted knapweed density is no more than 10 plants per acre by the end of the third growing season.*

Example of riparian stabilization objective:

- *Livestock closure will remain in effect until 80% of the willow resprouts are 6 foot or taller in height and herbaceous species are within 20% of the canopy cover of unburned riparian values on the same stream.*

The objectives must relate to the stabilization priorities to be protected or achieved.

3. Burned Area Rehabilitation Plans (BAR Plans)

Burned Area Rehabilitation Plans (using the current BLM template) are site-specific documents that identify non-emergency treatments and activities to be carried out within three years following containment of a wildfire. Burned area rehabilitation funding (2881) is limited and therefore treatments are prioritized based upon a set of criteria developed by IBAER. All BAR Plans must be approved by the National Program Office. At a minimum, BAR Plans must address:

a) A description of each treatment or activity

b) A discussion demonstrating how the specifications are consistent and compatible with approved LUPs, and how the proposed treatments and activities are related to damage or changes caused by the wildfire (why it is being recommended), and the goals and objectives of the BAR Plan.

c) Provisions for monitoring and evaluation of treatments (including criteria for measuring a successful treatment) and techniques, and a procedure for collecting, archiving, and disseminating results (if monitoring is not covered completely under the ES Plan).

d) Clear delineation of funding and responsibilities for implementation, operation, maintenance, monitoring, and evaluation throughout the entire life of the project, including rehabilitation actions and follow-up actions beyond three years that may be necessary to ensure the effectiveness of initial investments, although funding for such activities beyond three years will not be funded from the ES&R accounts.

Rehabilitation treatments must be designed to address the protection priorities: 1) To repair or improve lands damaged directly by a wildland fire; and 2) To rehabilitate or establish healthy, stable ecosystems in the burned area. (620 DM 3.8A)

A BAR Plan may be amended at any time as long as the treatment implementation can be accomplished within three years from the fire containment date.

Rehabilitation Objectives
Each treatment description in BAR Plans must include stated objectives to be met through implementation and how the treatment relates to damage or changes caused by the fire. All treatment objectives must be **SMART**:

1. **S**pecific yet understandable.
2. **M**easurable with appropriate monitoring protocols.
3. **A**ttainable relative to site potential.
4. **R**easonable given social-economic constraints.
5. **T**imeframe to accomplish.

Examples of objectives that meet these criteria include:

Example of restoring healthy stable ecosystem objective:

- *Establish seeded native grass densities of 5 plants m^2 by the end of the third growing season on the key area in the Loamy 10-13" Precipitation Zone, Wyoming big sagebrush/bluebunch wheatgrass ecological site.*
- *Seed production on 90% of the perennial native grass and forb plants, and 70% of the bitterbrush plants that were burned relative to seed production on adjacent unburned rangeland on the same ecological site is achieved prior to reintroduction of livestock to the burned area.*
- *Establish minimum of 20 shrub plants per acre within three years of containment date of the fire.*

Example of invasive species objective:

- *Cheatgrass density is not more than 100 plants m^2 and spotted knapweed density is no more than 10 plants per acre by the end of the third growing season.*

Example of minor facilities objective:

- *Repair of internal allotment fences will be accomplished in a manner that does not impact the newly seeded burned area and completed prior to livestock turnout.*
- *Replacement of picnic tables in recreation area will be accomplished in a manner that provides for public safety and protection of the seeded areas.*

The objectives should include the vegetation attribute (density, cover, frequency, production, etc.) that one desires to obtain and measure. An adjacent unburned area may be used as the reference for setting the standard for attainment of an objective as long as it is on the same ecological site as the treatment monitoring plot. This approach provides for setting a realistic objective that takes into consideration climatic influences on the treatment area in comparison to the non-treated area.

4. Burned Area Emergency Response Plans (BAER Plans)

BAER Plans are generally developed by the DOI National Burned Area Emergency Response (BAER) Teams. BAER Teams, comprised of personnel from the Bureau of Indian Affairs, Bureau of Land Management, National Park Service, Fish and Wildlife Service, and Forest Service, may be dispatched to any DOI wildfire incident or where other federal lands are involved. This approach is generally employed for a wildfire that involves multiple agency ownership or on large complex wildfires where preparation of ES&R planning is beyond the capability of the local staff and where the values-at-risk are extremely high. A team of interagency specialists (members may be outside the local office area) is brought in to assess the impacts of the fire and prepare a BAER Plan for emergency stabilization treatments. A BAER team must be requested through the Incident Command System (ICS) prior to wildfire control or later through the appropriate line management decision process (see National Interagency Mobilization Guide Chapter 60, Section 69.4 at http://www.nifc.gov/news/mobguide/index.html). Prior to requesting a DOI BAER Team, the National BAER Team Dispatch Prioritization Criteria must be reviewed, and mutually agreed upon with the National and State ES&R Program Leads. See Appendix 3 National BAER Team Dispatch Prioritization Criteria. The BAER Plan developed is usually an ES Plan that may recommend rehabilitation treatments.

In activating the BAER Teams, all disciplines and programs at the requesting office need to be represented and be part of the plan development process and some members of the local staff may need to be present through the whole plan development process. A high quality plan is only possible with the significant and timely input of the local staff. If they cannot be involved, the integrity, utility, and quality of the final product may be compromised. In the request for the BAER Team, it may also be advisable to call in BLM personnel who are familiar with BLM processes and needs relative to the ES&R program to assist the BAER Team. They may also be able to assist in data entry and financial management of the ES project plan and implementation.

In planning for, or requesting a BAER Team, it may be beneficial for the BAER Team leader to report to the host office a couple of days before the rest of the team. The time can be used to

discuss the Delegation of Authority, details or issues to be addressed in the proposed plan, and the information needed to insure the highest efficiency possible for the plan development. The Delegation of Authority is the authorizing document that details the issues to be addressed by the BAER Team. It should be understood, developed and agreed to before the Team arrives. It is the "contract" that the team should be using in their analysis and plan development. Managers need to be aware that the more complex and defining that their Delegation of Authority is, likely the more costly and difficult the plan will be to implement. A "General Delegation of Authority", while potentially less troublesome to accept, may leave the requesting office with a plan that does not meet its needs.

Prior to bringing in the BAER Team, the requesting office should have the following information available:

- GIS layered information including soil and vegetation community types, allotment boundaries, rangeland improvement information, grazing permittee information, T & E information, and if possible land use plan or activity plan information in an electronic format. If the information isn't available external to the BLM firewall, it should be made available with CDs. It should be understood that GIS issues can be problematic, and as a result cost valuable time. If an incident is so large or complex so as to warrant the use of a BAER Team, a BLM GIS person may also be needed to insure that the data is compatible and useable to the BAER Team. There may also be difficulties if the fire crosses administrative or state boundaries, hence the need for GIS skills that may extend beyond the ordinary skills in the use of GIS data bases.

- Contact information for interest groups, persons or others that can assist in plan development or who maybe beneficial to be involved. Examples include local Audubon Society members, Division of Wildlife subject matter experts, and US Fish and Wildlife Service personnel who may need to be involved with T & E species questions. The local BLM personnel may also be involved in contacting these resources, who may then be involved in plan development.

When the BAER Team develops an ES Plan, part of the plan should address continued financial management of the plan through implementation. The continued financial management of the plan may necessitate the hiring or detailing of an Implementation Team Lead or Program Analyst or Financial Analyst.

III. Standards for Use of Emergency Stabilization and Rehabilitation Funds

ES&R funds will only be expended on lands administered by the BLM and are not authorized for use on private, state or other ownership lands. An exception is when the Wyden Amendment may apply. See Wyden Amendment Section for detailed guidance. Standards for the appropriate use of ES&R funding for administrative actions and treatment guidance are discussed below. Also see Appendix 4 - Expenditure Guidance for ES&R Funds.

A. Administrative Actions

1. Acquisitions

Acquisition planning must closely work with the local procurement personnel to determine if the staffing to accomplish the anticipated acquisitions is available, or whether additional personnel is needed to assist with the acquisitions necessary to support the implementation work. The acquisition group can help the implementation team decide how acquisitions should be accomplished (utilization of End-Product type contracts or equipment rentals) and what lead times may be necessary to accomplish the procurements. The implementation team needs to work closely with the procurement personnel to insure adequate specifications and product descriptions are addressed.

When obtaining competition, price must always be considered, but other factors may also be considered such as past performance, experience, quality, etc. The Acquisition Regulations which apply to ES&R projects are the same regulations which apply to procurements which support fire suppression activities. The following are some of the competition thresholds listed in the Federal Acquisition Regulations:

- Acquisitions under $2,500 – Do not need to obtain competition, but should do so if necessary to ensure receiving a reasonable price.
- Acquisitions $2,500 to $25,000 – Competition should be obtained to the maximum extent practicable. Normally, a minimum of three quotes should be obtained. The number of quotes obtained is dependent on the nature of the supplies and services being obtained. If competition is not obtained, a memo documenting the reasons must be placed in the file.
- Generally, all acquisitions over $25,000 must be advertised with full and open competition. There are a number of exceptions to these advertising requirements. The authority used during fires is the following:
    - FAR 5.202 (a)(2) – The proposed contract action is made under the conditions described in 6.302-2 (or, for purchases conducted using simplified acquisition procedures. If unusual and compelling urgency precludes competition to the maximum extent practicable) and the Government would be seriously injured if the agency complies with the time periods specified in 5.203;
    - FAR6.302-2 – Unusual and compelling urgency.
        (a) Authority.
            (1) Citations: 10 U.S.C. 2304 (c)(2) or 41 U.S.C. 253(c)(2).
            (2) When the agency's need for the supplies or services is of such an unusual and compelling urgency that the Government would be seriously injured unless the agency is permitted to limit the number of sources from

which it solicits bids or proposals, full and open competition need not be provided for.

(b) Application. This authority applies in those situations where -

(1) An unusual and compelling urgency precludes full and open competition; and

(2) Delay in award of a contract would result in serious injury, financial or other, to the Government.

(c) Limitations.

(1) Contracts awarded using this authority shall be supported by the written justifications and approvals described in 6.303 and 6.304. These justifications may be made and approved after contract award when preparation and approval prior to award would unreasonably delay the acquisition.

(2) This statutory authority requires that agencies shall request offers from as many potential sources as is practicable under the circumstances.

Justifications are required whenever the minimum competition required is not obtained. If preparation of the justification would unreasonably delay the acquisition, the justifications may be prepared and approved after contract award. It is the responsibility of technical and requirements personnel to provide, and certify as accurate and complete, necessary data to support their recommendations for other than full and open competition. Specific information required for justifications may be obtained in Part 6.303-2 of the Federal Acquisition Regulations through the units contracting officer.

End-Product Contracts: FAR 16.202-1 – "A firm fixed-price contact provides for a price that is not subject to any adjustment on the basis of the contractor's cost experience in performing the contract. This contract type places upon the contractor maximum risk and full responsibility. It provides maximum incentive for the contractor to control costs and perform effectively and imposes a minimum administrative burden upon the contracting parties."

The specifications in a job contract are written to state the work to be accomplished and the level of acceptability. As a minimum, the potential contractors must be given enough information to prepare a bid and perform the work under the contract without further directions. This places the risk of completing work on the contractor and provides them the most financial incentive to work efficiently.

2. Acquisitions of Services

The National Fire Plan website www.blm.gov/natacq/FIRE/vendors.html lists the current national contracts in place for suppression equipment/services available, which can also be a source for ES&R projects. Transportation charges for shipping or receiving equipment are an appropriate use of ES&R funds. Government vehicles or equipment damaged during the course of completing an ES&R treatment may be repaired using ES&R funds.

3. Awards

Exceptional efforts by employees, realization of large cost savings, and improvement of methodologies or techniques may be justification to provide an employee or group of employees

an award. Only burned area rehabilitation funds (2881) may be used for performance awards (the use of Emergency Stabilization funds (2822) is prohibited). Performance awards may be monetary or time off. All awards must follow existing awards policy and have the concurrence of the National ES&R Program Lead in writing.

4. Contracting

Contracting for ES&R treatments, personnel, services, supplies, and materials shall follow all BLM contracting regulations. In some instances, contracting and purchasing procedures found in the Incident Business Management Handbook (NWCG Handbook 2, PMS902) may be used. Chapter 20 of the NWCG Handbook gives guidance for suppression related acquisitions. The National Fire Plan (NFP) has a goal of contracting 50 percent of NFP project funds. Opportunities for stewardship contracting should also be considered.

The fuels reduction indefinite delivery indefinite quantity (IDIQ) contracts have been set up to streamline contracting for fuels reduction and ES&R projects. A program overview, vendors, and statement of work can be viewed at: http://www.blm.gov/natacq/FIRE/contracting.html

5. Equipment/Facilities Rental

Rental of equipment needed to implement ES&R activities is an appropriate use of ES&R funds. The use of Emergency Equipment Rental Agreements (EERAs), as outlined in the Interagency Incident Business Handbook, may be appropriate when there is a threat to life and/or property. When there is ample time to compete for contract, competitive sourcing is the best method to rent equipment. EERAs are designed for "quick" hire for immediate emergency use and should not circumvent normal acquisition methods when time allows.

Short-term rental/leasing of space is an appropriate use of ES&R funds. Space rental may include a warehouse for seed, straw bales, straw wattles, or a portable unit such as a refrigerated trailer. The item to be rented must be identified with supporting rationale in the ES&R Plans. Justification must be in writing and shall include why a rental is needed, at lease three competing sources (plus dates they were contacted), and a cost analysis.

All renting/leasing must follow agency policies.

6. Equipment Purchases

Equipment purchases needed to accomplish ES&R treatments may be made using ES&R funds following the guidelines below. All purchases of equipment must follow agency procurement policies and be approved by the National ES&R Program Lead in writing (except for minor supplies such as flagging, offices materials, etc.). Equipment must be entered into the appropriate tracking and property management system and equipment that requires licensing to operate must be accounted for under the Fixed Assets guidelines.

BLM Sensitive Equipment has an acquisition cost of $500 - $4,999.99 per single item and includes both Information Technology (IT) equipment and property such as cameras, small GPS units, seed bag sewing machines, hand held seeders, fencing equipment, etc. These are items that have been selected by BLM as sensitive because they are portable, desirable and/or need special handling.

Sensitive Equipment has an acquisition cost of $5,000 – $14,999.99 per single item and is either IT equipment or property that has been designated as sensitive because it is portable, desirable and/or needs special handling. Examples of this category of equipment include truck-mounted seeders, seed mixing equipment, trailers, harrows, generators, automated post pounders, RAWS, etc.

Capitalized Equipment has an acquisition cost of $15,000 or greater per single item and would include rangeland drills and other heavy equipment.

Equipment purchases must be identified with supporting rationale in the ES&R Plans and have a line manager's recommendation before being forwarded to the National ES&R Program Lead for approval. The rationale for recommending the purchase must include: 1) why purchasing is more cost effective than leasing; 2) names and numbers of at least three competing sources (plus dates they were contacted); 3) where the equipment will be stored after use on the project; 4) and a line manager's signature. The purchases shall remain the property of the ES&R program for the life of the equipment.

The purchase of computers, cell phones, and radios using ES&R funds is prohibited except in support of a National, Regional, or Statewide ES&R Program or a BAER Team and must be approved in writing by the National ES&R Program Lead. These purchases must follow all Bureau IT and procurement policies.

Efforts should be made to utilize all equipment across multiple incidents (and future incidents) and with other BLM offices, including radio cache equipment from the BLM National Office of Fire and Aviation at the National Interagency Fire Center (NIFC). A pool of fixed assets (comprised of sensitive and capitalized equipment, as defined above) will be available for use by all BLM offices.

7. Evaluation of Different Techniques and Methodologies

The evaluation of different techniques and methodologies (equipment, plant materials, etc.) on a limited scale may be supported with ES&R funding if the potential to improve cost efficiency or success of ES&R treatments is likely. If the different technique or methodology is proposed from an outside source, the use of ES&R funds is limited to providing an appropriate area within a burn and monitoring the results. ES&R funds would not be appropriate to fund associated NEPA documentation or treatment implementation when proposed by an outside source. If the different technique or methodology is from an internal source, use of ES&R funds may be appropriate for NEPA, implementation, and monitoring.

Caution must be used when incorporating different techniques or methodology to a project to ensure the goals and objectives of the overall project are not compromised. All activities under this section must be approved in writing by the National ES&R Program Lead.

Results of all evaluations require a technology transfer product upon completion of the evaluation. The product may be in the form of technical notes or bulletins for distribution through the agencies, professional papers, presentations, or other products. These products

should describe the problem, solution, methods or techniques, and should be distributed to a variety of audiences, including the public where feasible. The BLM's National Science and Technology Center is one a venue for publishing Technical Notes or Resource Notes.

Research projects are funded through the Joint Fire Science Program. Also see Research Section.

8. Fire Trespass

For all human-caused fires, where the suspect is identified, trespass actions may be taken to recover costs of suppression and ES&R treatments. Guidance on recovering costs of human-caused fires is found in BLM Manual H-9238-1-Fire Trespass and is initiated and tracked by the Fire Suppression and Law Enforcement organizations. For incidents where cost recovery of ES&R costs is proposed, extra care should be made to accurately document all ES&R expenditures.

9. Full Force and Effect Decision Authority

Given the emergency nature of stabilization treatments, it may be necessary to issue a decision to implement the treatments immediately or on a date specified in the decision document. A decision implementing treatments immediately may be issued in Full Force and Effect (FFE) using 43 CFR 4190.1 for rangelands and 43 CFR 5003.1 for forest lands. Also see Section IV E. Documenting Decisions section and the Livestock Grazing section for decisions on allotment closures.

In two recent cases (IBLA 2004-149/IBLA 2004-173 May 25, 2004 and IBLA 2004-228 June 16, 2004), IBLA has reaffirmed that "wildfire management decisions" are appealed directly to the Board rather than being subject to other protest and appeal procedures.

BLM decision makers may exercise Full Force and Effect (FFE) decision authority on appropriate wildfire management decisions. Field Offices must make reasonable efforts to discuss all wildfire management decisions with interested parties, partners, stake holders and State, local, and Tribal governments during the project planning and National Environmental Policy Act (NEPA) analysis stages of any project. A fire management decision placed in full force and effect does not eliminate the appeal period. Efforts must be taken to provide the opportunity for public comment during the planning phase of all wildfire management projects.

The authority for closing an area to livestock grazing is found at 43CFR 4110.3-3(b). If the determination is made **not** to place a livestock decision in full force and effect under 43 CFR 4160.3(f), **and** an appeal and request for stay of the grazing modification decision has been filed - - **do not** begin the treatment(s) until after the expiration of the period allowed under 43 CFR 4.21(b)(4) for the Office of Hearings and Appeals (OHA) to consider and rule on the stay request. If OHA stays the grazing portion of the decision, then the treatment(s) should be delayed until after the appeal process has been completed in order to avoid adverse grazing impacts to the treatment(s). Also see section below on Potential Protests, Appeals, and Stays.

Use of the FFE authority is discretionary. When BLM determines that immediate implementation of an ES&R decision is necessary because resources are at immediate risk of

erosion or other damage due to wildfire, BLM may make the decision effective immediately, or on a date established in the decision. Sections 43 CFR 4190.1 (rangelands) and 43 CFR 5003.1 (forested lands/woodlands) provides the authority for setting a date other than the date the decision is signed. When the FFE decision authority is used, the decision document must include information clearly identifying what resources are "at immediate risk of erosion or other damage due to wildfire" and what factors are placing those resources at risk (i.e. why is this an "emergency").

Decisions Affecting Other Authorized Uses: Implementation of a wildfire management decision may affect other uses authorized on public lands such as special recreation permits, grazing permits, rights-of-ways, wild horses or burros, or any number of permits/leases or authorized uses on public lands. It is imperative that the effects of a wildfire management decision be discussed and coordinated with other affected program specialists. A single wildfire management decision may be issued that applies to all uses potentially affected by it (a "multiple-use decision document"). For example, BLM relies on authority at 43 CFR 4110.3-3(b) and 4160.3(f) to issue and implement, in full force and effect, a decision that makes immediate modifications to use authorized by a grazing permit or that closes all or portions of an allotment to grazing use. Under the new wildfire management decision authority, when implementation of a wildfire management decision will affect grazing use, a single multiple-use FFE decision document may be issued that addresses emergency stabilization and rehabilitation treatments under 43 CFR 4190.1 for rangelands and 43 CFR 5003.1 for forested lands/woodlands and that closes all or portions of grazing allotment(s) under 43 CFR 4110.3-3(b).

The decision must explain the rationale for the decision, cite all of the appropriate authorities (e.g. 43 CFR 4110.3-3 (b) and 43 CFR 4160.3(f) for allotment closure and 43 CFR 4190.1 and/or 43 CFR 5003.1 for post-fire management/treatment decisions) and contain the appropriate appeal language applicable to each type of action. For example, a single decision that simultaneously addresses wildfire management/treatment and grazing authorization is appealable under 43 CFR 4160.4 for the grazing portion and 43 CFR 4.416 for the wildfire management portion.

Timing of Actions for FFE Decisions That Affect Grazing Use: If livestock removal or modification of grazing use is important to the success of a ES&R treatment and a determination is made to implement the treatment immediately and the decision is placed in full force and effect (using 4190.1 or 5003.1), then the livestock grazing modification should also be placed in FFE also using 4110.3- 3(b). Both components of the decision must clearly document what resources are at "substantial risk of wildfire" or "at immediate risk of erosion or other damage due to wildfire" and what factors are placing those resources at risk.

Potential Protests, Appeals, and Stays: A wildfire management decision issued under FFE using 43 CFR 4190.1 or 43 CFR 5003.1 must include information regarding appeal and stay procedures (see Supporting Language below). Information on adjudicating appeals regarding wildfire management decisions on either rangelands or forested lands/woodlands is contained in 43 CFR 4.410.

Both 43 CFR 4190.1 and 43 CFR 5003.1 override the automatic stay provisions contained in 43 CFR 4.21(a)(1) and the requirement to delay implementation until the appeal period has expired or a petition for stay has been adjudicated under 4.21(a)(2). A full force and effect wildfire management decision under 4190.1 or 5003.1 becomes effective the day the decision is signed or on a date stated in the decision. Regardless of whether or not an appeal is received, work may begin immediately or on a day specified in the decision. Work may continue until such time as a stay is granted by IBLA. Although work may begin immediately, the Board still retains the authority to issue a stay.

Supporting Language: When issuing an ES&R decision under FFE authorities, the following language must be included in the decision document:

> This wildfire management decision is issued under **[chose either 43 CFR 4190.1 for rangelands or 43 CFR Part 5003.1 for forested lands/woodlands, or both when applicable]** and is effective immediately **[or insert another date established in the decision]**. The BLM has made the determination that vegetation, soil, or other resources on the public lands are at immediate risk of erosion or other damage due to wildfire. Thus, notwithstanding the provisions of 43 CFR 4.21(a)(1), filing a notice of appeal under 43 CFR Part 4 does not automatically suspend the effect of the decision. Appeal of this decision may be made to the Interior Board of Land Appeals in accordance with 43 CFR 4.410. The Interior Board of Land Appeals must decide an appeal of this decision within 60 days after all pleadings have been filed, and within 180 days after the appeal was filed as contained in 43 CFR 4.416.

For a FFE wildfire management decision that also includes a FFE grazing decision, the decision document must cite (in a separate paragraph) the applicable grazing authority and appeal language/process, e.g. 4110.3-3(b) and 4160.3(f).

Referenced Sections from 43 CFR 4190.1 and 43 CFR 5003.1

> **4190.1 Effect of wildfire management decisions.**
> (a). Notwithstanding the provisions of 43 CFR 4.21(a)(1), when the BLM determines that vegetation, soil, or other resources on the public lands are at substantial risk of wildfire due to drought, fuels buildup, or other reasons, or at immediate risk of erosion or other damage due to wildfire, BLM may make a rangeland wildfire management decision effective immediately or on a date established in the decision.
>
> Wildfire management includes but is not limited to:
> (1). Fuel reduction or fuel treatment such as prescribed burns and mechanical, chemical, and biological thinning methods (with or without removal of thinned materials); and
> (2). Projects to stabilize and rehabilitate lands affected by wildfire.
> (b). The Interior Board of Land Appeals will issue a decision on the merits of an appeal of a wildfire management decision under paragraph (a) of this section within the time limits prescribed in 43 CFR 4.416.

5003.1 Effect of decisions; general.
(a). Filing a notice of appeal under part 4 of this title does not automatically suspend the effect of a decision governing or relating to forest management as described under sections 5003.2 and 5003.3.
(b). Notwithstanding the provisions of 43 CFR 4.21(a)(1), when BLM determines that vegetation, soil, or other resources on the public lands are at substantial risk of wildfire due to drought, fuels buildup, or other reasons, or at immediate risk of erosion or other damage due to wildfire, BLM may make a wildfire management decision made under this part and parts 5400 through 5510 of this chapter effective immediately or on a date established in the decision. Wildfire management includes but is not limited to:
(1). Fuel reduction or fuel treatment such as prescribed burns and mechanical, chemical, and biological thinning methods (with or without removal of thinned materials) and;
(2). Projects to stabilize and rehabilitate lands affected by wildfire.
(c). The Interior Board of Land Appeals will issue a decision on the merits of an appeal of a wildfire management decision under paragraph (b) of this section within the time limits prescribed in 43 CFR 4.416.

10. Funding: Requesting Additional or Turning Back Excess
Under the ES&R Plans, funding is requested and approved on a project-by-project, treatment-by-treatment basis. Funding can only be spent as requested and approved in the ES Plan and/or BAR Plan. Any requests for additional funding must be based on the results of monitoring and approved through an amendment to the original plan by the appropriate approving office. Occasionally a project will have excess funding due to reasons such as reduced seed costs, all or part of a planned treatment was determined unnecessary, or other similar savings. When approved funds are determined unnecessary for the project, the excess funding must be promptly identified and returned to the National ES&R Program Lead for redistribution.

11. Hiring ES&R Personnel
For current hiring guidance, consult the Interagency Incident Business Management Handbook (NWCG Handbook 2, PMS902) and local personnel specialists.

12. Maps and GIS
All ES&R treatments should be mapped with GPS and stored in an appropriate GIS database. Maps included in all ES&R plans must contain land status, treatment locations clearly identified (include existing fences that proposed protective fences will tie into), and be geo-referenced. They should contain sufficient metadata to inform potential users of how the data was gathered and will be at a large enough scale that details are easily interpreted during the review process. GIS generated colored maps are recommended.

13. Minimum Fire Size
All plans must be cost effective and document values-at-risk. Though there is no minimum size fire required in order to receive funding for ES&R treatments, any fire under 40 acres must document particularly compelling values-at-risk to gain funding approval.

14. National Drill Shop

The BLM operates a National Drill Shop in Vale, Oregon. The Drill Shop houses and maintains several types of rangeland drills used for planting seed. These drills are of varying capability and vintage. The Drill Shop should be contacted to determine equipment availability and specifications before ordering. The Drill Shop also maintains an inventory of other equipment that is useful in applying treatments. Procedures for ordering these drills and current use fees can be obtained from the Drill Shop. Transportation and operational (FOR) costs should be calculated and included as costs in the ES&R Plans. All drills must be cleaned prior to return to the drill shop to prevent the transportation of unwanted seeds, weeds, or pathogens.

15. National Seed Warehouse

The National Seed Warehouse is located at the Boise District Office in Boise, Idaho. A wide variety of native and introduced seed is purchased, tested, and stored at this facility. This facility purchases and stores seed for several States as described in a formal agreement (Memorandum of Understanding) with the Idaho State Director. The amount of seed each MOU State (Idaho, Oregon, Nevada, Utah, and Colorado) can reserve should be based on a reasonable projection of the annual acreage to be stabilized/rehabilitated over a 5-year period and the storage capacity of the warehouse.

Seed reserved through the Memorandum of Understanding (MOU) is held until September 1 each year for the requesting State and is available by requisition until this date. After September 1, any part of a State's reserved seed that has not been obligated with a requisition is available for any other State/District use. States or Districts that do not have MOUs with the Idaho State Director can acquire seed not reserved by another State at any time by submitting a requisition to the National Seed Coordinator. The use of the National Seed Warehouse is not mandatory. Seed may be purchased locally if it is more practical or desirable to do so. However, all seed testing and noxious weed restrictions still apply. All seed purchased by the National Seed Warehouse is tested for purity, germination, and applicable State-listed noxious and other weeds.

Also see Seed Selection, Testing, Treatments, and Purchasing sections.

16. Preexisting Conditions

ES&R funds cannot be used to settle long-standing disputes or completely deal with preexisting conditions. As examples:

- A riparian area is totally dominated by salt cedar. A fire burns through the area and funds are requested to stabilize and rehabilitate the area. While it is appropriate to deal with the potential spread of salt cedar as a result of the fire, and to replant herbaceous and woody vegetation to stabilize/rehabilitate the area with more desirable vegetation - - it is not appropriate to use ES&R funds to completely remove all of the salt cedar that were there before the fire.
- The burned area was in a poor pre-fire condition infested by 30 percent cheatgrass. It is appropriate to stabilize soils and inhibit increased expansion of invasive species (cheatgrass) by seeding with perennial species using ES&R funds, but it would not be appropriate to expend ES&R funds to reach a post-stabilization/rehabilitation objective of less than the 30 percent that existed before the fire.

17. Qualifications
There are no specific BLM qualifications for employees to participate in ES&R activities after the wildfire has been declared out. However, prior to the fire being declared out, all ES&R personnel must meet the minimum NWCG standards outlined in the Fireline Handbook (NFES 0065/PMS 410-1) as directed by the Incident Commander. Typically, during the active fire period, ES&R specialists are ordered using the THSP 310-1 Technical Specialist with light duty requirements.

18. Research
Formal research investigations of treatment effectiveness and fire ecology issues are defined as individual projects and cannot be funded by ES&R. All research activities should be presented to the Joint Fire Science Program, or other sources, for consideration and funding.

19. Timeliness
Congress has determined that "it is in the best interest of the Nation to take swift action to rehabilitate burned lands." Therefore ES&R treatments must be implemented, to the extent possible, before additional damage occurs to the burned area, immediately down slope of the burned area, or before undesirable vegetation becomes established. Treatments must be implemented at a time that will ensure a high or maximum probability of success. The **initial** ES Plan (Form 1310-20 plus attachments) must be submitted to the State Office, the Washington Office, and Denver Budget Office **within seven calendar days** of wildfire containment. At that time the Denver Budget Office allocates two work months for the writing of the ES Plan. Both 2822 and 2881 may be indicated on Form 1310-20, though funding under 2881 may not occur until the following fiscal year.

The **complete** ES Plan must be submitted **within 21 calendar days** to the State ES&R Program Lead (for Plans below $100,000) or to the State ES&R Program Lead and the National ES&R Program Lead (for Plans of $100,000 and above). In rare circumstances an additional 14 days may be granted for the completion of the ES Plan by the Approving Office. Review and approval at the appropriate administrative level (SO if below $100,000; WO if above $100,000) must be completed **within six calendar days** of receiving the ES Plan. If a plan is not approved or changes are required, the initiating office has 10 working days to make the requested changes and the approval office has 5 working days to either approve or disapprove the revised plan. If the plan is not submitted in a timely manner and without documented extenuating circumstances, there is a diminished likelihood for funding.

20. Travel and Training
Funding for travel and training must be tied to specific ES&R projects unless otherwise designated in the Annual Work Plan. Examples of appropriate uses of ES&R funds for travel and training include: sending personnel to ES&R related training courses [i.e., Project Inspector, Contracting Officer's Representative (COR), Seed COR, Pesticide Use Applicators, and Burned Area Emergency Response (BAER) Training], or travel costs to attend seed buys or lessons learned meetings.

21. Values-at-Risk (Values to be Protected)
While conducting the burned area assessment, values-at-risk must be documented and analyzed. High values-at-risk would include situations such as: homes at the bottom of a drainage; a community's only source of potable water; or a stream with T&E fish. The expenditure of ES&R funding must be commensurate with the values-at-risk. The primary questions to ask when determining values-at-risk are: Is the site at risk of further degradation? What can be done to prevent further degradation?

22. Work Schedule (overtime and base 8 hours)
Given the emergency or urgent nature of the ES&R program, it may be necessary to work long hours, work on weekends and holidays, and travel to remote locations via helicopter. At all times, BLM policy on hours worked, travel requirements, and safety considerations shall be followed.

Overtime may be authorized when deemed necessary by a supervisor. True overtime (code 113) can only be earned by ES&R personnel working on an ES Plan (essentially doing assessments in the field on an active fire) for up to 10 days after control of the fire or until the initial ES Plan is submitted for approval - - whichever is shorter. The Interagency Incident Business Management Handbook (IIBMH) states:

- 12.11 (2) Those involved in the preparation and approval of a Burned Area Emergency Stabilization and Rehabilitation Plan (ESR) whose overtime hours worked are exempt from coverage under the FLSA. The new overtime provision will apply only until the initial ES Plan is submitted for approval.
- 12.11 (4) In order to qualify for the pay provision, an employee's overtime work must be charged to a wildland fire, ESR, severity, or wildland fire suppression funds tied to the support of suppression operations and the overtime must be recorded on a timesheet approved by the appropriate supervisor or time keeper.

- Hazard: Guidelines for hazard/environmental pay differential is covered in the IIBMH:
  - Section 12.9: GS employees and 12.10 for Prevailing Rate Employees.
  - Section 12.9-3: Criteria for Entitlement to Hazardous Pay Differential for Irregular and Intermittent Hazardous Duties list 4 categories for hazard pay: 1) fire fighting, 2) limited controlled flights, 3) groundwork beneath hovering helicopter, and 4) work in rough and remote terrain. Burned area rehabilitation [Burned Area Emergency Response] (BAER Team) or other rehabilitation work does not meet the definition of firefighting for hazard pay eligibility; however, hazard pay under 2, 3, or 4 from above may apply in very limited circumstances. Line Officer determination and documentation is necessary to authorize hazard pay.

Work/rest guidelines outlined in the Interagency Business Management Handbook shall be followed. National Incident Operations Driving Standards shall also be followed.

The decision was made by the Wildland Fire Leadership Council (WFLC) in January 2003 not to shift base 8 preparedness salary costs to suppression accounts. Employees funded with fire

preparedness funds (i.e., 2810) will continue to charge their regular base 8 hours to the fire preparedness program when they are assigned to an emergency stabilization project, along with the incident number (i.e., 2810-JS-XXXX for stabilization). Overtime, premium pay, etc., will be charged to the emergency stabilization program (i.e., 2822-JS-XXXX). When working on a burned area rehabilitation projects, employees funded with fire preparedness funds (i.e., 2810) will charge their regular base 8 hours, and any overtime or premium pay to the burned area rehabilitation program (i.e., 2881-JL-XXXX).

Employees funded with fuels program funds (i.e., 2823 or 2824) will charge their regular base 8 hours, and any overtime or premium pay to the emergency stabilization program (i.e., 2822-JS-XXXX) when they are assigned to an emergency stabilization project; or the burned area rehabilitation program (i.e., 2881-JL-XXXX) when they are working on rehabilitation projects.

Employees funded with ES&R funds (i.e., 2822 or 2881) will charge their regular base hours and any overtime or premium pay to the fire suppression program (i.e., 2821-HU-XXXX) when they are assigned to a wildfire suppression incident. Employees funded with non-fire program funds (i*.e., MLR, O&C, etc.)* will charge their regular base 8 hours and any overtime or premium pay to the fire suppression program (i.e., 2821-HU-XXXX) when they are assigned to a wildfire suppression incident (including initial attack); to the stabilization program (i.e., 2822-JS-XXXX) when they are assigned to an emergency stabilization project; or the burned area rehabilitation program (2881-JL-XXXX) when they are working on rehabilitation projects.

B: Treatment Guidance

All ES&R treatments (fences, culverts, water bars, etc.) must comply with applicable BLM policy and standards (as specified in the Engineering Guide Specifications and Standard Drawings, and Manual Section 9170) and other applicable guidance. Treatments should be designed to be cost-effective, commensurate with the values-at-risk, and to meet stabilization/rehabilitation objectives.

1. Cadastral Survey

Emergency stabilization or rehabilitation funds may be used to mark treatment area boundaries between agency and private, or agency/agency administered lands. These funds may also be used to locate and flag existing monuments such as section, quarter, and property corners for avoidance prior to any surface disturbing activity that could result in damage to or destruction of the monuments. If an existing monument is removed or destroyed by a surface disturbing activity associated with ES&R treatments, a Chief Cadastral Surveyor (located in most BLM State Offices) will be notified. ES&R funds may then be used to reestablish the marker. ES&R funds will not be used to resolve long-standing large-scale ownership issues or replace monuments removed or destroyed by the fire or by fire suppression activities.

2. Clean Water Act

Certain ES&R treatments are regulated under the Clean Water Act. A Nationwide Permit Summary 33 CFR Part 330 (January 15, 2002) (NWP 37, Emergency Watershed Protection and Rehabilitation) (http://www.spa.usace.army.mil/reg/NATIONWIDES-NEW/NW37-Wshed.pdf) describes actions that must be taken prior to implementing certain treatments. The placement of

sediment control structures may have impacts to aquatic resources and thus require authorization under Sections 401 and 404 of the Clean Water Act. Activities, such as the installation of straw check-dams, rock dams, culverts, and other measures intended to stabilize ground cover and slow the rate of soil erosion in perennial and intermittent stream channels and other waters of the U.S., including wetlands, require written notification to the local Corps of Engineers District Office. Locations of these types of treatments should be included in the written notification. The District Engineer has 30 days from date of receipt of the BLM's proposal to request additional information. The Corps of Engineers may require modifications to ES&R treatments to ensure that the environmental impacts to stream channels or wetlands are minimal. If adverse impacts of the proposed activities are more than minimal, the Corps should notify the applicant that an individual permit is required. Examples of certain ES&R activities that may require Section 404 authorization include placing rocks in an active stream channel to create a check dam.

3. Closures

Closures may be established under the authorities at 43 CFR 8364 for public safety or to temporarily close the burned or seeded areas to uses (livestock, recreation, etc.) or access (motorized, non-motorized, horse, foot, etc.) to allow recovery and prevent unacceptable resource damage. Such closures require following the appropriate NEPA process, issuing a Federal Register Notice, and sufficient public notices. Costs to enforce public restrictions or closures should be accomplished within existing program funding, except in extraordinary situations which require justification and approval within the ES&R Plan. Also see the Recreation, Law Enforcement, and Livestock Management sections.

4. Contour Log Felling

Contour log felling consists of falling burned trees or importing small diameter logs and anchoring them perpendicular to the slope to slow down erosion. For specifications, see references from the following NRCS Colorado Fact Sheets:
http://www.co.nrcs.usda.gov/technical/eng/CONTOURFELLINGfactsheet.pdf, and
http://lamar.colostate.edu/~rmoench/logfell.pdf

It is imperative that when using contour log felling that the specifications be followed as closely as possible. If not followed, these structures may cause more harm than good. Contour log felling is an acceptable ES&R practice and can be funded using ES&R funding. Also see Log Erosion Barriers section.

5. Cultural Resources

Emergency stabilization objectives related to cultural resources are: 1) to stabilize and prevent post-fire related degradation to cultural resources including archaeological sites, cultural landscapes, traditional cultural properties and historic structures, and 2) to ensure other ES&R treatments comply with Section 106 of the National Historic Preservation Act (NHPA). In the first case, where fire-related damage may contribute to further degradation of cultural resources, ES&R funds may be used as follows: a) to determine if known (see "Identifying resources at risk" below) resources are at risk from such degradation; b) to determine if stabilization is possible and cost-effective for such resource; and c) to implement stabilization treatments. ES&R funds are limited to stabilizing resources, therefore it is not appropriate to use ES&R funds to conduct extensive or systematic post-fire inventories; site documentation; national

register evaluations; assessments of damage caused by the fire; or site restoration. It is also not appropriate to use ES&R funds to repair damage caused by wildfire suppression activity.

ES&R treatments are subject to the provisions of Section 106 of the National Historic Preservation Act. Where activities have the potential to affect historic properties, ES&R funds may be spent for Section 106 compliance.

Emergency Stabilization Treatments

The purpose of emergency site stabilization and protection actions is to ensure that critical cultural resources will be available in the future for normal management activities. Emergency stabilization actions are directed at resources that are in danger of further degradation due to the effects of a wildfire. Successful stabilization preserves the value of cultural resources for future management activities, such as scientific research or interpretation. ES&R of cultural resources after a fire is not itself a Section 106 activity and does not follow that process.

In relation to cultural resources, emergency stabilization funds may be used to:

- Determine which cultural resources are at risk from post-fire degradation due to erosion, looting, or other effects;
- Assess those resources to determine if stabilization is possible and cost-effective to prevent further degradation;
- Implement stabilization actions to prevent further damage;
- Implement Section 106 compliance for other ES&R activities where appropriate.

Procedures

- Identifying resources at risk: The limits of time and funding preclude Class III inventory procedures as a standard approach to site identification for purposes of site stabilization and protection. Endangered sites may be identified by other means including: examination of existing site databases and historic/documentary information; aerial survey (photographs, fly-over of burnt area); consultation (e.g. SHPO, Tribes, and others); existing cultural resource planning models; and classifications in land use and fire management plans.
- Evaluating the risk: Emergency stabilization actions must be commensurate with the values-at-risk. A standard measure of such values includes those aspects of a site that make it eligible for the National Register. However, emergency stabilization funding does not cover routine National Register evaluations; therefore it is permissible to assume a cultural resource has such values for stabilization/protection purposes when necessary. On rare occasions it may be more cost-effective to evaluate the values of a site than to make this assumption. These instances need to be justified on a case-by-case basis.
- Stabilization: Stabilization actions are those which prevent or minimize further damage to sites due to the effects of a fire. Stabilization methods do not include data recovery except in extremely rare occasions where recovery of information is the only possible or least costly alternative to preventing further damage from fire effects. Such considerations may be the case for exfoliating rock art panels, for example, where there is no feasible way to stabilize the degradation. These instances need to be justified and approved on a case-by-case basis.
- Implementation: Cultural resource specialists should work closely with other specialists to coordinate stabilization assessments and treatments. Treatments may include, for example, hazard tree removal; erosion prevention; and patrolling, area closures, and camouflaging

where sites are at risk from looting. Where looting is a concern there should also be a determination with regard to the cost effectiveness of law enforcement patrols versus the other protection measures such as road closures, public awareness contacts, or use of site stewards.

Burned Area Rehabilitation Treatments

The cultural resources needs for a rehabilitation treatment follows the same guidelines as for emergency stabilization except that funding is for actions that may extend up to three years. Restoration of cultural resources to pre-fire condition (such as rebuilding log cabins or other structures) is not appropriate for rehabilitation funding (620 DM 3). Funding is limited to preventing further post-fire degradation to cultural resources due to erosion, looting, other fire effects, or for Section 106 compliance for other proposed rehabilitation treatments.

National Historic Preservation Act Compliance

Emergency stabilization and rehabilitation actions are subject to the provisions of Section 106 of the National Historic Preservation Act (NHPA). Compliance with Section 106 is part of any treatment that has the potential to affect historic properties, and is required for all such undertakings. ES&R funding covers compliance with the NHPA for treatments.

Cultural resource specialists should be involved early in ES&R treatment planning, in order to facilitate compliance with Section 106 and to minimize delays for anticipated ES&R projects.

When necessary, cultural resource specialists also assist ES&R teams to comply with other cultural resource laws and regulations, such as the Archaeological Resources Protection Act and the Native American Graves Protection and Repatriation Act.

Fire Suppression Activities and Cultural Resources

"Funding for fire suppression activity damage repair actions will come from the Wildland Fire Operations, Emergency Suppression subactivity and will be charged to the project code for the wildland fire suppression effort that resulted in the damage. Fire suppression activity damage repair will not be charged to the Emergency Stabilization or Rehabilitation subactivity accounts" (620 DM 3.10B).

6. Culverts, Rolling Dips

Culverts may be installed along roadways on public lands (or removed) using ES&R funds if it is determined by an engineer or hydrologist that the existing culvert might not be large enough to handle the predicted amount of runoff from the burned area. In areas where culverts are not needed or may not sustain peak flows, rolling dips may be installed/constructed in roadways following BLM specifications. All culverts in areas possessing native fish species must facilitate fish passage.

7. Early Warning Flood/Evacuation System

Remote Automated Weather Stations (RAWS) or other satellite driven systems may be necessary to monitor rainfall amounts and intensity in moderate to high intensity burns in immediate proximity to high values-at-risk (highways, structures, etc.). The initial installation and maintenance can be funded using ES&R funds for 3 years following containment of the fire.

Continued operation and maintenance after that time must be funded from other sources. Prior to purchase of these systems, check the availability of such equipment at the Branch of Remote Sensing/Fire Weather Support (FA-262) at the BLM National Office of Fire and Aviation at the National Interagency Fire Center (NIFC). Any hardware that is purchased as a result of these activities should be cached for reuse on future ES&R incidents. The monitoring of these Early Warning Systems (EWS), and the subsequent public notifications, must be coordinated with appropriate local emergency management agencies after instillation. The local emergency action agency is responsible for public evacuation planning, public notification, and evacuation on non-federal lands. A Cooperative Agreement must be prepared for this coordinated effort.

8. Facilities (repair and replacement)
The repair or replacement of minor improvements and facilities [e.g., kiosks, fences, exclosures, small water pipelines, interpretive or boundary signs, recreation facilities (tables, outhouses, etc.), water control structures, corrals, guzzlers, trails, etc.] burned or damaged by fire to pre-fire specifications is authorized with the use of ES&R funds only if these improvements or facilities are addressed in an appropriate planning document or if they are an approved BLM project [with a Range Improvement Project System (RIPS) or FIMMS project number]. Facility repair or replacement associated with public health, safety, or resource protection is addressed in the ES Plan while minor facility repair or reconstruction is addressed in the BAR Plan.

It is not appropriate to upgrade facilities to higher standards than existed before the fire (e.g., increasing a wildlife guzzler from 20,000 gallon capacity to a 40,000 gallon capacity or a restroom from a one-hole fiberglass facility to a two-hole SST) or to construct new facilities that did not exist before the fire. However, the difference of the cost of an upgrade (above the cost of replacing the original facility) may be paid for with another funding source. In areas of moderate or high fire frequency, metal posts/pipe posts or metal panels/gates may be substituted for older wooden fences during post-fire repair. Maintenance of repaired or reconstructed improvements beyond three years from containment of the fire is funded by other sources, not ES&R funds.

Replacement or repair of major facilities (e.g., visitor centers, residential structures, administration offices, work centers, vehicle bridges, or similar facilities and their contents) is not an appropriate use of ES&R funds.

9. Facility Inspection/Structural Stabilization and Clean-up
A visual inspection for hazardous conditions/materials and structural integrity of government owned structures affected by fire is required prior to the structure being reopened or made accessible to the public. Inspections are conducted for structural integrity by a qualified engineer assigned to the interdisciplinary ES&R team or project. A written condition assessment (including hazardous materials - HAZMAT) of each affected structure is submitted as part of the approved ES&R Plan. Should this assessment occur following demobilization and the closure of the fire suppression accounts, it may be funded through the ES&R account. ES&R funds are not to be used to develop reconstruction or repair plans or to initiate or complete any of the work outlined in these documents (including HAZMAT mitigation). For safety purposes, security measures required prohibiting public access to damaged structures or HAZMAT sites may be paid for using ES&R funds.

Facilities utilized by suppression forces should be cleaned/repaired using the fire suppression account and may include such activities as carpet cleaning, painting, etc. Facilities utilized by ES&R personnel should be cleaned/repaired using the ES&R account.

Also see Hazardous Materials Section.

10. Fences, Cattleguards, and Gates

Protective fences may be constructed using emergency stabilization funds to protect burned areas (from impacts by wildlife, domestic livestock, wild horses/burros, or humans and for the health and safety of agency personnel and the public) during the recovery period for burned vegetation or the establishment period for new seedings. Fencing may serve as either temporary protection only or as a permanent management fence if a seeding or recovered area requires separate management to maintain the investment. Fences should be placed around the perimeter of the burn to the minimum degree required, considering topography, rock outcrops, soils, existing fences, etc. When not needed for long-term management, protection fences should be reused on new ES&R projects after the protection period is over (if feasible). Prior to proposing any new fences, an analysis of the existing fences must be completed to see if they can meet the identified need.

Fences are generally installed:

- To protect a new ES&R seeding from grazing during the establishment period and to manage the seeded area after it is established to maintain the seeded species.
- Where it is determined that the native vegetation will adequately recover if protected from grazing, and the area does not require further treatments to reestablish plant species, composition, or cover.

New fencing that exceeds the amount required to protect new seedings or the burned area will be funded by another benefiting subactivity. Constructing new fences on private/public land boundaries to keep privately owned livestock off adjacent burned or rehabilitated public lands is the responsibility of the private land owner(s). Therefore, ES&R funds are not to be used to construct new fences on the private/public land boundary unless state laws (e.g., herd districts) require a different approach or under the conditions described in the following paragraph. Appropriate administrative and/or legal action should be taken when livestock trespass on public lands closed for stabilization or rehabilitation purposes occurs and the private landowner is responsible for fence construction or maintenance.

Construction of fences on the boundary of or across private or state lands may be considered if: 1) the fence was originally constructed by the BLM and has a valid project number; 2) the fence meets the criteria found in the Wyden Amendment (see Wyden Amendment section); or 3) if it can be clearly shown that construction of this fence results in a cost savings to the government compared to fencing only on public lands. Situations where this exception might apply includes where a shorter fence can be constructed by crossing private or state lands compared to building the fence on the private/state and public land boundary or where the topography is such (steeper or rockier on the public than the private) that it costs less to construct the fence on the private land. BLM must acquire an easement from the landowner prior to fence construction (including

cattleguard installation if required). The easement should be for 4-5 years in case additional livestock exclusion is required beyond the second growing season. Also see Livestock Management Post-Fire section. All fences constructed with ES&R funds must meet Bureau standards found in handbook H-1741-1 Fencing.

Cattleguards may be installed on maintained county, agency or State roads, and areas of high use where a gate would present a safety hazard to the public or would be impossible to keep closed. Cattleguards are not to be installed with ES&R funds on lightly traveled roads and two-track trails where a gate would suffice. A State or county permit must be obtained if required prior to installation. Warning signs concerning gates and cattleguards may also be installed with ES&R funds to reduce public safety concerns. A cattleguard installed in conjunction with a temporary protection fence must be removed and used on future ES&R projects.

Emergency stabilization funds can be used to maintain ES installed/funded fences, cattleguards, or gates for a period of up to three years.

Removal of protective fences and cattleguards can be funded with emergency stabilization funds within the three-year period following a wildfire. After 3 years, funding other than from ES&R will be required. If a temporary fence is to be reused on a new ES&R project, funding to remove the old fence and install it on the new ES&R project can be funded through the new ES&R project.

Existing BLM approved fences (documented with a project number in the Rangeland Improvement Project System) burned within the perimeter of the fire may be repaired or reconstructed using rehabilitation funding (considered as minor facilities). However, if the existing interior fence is to be used as the seeding protection fence (instead of constructing a new fence), then it can be repaired using emergency stabilization funds. In cases of threats to human safety, such as a highway protection fence having been burned, all efforts to coordinate with the owner of the fence are to be made as quickly as possible. If action cannot be taken in a timely manner, then emergency stabilization funds may be used to repair the fence for human safety purposes until it can be rebuilt.

ES&R funding may be used to remove old burned fencing that must be eliminated prior to drill seeding, fence replacement, or other mechanical treatment(s).

If it is more practical and economical to maintain (bring up to current BLM standards) an existing BLM approved fence a short distance from a proposed ES&R treatment rather than build a new temporary fence, then ES&R funds may be used to maintain the existing fence.

On a case by case basis, an ES&R protection fence that is at the end of the project life may be bartered as “excess property” to offset the cost of removing the fence.

Non-Standardized Fence Types Paid for by ES&R Funds

- EZ Panel – Temporary panels attached together with pipe clamps. Used for short stretches.

- Steel Post – Used in areas of high fire frequency.
- Electric Fence

All fences and cattleguards must be entered into the Rangeland Improvement Project System (RIPS) or its replacement system.

11. Forest Treatments
Seeding or planting of trees for emergency stabilization (willows or cottonwood poles along a creek) is only appropriate if such actions have been demonstrated to be cost-effective in meeting project objectives of stabilizing watersheds to prevent downstream damage and can be completed within one year.

Tree planting using rehabilitation funding is limited to the following [per Wildland Fire Leadership Council direction and Departmental Manual 620 DM 3 (3.8.M(3)] and must be consistent with existing approved LUPs and BLM guidance:

- Reestablish burned habitat.
- Reestablish native tree species lost in a fire.
- Prevent establishment of invasive plants.

The costs for cutting trees destroyed by fire where they are a danger to the public (hazard trees) as well as the use of trees for log erosion barriers to inhibit erosion is an appropriate use of ES&R funds. Also see Contour Felling and Hazard Tree Removal sections.

Although the initial burned area assessment of forest resource loss may be funded by emergency stabilization funds, a detailed timber salvage assessment and the costs associated with a salvage sale (i.e., timber inventory, contract preparation, etc.) or the sale itself cannot be charged to the ES&R accounts.

12. Fuels Management/Greenstrips
Post-fire fuels management activities designed to address a fuels issue, not for site stabilization or to protect ES&R treatments, are not an appropriate use of ES&R funds.

13. Hazardous Materials
A visual inspection for hazardous conditions/materials and structural integrity of facilities affected by wildfire is required prior to their being reopened or made accessible to the public. Appropriate inspections are conducted by a qualified technical specialist. A written condition assessment (including hazardous materials - HAZMAT) of each affected structure is submitted as part of the approved ES&R Plan. ES&R funds may only be used to identify the location of hazardous materials and to prevent them from leaving the site (aerial seeding, hydromulching, or trenches down slope) or for safety measures required to keep the public from entering the site (signs, barriers, and road closures). ES&R funds are not to be used to develop reconstruction or repair plans, or to initiate or complete any of the work outlined in the hazmat assessment document. ES&R funds may NOT be used for hazardous material removal or mitigation.

Hazardous materials discovered during field assessments may be secured with emergency stabilization funds.

Also see the Preexisting Conditions section.

14. Hazard Tree Removal
The cost of cutting trees destroyed by fire (hazard trees) where they are a danger to the public (along roads, trails, campgrounds, and high use areas) is an appropriate use of ES&R funds. Also see Contour Felling and Forest Treatment sections.

15. Insect and Rodent Control
Outbreaks of rodents or insects may threaten seedings or returning native vegetation. ES&R funds may be used to protect seedings/returning vegetation from damage on a limited basis. After consultation with APHIS and state wildlife agencies, ES&R funds may be requested for rodent or insect control from the National ES&R Program Lead. Additionally, the time and costs of necessary NEPA, Pesticide Use Proposals, etc. will need to be considered in overall plan development.

16. Invasive Plant Control
ES&R funds can be used to control non-native invasive plants within burned areas when it can be documented that those plants may quickly invade or hamper reestablishment of native vegetation or adversely effect the establishment or maintenance of a seeding. Invasive plant control treatments must comply with existing approved LUPs and BLM guidance. Caution should be used when controlling invasive plants in the vicinity of T&E plants and animals, especially in Critical Habitat areas.

An integrated pest management approach should include using a combination of chemical, biological, mechanical, and/or hand control methods, as well as, post-fire weed assessment and monitoring. The cost to assess and control invasive species is an appropriate use of ES&R funds. Other funding for weed control must be acquired if treatments are needed after the three-year time limit for rehabilitation funding. All invasive species control methods must conform to specific BLM policy (BLM Manual MS-9000-1 and Handbook H-9011-1). Herbicide use must be approved and consistent with current policy and associated environmental analyses.

Chemical, biological, and mechanical treatments necessary to minimize invasive species in conjunction with site preparation for ES&R seedings is an appropriate use of ES&R funds. The use of herbicides to control post-fire invasive species is appropriate if:

- The herbicides proposed are approved for use on public lands. All other applicable label and environmental restrictions must be followed.

- The application of herbicides is necessary to keep non-native invasive plants from invading and dominating the post-fire environment.

- The application of herbicides is necessary for site preparation before seeding or planting. (Do not include forb, shrub or grass species in the seed mixture that are

susceptible to harm by herbicides if it is likely that weed control may be needed after the burned area seeding has germinated or is established.)

- The revegetation of grasses, forbs and shrubs to prevent the establishment or reestablishment of non-native invasive species is recommended after herbicide treatment.

A signed Pesticide Use Proposal (PUP) must be in place with the correct approval signature from the State Office before any herbicides may be applied. Appropriate NEPA documentation must be completed prior to the use of any herbicide on public lands. All labels must be followed and pesticides must be applied by a licensed applicator.

Washing vehicles and equipment to prevent the spread of invasive species or pathogens is an appropriate use of ES&R funds.

17. Law Enforcement

Typically, costs to enforce public restrictions or closures are accomplished within existing program funding. However, there may be extraordinary circumstances that require ES&R funding for law enforcement efforts. Funding of BLM law enforcement personnel is typically allocated by the benefiting subactivity. Based on values-at-risk, law enforcement personnel may be needed in unique situations, such as: to protect significant heritage sites from looting; to protect the public from safety hazards; and to enforce closures necessary for the recovery of burned or seeded areas. Use of ES&R funds for law enforcement efforts must be adequately described in the ES&R Plan with justification as to why the unique situation may warrant enforcement action. It may be appropriate and feasible to enlist the assistance of local law enforcement authorities or Fish and Game, Division of Wildlife personnel, etc. in addressing law enforcement needs. An example would be the additional patrols or extension of existing patrols in the burned area during hunting season.

Also see Closures and Recreation sections.

18. Livestock Management Post-Fire

It is critical to provide appropriate levels of rest or deferment from grazing after a wildfire to meet emergency stabilization and burned area rehabilitation goals and objectives. It is extremely important to allow resprouting vegetation to recover and newly seeded species to become firmly established. Levels and duration of rest or deferment must be consistent with short term emergency stabilization and rehabilitation objectives (such as stabilizing soils after wildfire to prevent erosion) as well as long term land use plan objectives. Monitoring results from previous stabilization and rehabilitation efforts should be reviewed to determine the results of previous rest/deferment prescriptions.

Policy: Livestock are to be excluded from burned areas until monitoring results, documented in writing, show emergency stabilization and rehabilitation objectives have been met. Objectives must be clearly defined in the Emergency Stabilization and/or Burned Area Rehabilitation Plan. Before livestock grazing can resume monitoring must

show that objectives have been met. In the case of treatment failure, other factors may need to be considered.

It often takes two years or longer to successfully establish a new seeding, especially when establishing native plants. During years of below normal precipitation or drought, longer rest periods from livestock grazing may be needed to meet ES&R goals and objectives. Alternatively, some ecosystems may need less rest from grazing while they recover from a fire. (For example, a high elevation area which receives > 16 inches of precipitation annually which was in good or excellent ecological condition before an early June fire.) Closures remaining in effect for longer than three years from fire containment fall outside of ES&R policy. After three years from the fire containment date, continued management of the burned areas falls under the local office's land use plan goals and objectives.

Before determining what actions to take and pursuant to 43 CFR 4110.3-3(b), BLM consults or makes a reasonable attempt to consult about ES&R treatment and management objectives, the potential need to close the treatment area to livestock grazing, and other potentially responsive management actions that may be needed to provide for meeting the objectives. At a minimum, this consultation occurs with affected livestock grazing operators, the interested public, and the State having lands or responsibility for managing resources within the area. If BLM decides that livestock grazing of the ES&R treatment area would impede progress towards achieving ES&R management objectives, then BLM issues a decision under 43 CFR 4160 to close to livestock grazing either all or part of the affected allotment and to otherwise specify management actions that BLM and/or the affected grazing operator(s) will implement to provide for objectives achievement. The regulations at 43 CFR 4110.3-3(b) provide authority for BLM to issue such decisions as immediately effective final decisions.

An immediately effective final decision is implemented as soon as it is issued and it remains in effect unless: (a) an appellant successfully obtains a stay of the decision from the Department of Interior, Office of Hearing and Appeals (OHA); or, (b) upon OHA denying an appellant's stay petition, the appellant successfully obtains an injunction of the decision from a federal civil court. Refer to BLM Handbook H-4160-1 for guidance regarding the formatting and content of grazing decisions as well as more information regarding the different implementation procedures that apply to a grazing decision that is first issued as a proposed decision as compared with a grazing decision that is issued as an immediately effective final decision.

Temporary fencing to exclude livestock grazing from seedings and resprouting vegetation may be necessary and should be evaluated to determine if fencing is necessary and the most cost effective alternative. A more cost effective method of vegetation protection to consider might be closing entire pastures or allotments in order to meet ES&R objectives. For example, if 75 percent or more of an allotment or pasture is burned, it may be more cost-effective to close the area rather than expend funds to install, maintain, and remove fences at a later date. ES&R funding can be used to repair existing fences to protect recovering vegetation and seedings and is preferred to construction of new fences.

The use of ES&R funds to pay livestock herders or to offset loss of forage to livestock permittees/lessees is prohibited. ES&R funds can be used for inspecting burned areas within

grazing allotments for compliance and should be identified in the ES&R plan. If livestock are found within closed areas, a Notice of Unauthorized Use and subsequent paperwork/actions should be issued in accordance with 43 CFR 4150.

Also see Standards for Rangeland Health and Guidelines for Grazing Management section.

19. Log Erosion Barriers

Log erosion barriers may be used to reduce soil erosion. These structures can be effective if properly installed (Robichaud, Peter R.; Beyers, Jan L.; Neary, Daniel G. 2000). Also see Contour Log Felling section.

20. Mulching

Mulch material may be spread across areas to reduce soil erosion. Any material used as mulch must be certified as weed and insect free in accordance with individual State's Department of Agriculture laws and requirements. Consideration should be given to utilizing biomass or wood chips off of BLM lands first before proposing to use other types of mulch. See Colorado NRCS Fact Sheets, at http://www.co.nrcs.usda.gov/technical/eng/STRAWMULCHfactsheet.pdf.

21. National Landscape Conservation System

When an ES&R effort is initiated on BLM's National Landscape Conservation Areas (NLCS) (National Conservation Areas, National Monuments, Wilderness, Wilderness Study Areas, Wild and Scenic Rivers, or Areas of Critical Environmental Concern, National Scenic and Historic Trails) the ES&R assessment team should coordinate their efforts with local and State NLCS personnel. If seeding or planting is necessary to prevent soil loss, control noxious weeds, or to restore habitat, etc., the use of native seed/plant species is strongly encouraged and may be required in some areas such as Wild and Scenic Rivers. Also see Wilderness Areas and Wilderness Study Areas sections.

22. Prescribed Fire

Emergency stabilization or rehabilitation funding is not appropriate following prescribed fire projects in which fire behavior was within prescription. Emergency stabilization or rehabilitation funding may only be used on that portion of a fire that has been declared a wildfire.

Minor facilities and structures such as fences or kiosks on BLM lands that are burned during the escape of the prescribed fire may be repaired using ES&R funds. The use of ES&R funds for the repair/replacement of major facilities and structures such as telephone poles, buildings, or homes burned on BLM, other agency, or private lands as a result of prescribed fire is prohibited.

23. Recreation

Burned or seeded areas may be temporarily closed to the public (43 CFR 8364) by excluding vehicle, bicycle, horse, and foot use if unacceptable resource damage would occur, or if danger to the public is present due to fire damage or ES&R activities. Such closures require following the appropriate NEPA process, issuing a Federal Register Notice, and sufficient public notices. Costs to enforce public restrictions or closures should be accomplished within existing program funding, except in extraordinary situations that require justification within the ES&R Plans and appropriate approvals. Also see Closures and Law Enforcement sections.

24. Revegetation

Natural recovery by native plant species is preferable to planting or seeding. The potential for recovery of existing vegetation and the potential establishment of invasive species should be evaluated prior to making a decision whether or not to seed a burned area.

Information on vegetation and soils can be found in several locations including the Great Basin Guidebook, BLM 2005, the NRCS Soil Surveys at: http://soils.usda.gov/survey/printed_surveys/, and ecological site potential (ecological site descriptions) at: http://trident.itc.nrcs.usda.gov/esis/index.html. References such as these should be reviewed to help determine what species should be in the mix to increase the likelihood of success. Climatic information should be reviewed for information on timing of growing season precipitation and annual precipitation patterns. The following are important sources of information for evaluating and planning vegetation treatments:

1. The Ecological Site Descriptions for your local area can be obtained either from the NRCS State Rangeland Management Specialist or on the web at: http://www.nrcs.usda.gov/technical/efotg/.

2. The Fire Effects Information System (FEIS) at http://www.fs.fed.us/database/feis/ one source of information on fire effects and recovery potential for many plants.

3. The NRCS-USGS Biological Resources Division "VegSpec" website (http://www.plants.usda.gov and click on "VegSpec" icon) is an expert system that aids technical specialists or managers in making sound decisions on what to plant on specific sites. VegSpec integrates the Natural Resources Conservation Service (NRCS) soils, plants, and climate databases to select adapted native and non-native plants to seed burned areas.

4. Guidebook to the Seeds of Native and Non-Native Grasses, Forbs and Shrubs of the Great Basin. Scott Lambert 2005. Bureau of Land Management, Idaho Technical Bulletin No. 2005-04.

5. The Plant Conservation Alliance (http://nps.gov/plants/), a consortium of ten federal government Member agencies and over 225 non-federal Cooperators, has many useful sources of information for evaluating and planning vegetation treatments, such as Seeds of Success (http://nps.gov/plants/sos/index.htm).

6. Species seeded or planted on burned areas must provide the protection required by ES&R Plan objectives, be consistent with the appropriate approved LUP and be in compliance with Executive Order 13112, Invasive Species, February 3, 1999. Post-seeding or planting management must maintain these species. According to BLM Manual 1745 Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants, use of non-native seeds as part of a seeding mixture is appropriate only if:

   1) Suitable native species are not available; 2) the natural biological diversity of the proposed management area will not be diminished; 3) exotic and naturalized species can

be confined within the proposed management area; 4) analysis of ecological site inventory information indicates that a site will not support reestablishment of a species that historically was part of the natural environment; 5) resource management objectives cannot be met with native species.

Policy: The planting/seeding of shrubs for the purpose of vegetation or wildlife habitat recovery [except to prevent permanent impairment of designated Critical Habitat for Federal and State listed, proposed or candidate threatened and endangered species - 620 DM 3 -3.7.M(7)] is an appropriate use of 2881 funds. Shrub seeds or seedlings purchased for T&E species habitat stabilization or that can be demonstrated to be effective in stabilizing a burned area within 3-years (620 DM 3 - 3.7.E) is an appropriate use of 2822 funds and must be seeded/planted within one year from fire containment.

The Native/Non-native Worksheet documents the rationale for using non-native plants and lists the criteria for selecting native plants for revegetation. This worksheet is a required component for all ES&R Plans and is part of the plan template. In addition to the criteria listed in the Native/Non-native Worksheet, the use of local seed sources for native plants is recommended, especially the proper subspecies of plants like big sagebrush as long as the seed can be secured, purchased at a reasonable price, and planted in a reasonable amount of time. Important elements to consider in selecting a seed mixture that includes native plants include the following:

- Availability at a reasonable price. Reasonable price is determined on a case-by-case basis. However, any seed over $35 per pound should be scrutinized and justified. (For example: A highly desirable forb is $45/lb. Instead of seeding at 1 lb/acre, managers should consider 0.25 or 0.1 lbs/acre to reduce the cost per acre and still include the species in the seed mix.)

- Suitability of the area to be seeded (avoid use of "one size fits all" seed mixtures on landscapes with different site potentials). The use of local native genotypes is encouraged as long as seed can be applied at the proper time at a reasonable cost; that cost compared to a commonly available cultivar.

- Impacts of competition (weeds, other plants in the seed mixture, land uses) on native plant establishment and persistence.

- Approved LUP decisions, e.g., natives only in wilderness study areas (WSAs).

- Approved BLM policy at the State level.

Planting techniques should be based on the seedbed requirements of different plants in the seed mixture. For example, some species may need to be planted in separate rows or different depths than other plant species. For example: Indian ricegrass germinates best when seeded at 2-4 inches; however, Wyoming big sagebrush seed prefers to be spread directly on a bare surface and very lightly covered with soil (1/16 inch). Seed should be drilled or covered by dragging a chain, harrow, or other implement. Use aerial broadcast seeding only where it has shown to be successful over a period of years, based on experience or studies. Drilling and covering the seed

usually results in the best success while aerial/broadcast seeding without covering has some of the lowest success. Scientific studies and technical specialists with experience should be consulted since success or failure of this type of project is contingent on proper seed selection and application, coverage, and climatic events.

Seedings should occur during the appropriate season to ensure seed stratification (cold temperatures), germination, and establishment. Fall seedings are recommended for sites requiring cool season species revegetation. Spring seeding may be appropriate for warm season species in certain regions such as the Southwest desert. Early spring transplanting of seedlings is recommended to better utilize available moisture, thereby improving the success of seedling establishment. Consider postponement of seeding if the site is in a prolonged drought or if a seeding cannot be accomplished during the proper time period.

The use of certified seed (i.e., blue tag) for plant cultivars is recommended (if available and cost effective) to insure that desired genetic traits are present. The use of "source identified seed" (i.e. yellow tag) is recommended when native seed is collected from wildland sites to insure that a local or otherwise adapted seed source is used to revegetate the burned area. Also see Seed Selection section.

Straw and other vegetative mulch materials (rice hulls) must be purchased as "certified weed-free" and should be sampled and tested for noxious weeds prior to use.

Seeding using different plant species on different portions of the burned area is acceptable (refer back to Ecological Site descriptions). Within a burned area, the use of more fire resistant plant species along roadways in high fire frequency areas in order to protect new stabilization or rehabilitation seedings is acceptable providing the cost does not exceed the average cost for the rest of the seeding effort.

Also see Fuels Management/Greenstrips, Seed Selection, Testing, Treatments, and Purchasing sections.

25. Road Stabilization

Road maintenance using ES&R dollars is limited to the following items:

- Repair of ES&R activity damage.
- Pulling ditches as part of culvert/rolling dip activities designed to increase water/material flow capacities and prevent a road from “blowing out”.
- Water bars or other structures to prevent road materials from eroding.

The following road maintenance related items are prohibited using ES&R funding.

- Normal road maintenance.
- Road reconstruction.
- Improving the road to better than pre-fire conditions.
- Maintenance, construction, or reconstruction of vehicle bridges (bridges are considered a major facility).

26. Rock Check Dams

Rock check dams are used where runoff is concentrated in a drainage way, swale, or road ditch that has lost all its natural protection due to the fire, or will receive increased flow rates as a result of fire in the contributing drainage area. The rock dams will reduce erosion and trap sediment generated from adjacent areas or the ditch. Rock check dams should be limited to use in open channels that drain 50 acres or less. The construction of rock check dams is an appropriate use of ES&R funds. See Colorado NRCS Fact Sheets, at http://www.co.nrcs.usda.gov/technical/eng/ROCKCHECKfactsheet.pdf.

27. Safety and Public Health

Public use facilities such as campgrounds and restrooms that pose a health or safety risk after a wildfire can be stabilized or closed to public use using ES&R funds to protect human health and public safety. Law enforcement necessary for protection of public health and safety or for protection of natural and cultural resources should typically be funded from existing program funding; however, there may be extraordinary circumstances that require ES&R funding for law enforcement efforts based on values-at-risk. Also see the Law Enforcement and Recreation sections.

A risk assessment must be prepared for pertinent ES&R activities. On an active fire the same safety rules that apply to suppression also apply to ES&R activities.

28. Seed Selection, Testing, Treatments, and Purchasing

The use of native species is preferred to non-natives for ES&R projects. However, a mixture of native and non-native species is preferable to using only non-natives if the desired natives are not available, and if the use of non-natives is consistent with approved LUPs. Competitive non-native seed or plants should not be used in a seed mixture to facilitate the establishment and persistence of the native species.

Policy: All Field Offices are required to use seed on public land that contains no noxious weed seed and meets certified seed quality. Prior to BLM purchasing or accepting seed from any source, all seed must have a valid seed test, within one year of the acceptance date, from a seed analysis lab by a registered seed analyst (Association of Official Seed Analysts).

Noxious weed seed is not allowed in certified seed according to individual State's Department of Agriculture seed law and the Federal Seed Act (7 USC 1551-1610) and specifications JJJ-S-181. (The Federal Seed Act can be found at http://www.ams.usda.gov/lsg/seed/fsa-98.pdf.)

It has been acceptable for the seed lot (excluding species on the State and Federal noxious weed seed list) to contain from 0.5 percent by weight of other weed seeds; and the seed lot shall contain no noxious, prohibited, or restricted weed seeds according to State seed laws in the respective State(s). "Other weed seed" is defined as any non-noxious weed seed, such as cheatgrass (downy brome) or Russian thistle, in the State(s) of concern. Seed may contain up to 2.0 percent of "other crop seed" by weight which includes the seed of other agronomic crops and native plants; however, a lower percent of other crop seed is recommended. Copies of the seed lab test results, including purity and germination (viability) rate, must be forwarded to the

appropriate BLM office prior to seed application. If the seed does not meet the BLM and State/Federal standard for noxious weed seed content or other crop seed allowances, it shall not be applied to public land. All seed test results must be retained in the seeding project file.

Seed can be purchased that has been processed to enhance seed germination and survival. Some seed processing includes adding rhizobia inoculants for nitrogen fixation on legumes (including alfalfa), fungicide added to the seed, mycorrhizae inoculants of various beneficial fungi, and soil nutrients. Legume seed can be purchased with or without rhizobium inoculant. Each legume species or genus usually has a specific rhizobium bacterium that grows in association with it. Rhizobia and mycorrhize are short-lived unless maintained in cold storage. The "shelf-life" is typically six months to one year. Re-inoculate legume with fresh rhizobium if the treated seed has been stored more than one year.

Seed can be procured with a coating (also know as "pilling") that often consists of inert clay with inoculants and/or soil nutrients (fertilizer). One purpose of seed coating is to add weight with the soil-like material surrounding the seed to facilitate sowing by seed drills and aerial application. Coating seed is expensive and seeding rates must be adjusted to allow for the increased individual coated seed size and weight.

In the case of mycorrhizal inoculated seed, there may also be limitations with the soil pH on the site or the specific mycorrhizae for arid land plants are not available. It is often not necessary to include nutrients or fertilizer, especially nitrogen, with seed. Increased available nitrogen may be a factor on burned sites. Free nitrogen after a fire is usually not a limiting factor for plant growth. An increase in nitrogen after fires often promotes weed growth (including cheatgrass) as well as pioneer (early seral) plant species. Before purchasing seed enhanced with inoculants, mycorrhizae, or nutrients, analyze the cost and benefit to meeting seeding expectations. Check with knowledgeable seed specialists, agency and university researchers and seed research literature for additional information.

Seedlings (containerized or bare root transplants), Slips

Containerized or bare root seedling planting (transplanting) is an acceptable treatment. Limited transplanting or nursery stock may be necessary to reintroduce a species into the disturbed area as a future seed source. Transplants require protection from herbivores and may require limited watering during the establishment period. Funding for watering is approved on a case by case basis.

Seeding Methods

Drill Seeding

Drill seeding is the preferred method for planting most types of seed and can achieve better plant establishment. Some monitoring studies indicate a success rate as high as 70%. It provides better seed contact with the soil and seed can be applied at a calculated rate. The required depth can be met more easily (Indian ricegrass should be placed 2-4 inches deep to enhance germination and survival).

Limitations include slope and seed types such as smaller seed or heavy seed which may vibrate to the bottom of the drill and result in poor seed distribution. Most drills cannot deal effectively

with fluffy seed (winterfat) or small seed (big sagebrush). The Drill Shop currently possesses 25 drills which have fluffy seed boxes and small seed boxes (alfalfa box). Four of these drills are Truax Rough Rider rangeland drills with better depth control and packer wheels for better seed contact. Minimizing surface disturbance can also minimize weed invasion. The Drill Shop also currently has 39 drills with the alfalfa boxes for better planting of the small seeds. Another major limitation is unburned vegetation such as pinyon or juniper trees, or large rock surfaces. Drill seeding can result in some ground compaction and slight soil disturbance depending upon weather conditions. In areas with high resource values that are not compatible with disturbance associated with drilling, it may be necessary to mark areas to avoid prior to seeding (i.e., cultural resources, survey markers, special status species, etc.).

Aerial Seeding

Aerial seeding without covering the seed is much less reliable than drill seeding. Monitoring studies have shown low success rates particularly for shrubs such as big sagebrush. However, aerial seeding has no terrain limitations and can be effective on rocky slopes. This application method has no impact to the soil, cultural resources, or to special status species.

To ensure good information on acreage covered in the aerial seeding, a GIS shape file should be required in the aerial contract and in the monitoring plan.

Broadcast Seeding

The use of ATV mounted seeders, “organ grinders”, truck mounted seeders, or tractor dribblers can be used on smaller tracts of land. This is often the preferred method for small quantities of specialized seed or in specific areas in which little or no ground disturbance is desired. On these small acreages, the seed should be covered by towing a harrow, sheep’s foot, or chains behind the ATV or truck.

Chaining After Aerial or Broadcast Seeding

Chaining, harrowing, or some method to cover the seed or incorporate the seed into the soil is preferred over simply broadcast or aerial seeding. Chaining can be accomplished over terrain where it is impossible or impractical to pull drills. Burned trees and shrubs may be knocked down to contact the soil surface and aid in erosion control as well as providing protection and favorable microsite conditions for seeds. A seed dribbler can be attached to a tractor to dispense larger seed species (for further discussion of seeding methods, see: Monsen, S.B. and others, 2004; Restoring Western Ranges and Wildlands, Volume 1, Chapter 9). Anchor chains are available at some BLM offices (Salt Lake, Filmore, Battle Mountain, Burley, and others), as well as other equipment, including the Dixie Harrow (Richfield). Further information on the use of the Dixie Harrow can be found at NSTC’s Library website or http://www.blm.gov/nstc/resourcenotes/rn75.html.

Seeding Rates

A large percentage of ES&R funding goes toward seed purchase and application. Determining and applying appropriate seed rates is an essential aspect of developing cost effective plans and for treatment success. ES&R plan preparers should consult the BLM National Seed Coordinator and other local plant material specialists when developing seeding treatments to determine the most appropriate species, seeding method, and seeding rate.

The USDA recommendation for drilled seeding rate for large seeded species is 20 seeds (PLS) per square foot. The recommended drill seeding rate for small seeded species (most BLM seed mixes) is 30 to 40 seeds per square foot.

Broadcast or aerial seedings are recommended at the rate of 60 to 80 seeds per square foot (approx. double the drilled rate).

Aerial or broadcast seeding rates should not be higher than has proven to be successful and cost effective. As an example, 0.2 lbs PLS of Wyoming big sagebrush seed (approx. 1.25 lbs bulk) per acre equals 11.5 sagebrush seeds per sq. ft. should not be exceeded, even in an aerial seeding.

In the same project area, considerations must be made for treatments planned in both the ES Plan and BAR Plan for all seeding treatments, including aerial, broadcast, and drilling. If multiple seed applications are planned the rate per treatment should be lowered so that the total seed rate, combining all application methods, does not exceed 80 seeds per square foot. All ES Plans and BAR Plans must calculate and display proposed seeding rates.

29. Severity Data Collection
The purchase of remotely sensed data to determine fire severity is an appropriate use of ES&R funds. It may be advisable to call the Branch Chief, Branch of Resources Technology (ST-134, at the National Science and Technology Center) for information on sources for remotely sensed information, including burn severity. It may also be appropriate to discuss the potential for the use of remotely sensed information in project planning, layout, and monitoring.

30. Silt Fences
Silt fences can be effective in reducing soil erosion and may be purchased using ES&R funds. See Colorado NRCS Fact Sheet Silt Fence, available at:
http://www.co.nrcs.usda.gov/technical/eng/SILTFENCEfactsheet.pdf and Robichaud, P.R. and R.E.Brown, 2002.

31. Soil Stabilization
See Log Erosion Barriers, Seeding, Mulch, Straw Bales/Wattles, Contour Log Felling, Silt Fences, Revegetation, and Rock Check Dams sections.

32. Standards for Rangeland Health and Guidelines for Grazing Management
BLM grazing regulations that established a framework for the development of Standards for Rangeland Health and Guidelines for Grazing Management (43 CFR 4180.1) became effective on August 21, 1995. These standards and guidelines were developed on a regional or state basis in coordination with the State Resource Advisory Council(s) and were incorporated into land use plans. They are intended to ensure that rangelands are managed to achieve the fundamentals of rangeland health (43 CFR 4180.1 (a) through (d)). Applicable standards and guidelines should be reviewed and incorporated as part of the ES&R planning process to ensure compliance with the intent of these regulations and the associated land use plan. All existing PESRPs should be reviewed and modified (if necessary) to ensure compliance with standards and guidelines. The

application of additional restoration processes beyond three years following wildfire control to obtain full ecological process function must be funded through other sources.

33. Straw Bales/Wattles

Straw bales or wattles, when installed properly, can be effective in reducing sediment delivery by trapping soil and are an appropriate use of ES&R funds. Straw bales or wattles must be certified weed-free. See Colorado NRCS Fact Sheets for specifications, available at http://www.co.nrcs.usda.gov/technical/eng/STRAWWATTLESfactsheet.pdf.

34. Suppression Activity Damage

Funding the repair of fire suppression activity damage is not an appropriate use of ES&R funds (620 DM 3.10). Repair of fire suppression activity damage is to be planned and performed primarily by the suppression incident organization as soon as possible and prior to demobilization. Funding for fire suppression activity damage repair actions will come from the Wildland Fire Operations, Emergency Suppression subactivity and will be charged to the project code for the wildfire suppression effort that resulted in the damage.

Repairing damage to improvements and/or to resources caused by fire suppression activities should be accomplished by the fire suppression incident management team. This work should be completed prior to final demobilization of the suppression forces whenever practical. For example: Where heavy equipment was used to construct fire lines, it may be more economical to use the same heavy equipment to stabilize/rehabilitate those fire lines before being released from the incident. The same would hold true for lines constructed by hand crews. Those same crews could "put the lines to bed." The suppression account remains open for several months after an incident to complete these activities. The following repair activities (necessitated by fire suppression activities) are examples of repairs that will be completed with wildfire suppression funds, not ES&R funds:

1. Replacement of displaced soil and/or seeding vegetation on fire control lines [seeding may be delayed until the appropriate time (fall) to enhance success].
2. Construction of water bars on primary and secondary fire control lines.
3. Repair of structural improvements or facilities (e.g., fences) damaged by suppression activity.
4. Repair of damage caused by operating the incident command base (spike camps and roads).
5. Repair of roads used to access fire lines.
6. Replacement of survey markers (cadastral markers) damaged due to fire suppression tactics.
7. Stabilization of cultural sites disturbed by suppression activities.

During periods of high fire activity, fire suppression personnel may be unable to complete these tasks before being redirected to another incident. In these cases, the ES&R team may assess the suppression damage in the ES&R plan, implement appropriate treatments, and charge the work to the fire suppression account for the incident.

35. Threatened, Endangered and Sensitive Species

The policy of the BLM is to conserve threatened and endangered (T&E) plant and animal species through conservation of the habitats upon which they depend and work closely with the U.S. Fish and Wildlife Service (Ecological Services Offices) or the National Oceanic and Atmospheric Administration (NOAA) Fisheries, as appropriate, on all emergency stabilization actions that may affect a threatened and endangered listed species or its habitat to ensure compliance with Section 7 of the Endangered Species Act. Timeframes for review and consultation may last several months. Therefore, every effort should be made to initiate these actions early in the emergency stabilization planning process. A burned area assessment should identify post-fire threats to Federal, Tribal, and State listed or proposed threatened and endangered species and what, if any, cost effective stabilization and rehabilitation measures can be implemented to prevent further post-fire degradation to their habitat.

Although the ES&R goals and objectives are to prevent further degradation to T&E species habitat - - biophysical or budgetary constraints may not allow BLM "to do everything possible" to mitigate the loss of T&E habitat. For example, the desired site-specific native seed may not be available in quantities needed or it may not be feasible to reseed because of the lack of precipitation, i.e., the site is too dry. The BLM consults with the U.S. Fish and Wildlife Service (USFWS) or NOAA Fisheries, as appropriate, on all actions that may affect a listed species or its habitat to ensure compliance with Section 7 of the Endangered Species Act. A similar process is required for state agencies when State-listed species are involved.

The BLM policy on federally listed species, species proposed for listing, candidate species, sensitive species, and State-listed species is contained in BLM Manual 6840 – Special Status Species Management. This Manual should be reviewed for additional management requirements for proposed species. Time frames for review and consultation may last several months. Therefore, every effort should be made to initiate these actions early in the ES&R planning process. It may be valuable to initiate discussions during the development of the PESRP and in pre-season meetings. The completion of the Section 7 Consultation process is a major benefit of preparing a PESRP.

As a result of the National Fire Plan efforts there may be procedures that can expedite the consultation process on T&E species. In addition, some locations or regions may have additional guidance that has been developed for the conservation of habitats for some species (examples could include lynx or sage grouse).

Removal and relocation of threatened or endangered:

- The FS, BLM, BIA, and NPS do not have the authority to move threatened or endangered species. When threatened or endangered species need protection, the appropriate federal, tribal or state managing authority must be identified and consulted.
- The land management agency and threatened and endangered species management authority can enter into agreement about how and who will remove and relocate the species.
- The land management agency may set up a reimbursable account for the threatened and endangered species management authority to reimburse the land management agency use of emergency stabilization funds.

Post-fire monitoring of T&E species status or recovery is not an appropriate use of ES&R funds. Monitoring for the purpose of assessing ES&R treatment effectiveness is appropriate.

36. Trails

To protect public safety, trails should be closed after fire until an assessment can be completed certifying the trail is safe. When closure is not possible, burned slopes in the immediate proximity above and below the trail as well as the trail can be stabilized. Rehabilitation funding may be used to repair trails. Particular attention should be given to repair trails for public access to essential services. The emergency stabilization of any trail to a standard above its pre-fire condition is also prohibited. Appropriate trail stabilization/rehabilitation measures which are funded with ES&R funds include:

- Hazard Tree Removal – (see Hazard Tree Removal section)
- Trail Slopes - Stabilization of burned slopes in immediate proximity above and below the trail to prevent further trail degradation.
- Waterbars (breaks) - The absence of or insufficient waterbars may create erosion induced safety hazards. Construction of the soil, rock or log waterbars is appropriate, but waterbars damaged or destroyed as a result of suppression efforts are repaired and/or replaced with wildfire suppression funding.
- Trail Markers – Replacement of trail markers or signs burned by the wildfire is appropriate.

Using ES&R funds for the repair or replacement of major trail facilities is prohibited.

37. Treatment Failures

ES&R treatments may fail for a variety of reasons. Emergency stabilization funding may be used for up to three years to "repair or replace emergency stabilization structures or treatments … where failure to do so would imperil watershed functionality or result in serious loss of downstream values …." Funding for retreatments must be approved by the original approving administrative level, i.e., State Office for ES Plan under $100,000, or the WO for ES Plan $100,000 or above. When a seeding or planting is determined to be a failure through documented monitoring, funding from the Burned Area Rehabilitation account may be requested to retreat the area. Since ES&R activities are limited to no more than three years from fire containment, failures of seeding and planting may not be immediately evident and pursuit of other funding sources may be necessary.

38. Visual Resources

Assessing the potential impacts of treatments on visual resources (http://www.blm.gov/nstc/VRM/vrmsys.html) is required for all BLM activity planning efforts. Refer to BLM Manual 8400 - Visual Resource Management (http://www.blm.gov/nstc/VRM/8400.html) for guidance on evaluating ES&R project impacts on visual resources and BLM Manual 8431 – Visual Resource Contrast Ranting (http://www.blm.gov/nstc/VRM/8431.html) which provides guidance for completing a visual resource contrast rating worksheet.

39. Wilderness Areas

The regulations providing authority for ES&R activities in wilderness areas are found in 43 CFR 6300. BLM Manual M-8560 and Handbook H-8560-1 (Management of Designated Wilderness Areas) provides general guidance on surface disturbing activities in wilderness areas. By policy, wilderness management plans are required for all designated wilderness areas, and this direction must be reviewed during PESRP and ES&R plan development for specific direction to guide ES&R activities. BLM's 8560 Manual, Section 8560.34C.3 states, "Hand or aerial seeding of native vegetation species may be permitted after disturbances, such as wildfire, to restore essential food plants to a wilderness where the natural processes of healing is not expected to occur." Section 8560.36A.2 states, "Re-establishment of vegetation as a watershed-restoration measure, where there is no reasonable expectation of natural healing, will be accomplished using native or naturalized species." Before seeding equipment is used, a determination must be made that this method is necessary to meet the minimum requirements for the administration of the area as wilderness. If ES&R treatments are determined to be necessary, consideration must be given first to achieving the recovery objectives using non-motorized equipment. Overland-motorized equipment will only be considered in cases where the objectives cannot be accomplished with non-motorized equipment, and there is a threat to wilderness values if no action is taken.

40. Wilderness Study Areas

Handbook H-8550-1 [Interim Management Policy (IMP) for Lands Under Wilderness Review] includes BLM policy and guidance for management of wilderness study areas (WSAs). WSAs must be managed in a manner so as not to impair their suitability for preservation as wilderness. Impacts from the equipment used for seeding must not impair wilderness suitability. In response to wildfire, any treatments needed must be conducted to the extent feasible in a manner that will not impair wilderness suitability. The ES&R work will use minimum tool methods that are least damaging to wilderness values. Per WSA policy, reseeding and planting will utilize species native to the area. Consult current instruction memoranda, WSA Handbook H-8550-1, and the Bureau's local, State or National wilderness specialist prior to implementing ES&R treatments in a WSA. Coordination with interested public and wilderness organizations is encouraged early in the ES&R planning process. Depending upon location, visibility, and sensitivity of the incident, coordination with the National ES&R Program Lead or Wilderness Coordinator may also be advisable.

41. Wild Horse and Burro Management

Exclusion of wild horses and burros may be critical for the recovery of burned vegetation or establishment and maintenance of new seedings. There are two wild horse and burro related activities for which ES&R funds can be used. The first, and preferred, is to exclude the wild horses or burros from the burned area through use of protective fencing. Care must be taken to assure wild horses and burros are not excluded from traditional water sources when constructing protective fencing. The second related activity is to remove or relocate the wild horses or burros through gathers/roundups. Gathering wild horses or burros requires close coordination with State and National ES&R Program Leads, and the State and National Wild Horse and Burro Program Leads to insure adherence to policy. Exclusion or relocation must occur before the animals significantly damage the recovery of seeded or recovering vegetation. Emergency stabilization funds may be used for gathering and temporary holding which includes

transporting, processing, and sorting the animals at a BLM facility. Funding long-term holding of these animals is not an appropriate use of ES&R funding.

Additional use supervision may be required to ensure that wild horses or burros are not accidentally trapped within the treatment areas if they inadvertently gain access. It is also important to ensure that wild horses or burros do not get trapped without access to water or be allowed to damage the seeded or recovering areas. Care should be taken to minimize the blocking of migration or water trails with protective fences. New fences may need to be flagged or constructed with special horse crossings/gates to alert horses to their presence or allow safe crossing.

42. Wildland Fire Use

Wildland Fire Use (formerly referred to as prescribed natural fire or fire for resource benefit) is the management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in pre-defined geographic areas outlined in the Fire Management Plan.

ES&R funding is not appropriate for Wildland Fire Use fires [620 DM 3.7J and 3.8J(1)]. However, if a Wildland Fire Use fire escapes and is converted to a wildfire, then emergency stabilization and rehabilitation funding may be appropriate for only those acres that are delineated or partitioned following the declaration as a wildfire.

All wildland fires that escape approved management actions are managed in accordance with decisions in a Wildland Fire Situation Analysis (WFSA). Emergency stabilization and rehabilitation cost estimates are to be included in the cost analysis portion of the WFSA.

Minor facilities and structures such as fences or kiosks on BLM lands that are burned during a Wildland Fire Use fire that is declared a wildfire may be repaired using ES&R funds. The use of ES&R funds to repair/replacement of major facilities and structures such as telephone poles, buildings, or homes burned on BLM, other agency, or private lands as a result of a Wildland Fire Use fire is prohibited.

43. Wildlife

Wildlife populations disturbed or displaced by the fire, may concentrate on and degrade unburned areas in and adjacent to the burned area, and may have a major affect on the success of emergency stabilization treatments. Agreements with the appropriate fish and wildlife management agencies (if needed) should be developed before the emergency stabilization or rehabilitation treatments are implemented, prescribing how wildlife is managed. Coordination should be done with wildlife agencies during the development of the PESRP or ES&R Plans. The PESRP or ES&R Plans should identify what measures are needed to prevent further burned area degradation from wildlife use, and treatment specifications should address timely implementation. If wildlife control techniques are not installed before next season's green-up, a majority of the animal damage will have occurred. By green-up, there will probably be enough forage in the burned area to prevent any concentrated damage in the unburned area, and treatment after green-up would not be cost effective.

Protective fences or other animal control measures should be constructed prior to negative impacts occurring on burned areas.

ES&R treatments must be consistent with wildlife habitat management objectives in approved LUPs. Seeding criteria must include an analysis of cost, species, adaptability, probability of success, weed competition, as well as other criteria in important wildlife habitats. The reconstruction of wildlife improvements on public lands may also need to be addressed in the ES&R plans, and should be in accordance with policy and in coordination with the appropriate agencies and non-governmental organizations. These improvements should also be in BLM databases (RIPS or its replacement) and cooperative agreements in place before funds are expended on them. In some cases they may be the property and responsibility of the wildlife agency, but should still be in BLM's databases as improvements.

ES&R funds may not be used to study, monitor, or research the effects of a wildfire on wildlife species. Appropriate actions to mitigate impacts to wildlife habitat may be proposed in ES&R Plans such as seeding/planting vegetation needed by a wildlife species or to reduce sediment and ash from entering a stream.

Treatments to mitigate the loss of fish and wildlife habitat are not appropriate for emergency stabilization funding except to prevent permanent impairment of designated critical habitat for federal, state listed, proposed or candidate threatened and endangered species.

The BLM does not have the authority to "relocate" any wildlife species. Also see Threatened, Endangered, and Sensitive Species section.

44. Wyden Amendment

The Wyden Amendment (16 U.S.C. 1011(a) as amended) provides the authority by which the BLM may consider funding work on non-BLM administered land that will have a benefit to public land. The Wyden Amendment is one of several laws providing BLM the authority to enter into watershed restoration and enhancement agreements (i.e., cooperative agreements) with non-BLM landowners such as other Federal agencies, Tribal, State, and local governments and private or nonprofit entities for the protection, restoration, and enhancement of fish and wildlife habitat and other resources on public or private land and the reduction of risk from natural disaster where public safety is threatened that benefit these resources on public lands within the watershed.

Wyden policy/guidance may change annually. Please check latest information before entering into any Wyden agreements.

Terms and Conditions for Using the Wyden Amendment

A cooperative agreement must be prepared and mutually agreed to by the Authorized Officer, the Financial Assistance Officer, and the landowner. The agreement shall be signed prior to project implementation and shall address the following terms and conditions:

- The project should reduce the risk from natural disasters where public safety is threatened or protect, restore, or enhance fish and wildlife habitat and other resources on public land in the watershed/landscape context.

- Provide for technical advice and assistance by the BLM in the planning of management activities that will further the purpose of the agreement. Examples include NHPA Section 106 cultural compliance and consultation; ESA Section 7 T&E compliance and consultation; NEPA documentation; Section 404 permits, etc.

- Partners to the cooperative agreement shall share in the cost as appropriate. Such costs may be in the form of contributed funds, in-kind services (such as providing equipment, monitoring, or maintenance activities), donated easements, rights-of-ways, or other real, personal, or property interest, or include other funding sources (described below). See Assistance Agreement Manual 1511 for additional information on contributed funds and in-kind services, etc.

- The project must show benefit to resources on public land within the watershed and be in the public interest.

Non-federal landowners may seek out other sources of funding to be used in conjunction with the Wyden Amendment including, but not limited to: other government programs such as the Natural Resource Conservation Service's Environmental Quality Incentive Program (EQIP), the Emergency Watershed Protection Program (EWPP), and the Environmental Protection Agency's Total Maximum Daily Load (TMDL) Program, as well as other non-profit non-governmental organizations. However, other federal dollars cannot be used as the recipients matching funds.

The Authorized Officer or BLM Agreement Officer may require other terms and conditions to protect public investments on non-BLM lands, provided they are mutually agreed to by the Authorized Officer, Financial Assistance Officer, and the landowner. Consideration should be given to the following issues:

- **Timeframe.** Identification of the timeframe or anticipated life span of the project or practice. This should be commensurate with the desired benefit and anticipated time needed to achieve stated goals/objectives.

- **Project inspection and validation.** During the construction/implementation phase of the project, inspections must be conducted to ensure the project meets design specifications and to ensure the funding was used correctly. A post construction/implementation document should be included in the Administrative File.

- **Monitoring requirements.** Monitoring should address whether the project was implemented as planned, the success of achieving written objectives, and whether there is a continued need for the project/practice and the cooperative agreement. The agreement should identify the frequency of monitoring and who should be involved. When monitoring is considered an in-kind service by a non-Federal landowner, BLM must set

forth a process whereby BLM periodically reviews and maintains the data collected and ascertains the effectiveness of the monitoring.

- **Maintenance responsibilities.** The agreement should identify the party responsible for periodic maintenance of capital improvements and land treatments. When maintenance activity is part of the in-kind service by a non-Federal landowner, BLM must set forth a process whereby BLM periodically ascertains the effectiveness of the maintenance activities. It must also be clear where and when any maintenance required will need to meet the same legal requirements (and specifications) as the projected implementation.

- **Responsibilities of non-BLM landowner**. The cooperative agreement should indicate ownership of all capital improvements and land treatments. When ownership of high value improvements is passed to the non-BLM landowner, in order to protect BLM's long term investment, the agreement should tie capital improvements and applicable land treatments to the land through recorded instruments such as a conservation easement or real estate conveyance instrument. See Acquisition Handbook H-2100-1 and Land Exchange Handbook H-2200-1 for further guidance.

Additional Wyden Amendment Guidance

- The State Director will be responsible for assuring BLM has funds available and that they are being spent in the public interest on priority projects that benefit resources and public lands within the watershed.

- The authority to enter into and execute cooperative agreements resides with the appropriate BLM Financial Assistance Officer. It is strongly encouraged that any offices considering use of the Wyden Amendment authority engage their State Procurement Analyst or Financial Assistance Officer early on in the process.

- Cooperative agreements must meet all of the requirements for entering into such agreements set forth in 43 CFR Part 12 and BLM's Assistance Agreement Manual 1511 and subsequent guidance.

- Projects using Wyden authority, even when they are on non-Federal lands, must comply with all applicable Federal, state, and local laws, regulations, policies, and permit requirements (e.g., the Federal Land Policy and Management Act (FLPMA), the National Environmental Policy Act (NEPA), the Clean Water Act (CWA), the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), etc.).

- An official file shall be kept at the local office on all Wyden Amendment projects. BLM will document how the decision was reached to expend BLM funds on non-BLM lands and how the expenditure of these funds is in the public interest and reduces the public safety risk from natural disaster, or how it protects, restores, and enhances fish and wildlife habitat and other resources on public lands. A copy of the cooperative agreement must be kept in this file (the original signed document is retained in the Procurement Office).

- All expenditures using the Wyden Amendment shall be with the concurrence of the National ES&R Program Lead.

IV. Environmental Compliance

A. Overview of NEPA Options

The purpose of this section is to briefly describe the available methods to efficiently accomplish NEPA compliance for ES&R projects. NEPA implementing regulations are found at 40 CFR 1500. BLM Handbook 1790-1 provides further NEPA compliance guidance. The interdisciplinary assessment and planning team should include input and guidance from the local NEPA specialist.

Prompt action following a wildfire is necessary to stabilize and prevent unacceptable degradation to natural and cultural resources, minimize threats to life and property, repair or improve lands unlikely to recover to a management approved condition, and repair or replace minor facilities damaged by fire. Following a wildfire, site-specific ES Plans and BAR Plans are prepared to describe the treatments necessary to address the fire damaged lands. Compliance with NEPA is required for these planning efforts.

Projects anticipated to have significant impacts are extremely rare in the ES&R program and require preparation of an EIS or consultation with CEQ for alternate NEPA procedures.

The most efficient method to document NEPA compliance for ES&R projects when the PESRP contains adequate NEPA analysis is by preparing a DNA (see Section IV B below). Covering both emergency stabilization and rehabilitation actions, Programmatic ES&R Plans (PESRPs) provide a complete analysis of the typical ES&R treatments most commonly used within a District or Field Office unit.

Offices without a PESRP should consider whether a categorical exclusion applies or if an EA or EIS is needed. The categorical exclusion for rehabilitation activities established under the Healthy Forests Initiative (HFI) in 2003 has some limitations: the project area cannot exceed 4,200 acres and cannot include use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure. If the BAR Plan exceeds these limitations or any of the extraordinary circumstances apply, an EA or EIS would be required.

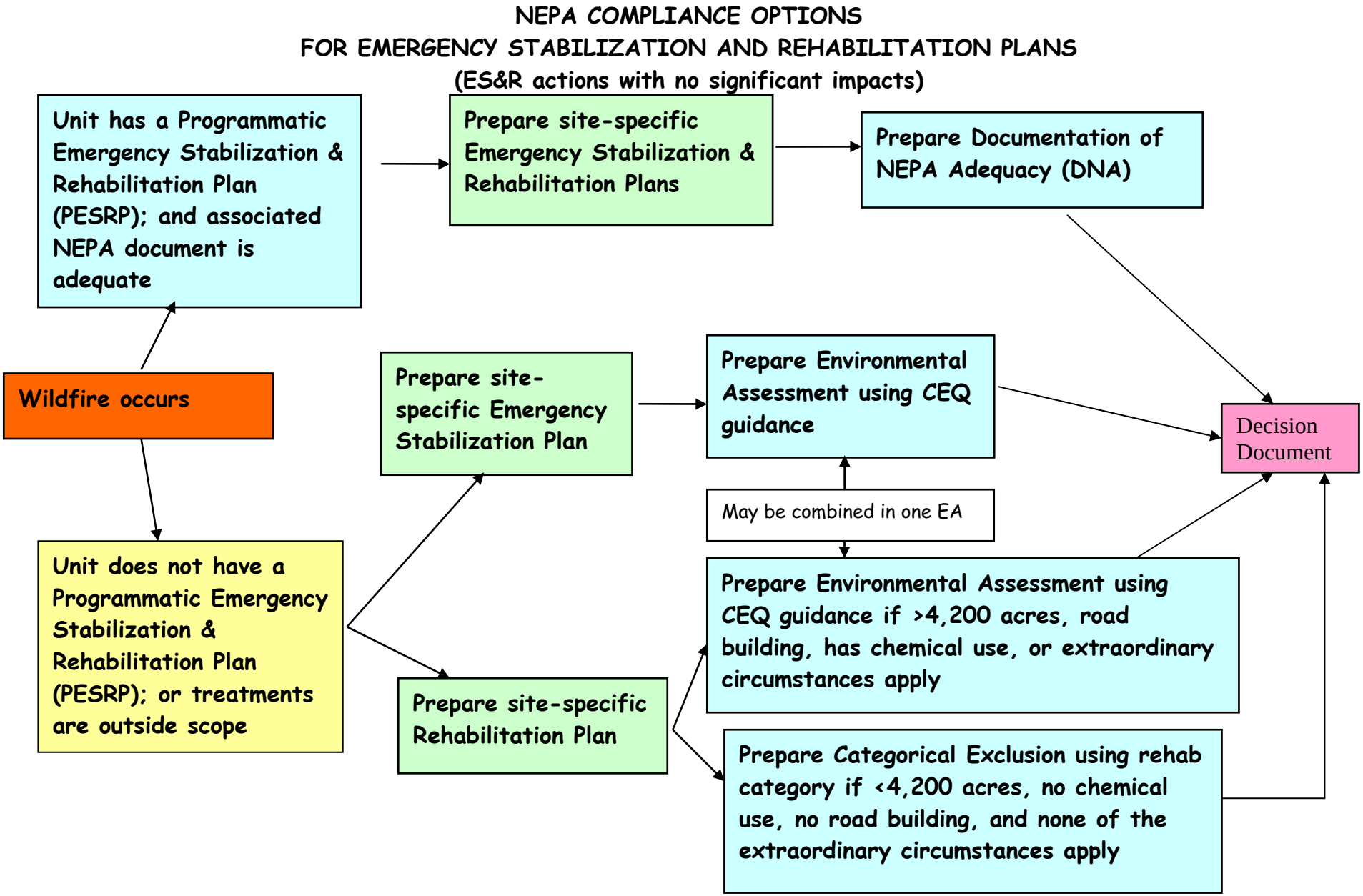
Emergency stabilization actions are not included in the HFI categorical exclusion for rehabilitation; therefore an EA or EIS is required for these actions if a PESRP/EA is not in place or the proposed emergency stabilization treatments are outside the scope of the PESRP. The CEQ guidance on focused EAs offers an efficient manner to document NEPA compliance for emergency stabilization activities as well as rehabilitation activities that exceed the limitations of the categorical exclusion.

Figure 4 illustrates the NEPA options for ES&R projects that have no significant impacts. Offices that experience frequent fires should consider preparing a PESRP, with associated NEPA documentation, to gain efficiencies in NEPA compliance and to meet the short timeframe. In lieu of a PESRP, offices are encouraged to use the new categorical exclusion for rehabilitation

where appropriate. Preparing EAs using the CEQ guidance also provides an excellent means of efficiently documenting NEPA compliance.

The local NEPA specialist should be consulted for additional guidance on current BLM NEPA requirements.

Figure 4 - NEPA Options Diagram



B. Documentation of NEPA Adequacy (DNA)

A Programmatic ES&R Plan (PESRP), with associated NEPA analysis (typically an EA), is a programmatic document developed at the landscape level for a District or Field Office unit, prior to a wildfire occurrence. See Appendix 2 for a sample PESRP outline. After a wildfire, a PESRP assists in the timely preparation of ES&R plans by providing a pre-analyzed tool box of treatments based on the local unit's typical post-fire conditions. Optimally, the PESRP should include all of the treatment techniques and potential species that may be used into the future. In this manner, when the need arises to implement the plan there has been ample opportunity for any public response to the techniques or prescriptions proposed and a DNA may be appropriate to document that previously prepared NEPA analysis is adequate. It has also been reviewed by personnel within the BLM programs and offices as well as other interested government offices.

A Documentation of NEPA Adequacy (DNA) worksheet is completed to confirm and document the rationale for concluding that the proposed ES&R treatments are within the scope of the NEPA analysis associated with the PESRP. Generally, existing NEPA documents can be used when: (1) a current proposed action was previously proposed and analyzed (or is part of an earlier proposal that was analyzed); (2) resource conditions and other relevant circumstances have not changed significantly, and there is no significant new information germane to the proposed action; and (3) there is no suggestion by the public of a significant new and appropriate alternative. A decision document for the action is necessary in addition to the DNA. See BLM NEPA guidance on preparing a DNA.

C. Environmental Assessments (EAs)

The Council on Environmental Quality (CEQ) issued guidance (December 9, 2002) for EAs prepared for forest and rangeland health projects that is also applicable to other actions where timely decisions are critical. The CEQ guidance focuses on the core elements required in the EA process: (1) need for the proposal; (2) proposed action and alternatives; (3) environmental impacts; and (4) agencies and persons consulted. The content for these four core elements is described in the section titled Contents of a Model Forest Health Environmental Assessment in the CEQ guidance. Though described in terms of a forest health project, the content topics are applicable to ES&R projects. Other formats for EAs are also found in the BLM NEPA Handbook (H-1790). Beyond the minimal requirement there is great flexibility in what information may be presented in an EA.

D. Categorical Exclusions (CXs)

In 2003 two categories of actions were added to the Department of the Interior's list of categories which are excluded from additional documentation in an EA or EIS (516 DM 2, Appendix 1, 1.12 and 1.13) under the Healthy Forests Initiative (HFI) effort. These categories are: (1) hazardous fuels reduction activities and (2) rehabilitation activities for lands and infrastructure impacted by fires or fire suppression. The rehabilitation categorical exclusion has some limitations: the project area cannot exceed 4,200 acres and cannot include use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure. These CXs cannot be used in Wilderness Areas or for activities that impair the suitability of

WSAs for future preservation as Wilderness or for the construction of permanent roads or infrastructure. Emergency stabilization activities are not covered under this categorical exclusion. See BLM NEPA guidance for a decision template required when using the HFI CX.

Other BLM CXs (see 516 DM 11) may also be applicable to some ES&R activities. See BLM NEPA guidance for documenting decisions when using these CXs.

E. Documenting Decisions

ES&R decisions are subject to a 30-day appeal period during which implementation would be delayed [43 CFR 4.21(a)(1) and (2)], unless the decision was issued under Full Force and Effect authority. Decisions issued under Full Force and Effect authority are subject to appeal, but a stay must be requested and granted by the Interior Board of Land Appeals (IBLA) to cease implementation during the resolution period of the appeal. Potential concerns should be addressed early in the planning process to avoid appeals and subsequent delays.

ES&R decisions may be issued under Full Force and Effect authority allowing immediate implementation of treatments. Regulations allow BLM to make ES&R decisions effective immediately when it is determined that public lands are at immediate risk of erosion or other damage due to wildfire. The regulations can be found at 43 CFR 4190 for rangelands and 43 CFR 5000 for forested lands. Also see Full Force and Effect Decision Authority section.

V. Monitoring, Evaluation, and Reporting

Monitoring is required on all Emergency Stabilization and Rehabilitation plans. The level of monitoring required for ES&R projects will be commensurate with the complexity of the project, level of concern, and the objectives in the plan.

Monitoring and evaluation to determine the effectiveness of ES&R treatments is funded for up to three years following containment of a wildfire. Monitoring using ES&R funding can only be used to assess treatment implementation and effectiveness and can not be used to study the effects of fire on soils, vegetation, water, or wildlife. As examples:

1) Log erosion barriers are used to reduce erosion. A study site may be placed in a stream using ES&R funds to measure the amount of materials entering the stream.

2) A fire burned through spotted owl habitat. ES&R funds may NOT be used to see what impacts the fire has had on spotted owls.

A. Monitoring and Evaluation

The first step in developing an effective monitoring program is to develop objectives that are measurable, include a time frame, and are realistic for the ES&R treatments implemented. These objectives should address requirements for soil stability, establishment of seeded species, invasive species control, etc. Adjacent unburned areas may be used as the reference for setting

the standard for attainment of an objective as long as it is on the same ecological site as the treatment monitoring plot. This approach provides for setting realistic objectives that takes into consideration climatic influences on the treatment area in comparison to the non-treated area. All ES&R plans should include objectives that are specific enough that appropriate monitoring studies can be used to determine if the objectives are met.

ES&R monitoring funds are limited to determining if the treatment:

1. Is needed (e.g., field assessments for invasive plants);
2. Was implemented as specified in the ES or BAR plan;
3. Was effective. (Did the treatment meet the goals and objectives of the ES or BAR Plan?)

ES&R funding is not appropriate to monitor for:

- The impacts or effects of the fire (e.g., water quality monitoring to evaluate the impacts of the burn on post-fire recovery of an endangered aquatic species; post-fire monitoring of threatened and endangered species presence, reproductive status, or reproductive success, etc.).

- Long-term monitoring (> 3 years following containment of the fire) related to treatment longevity and effectiveness and the plant community dynamics of the project. This type of monitoring is appropriate for the Joint Fire Science Program, National Fire Plan, or base funding.

Monitoring and evaluation to determine the effectiveness of treatments is funded for up to three years following containment of the fire. Funding for the second and third year of monitoring requires the submittal of the Monitoring Summary Report and Funding Request Form (Accomplishment Report) to report on success/failure of treatments during the first and second years.

Monitoring priority should be given to those areas where unique treatments were implemented or where resource values or public concerns are high. Reference areas or control plots may be needed to support validity of treatment objectives and to detect changes between untreated (natural revegetation, untreated watersheds, etc.) and treated (planting and seeding, treated watersheds, etc.) areas. Use existing monitoring sites if possible.

Effective monitoring methods should be used (e.g., Sampling Vegetation Attributes Technical Reference TR-1734-4, or Herrick, J.E., et al, 2005, Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems). Future monitoring methods are being developed. Once developed, BLM will adopt these methods as the standard for monitoring and data storage. Photographs are strongly encouraged at all monitoring sites. Cooperative efforts in monitoring ES&R projects are encouraged; these efforts could be with other BLM Programs, research organizations, neighboring offices, agencies, or universities. Monitoring information and results should be retained in a central location in at least one permanent retention file. Information gained in monitoring is strongly encouraged to be shared through professional papers, technical bulletins, symposia, workshops, etc.

Contracting with a university [i.e., Cooperative Ecosystem Studies Units (CESU)] or private organization/company to conduct monitoring is an appropriate use of emergency stabilization funds. However, as noted above, standardized protocols in monitoring should be used to insure data comparability, consistency, and share-ability.

B. Reporting

1. Data Tracking

All ES&R projects must be entered into the National Fire Plan Operations and Reporting System (NFPORS) or its replacement. Financial information and units of accomplishment must be entered into the MIS/FBMS tracking systems.

Other tracking systems may be developed for use in the ES&R program, such as the Nevada Pilot Project which was begun in 1999 for the purpose of tracking seed and other ES&R treatments. This project is currently being tested on a limited basis.

All completed ES&R projects shall be entered into the Rangeland Improvement Project System (RIPS) or its replacement.

2. Annual Accomplishment Report

The Departmental Manual (620 DM 3.7K and 3.8K) requires the submission of an annual accomplishment report on success/failure of treatments in order to continue treatment or monitoring funding into the second and third years. This reporting is accomplished using the current BLM template (Accomplishment Report).

3. Closeout Report (End of Project Report)

At the end of the three-year lifecycle of an ES&R project, a Closeout Report using the current template listing all funds expended, success or failure of treatments, and lessons learned must be turned in to the State and National ES&R Program Leads. These reports should be written as professionally/accurately as possible and will be posted on an Interagency Web page (per request from the Government Accountability Office).

Glossary of Terms and Acronyms

Following are the acronyms and definitions for terms used in this Handbook or useful in understanding closely associated programs.

Terms

-A-

Activities – Activities are tasks such as monitoring, plan writing, or administrative functions.

Agency Administrator – The line manager having direct organizational responsibility for management of an administrative unit. May include Director, State Director, District Manager or Field Office Manager.

Assessment (Burned Area Assessment) – Burned area assessments are conducted to validate anticipated emergency stabilization or rehabilitation needs either defined in fire and resource management plans or identified in initial fact finding activities and determine what realistic and cost effective emergency stabilization and rehabilitation treatments are needed. Assessments are not to be used to document the effects of the fire or to validate whether an appropriate management response (e.g. limited or modified suppression) was appropriate.

-B-

Burned Area Emergency Response Plan (BAER Plan) – An emergency stabilization plan that involves multiple agency ownership or on large complex wildfires where preparation of a plan is beyond the capability of the local staff and values-at-risk are extremely high.

Burned Area Emergency Response Team (BAER Team) – A standing or ad hoc group of technical specialists (hydrologists, rangeland management specialists, biologists, soil scientists, etc.) that is assigned to prepare a BAER Plan. A BAER Team may be requested through the Incident Command System (ICS) prior to wildfire control or later through the appropriate line management decision process.

Burned Area Rehabilitation (BAR) – Efforts undertaken within three years of containment of a wildfire to repair or improve fire-damaged lands unlikely to recover naturally to management approved conditions, or to repair or replace minor facilities damaged by fire.

Burned Area Rehabilitation Plan – A site-specific document that identifies non-emergency treatments and activities to be carried out within three years following containment of a wildfire needed to repair or improve fire-damaged lands unlikely to recover naturally to management approved conditions, or to repair or replace minor facilities damaged by the fire.

Burn Severity – Refers to the change in watershed relating to the severity of effects on soil hydrologic function, mapped as high, moderate, low, and unburned. Also, reflects on a broader sense the effects of a fire on the environment, with an emphasis on what is left with regards to environmental characteristics after the fire.

-C-

Cultivar – A seed-producing plant type that may or may not be improved by selection and propagation of individuals for certain traits, or desired, superior characteristics such as early flowering or taller flower stalks. A cultivar may have been altered by focused plant breeding. A cultivar may be either particularly desirable selections from populations of a single species, or hybrids between species. For the purpose of seed certification, a cultivar is synonymous with a variety.

-D-

Departmental Manual – The Department of the Interior Manual for the ES&R Programs is found in Series: Public Lands, Part 620: Wildland Fire Management, Chapter 3: Burned Area Emergency Stabilization and Rehabilitation (620 DM 3).

-E-

Ecosystem Management – The careful, skillful use of ecological, economic, social, and managerial principles in managing ecosystems to produce, restore, or sustain ecosystem integrity and desired conditions, while providing products and services over the long term.

Emergency Stabilization (ES) – Planned actions to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life or property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources. Emergency stabilization actions must be taken within one year following containment of a wildfire.

Emergency Stabilization Plan – A site-specific document that specifies treatments required to implement post-fire emergency stabilization policies.

Emergency Stabilization and Rehabilitation Team (ES&R Team) – A group of technical specialists (hydrologists, rangeland management specialists, biologists, soil scientists, etc.) assigned to prepare an ES Plan and/or BAR Plan. An ES&R Team is usually made up of local specialists but may also include ES&R specialists from other offices when assistance is needed.

Exotic Species – Plants or animals not naturally occurring, either presently or historically, in an ecosystem. Sometimes referred to as non-native species.

-F-

Fire Containment – Established once a fuel break around a fire has been completed. This break may include natural barriers or manually/mechanically constructed line.

Fire Control – The complete extinguishment of a fire, including spot fires. Fireline has been strengthened so that flare-ups from within the perimeter of the fire will not break through the line.

Fire Intensity – Describes the fire characteristics, referring to the effects of temperature, flame length, rate of spread, heat of combustion, size of the fuels consumed, and the energy produced. A general term relating to the heat energy released by a fire.

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

Fire Regime Current Condition Class – A qualitative measure classified into three classes describing the relative degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings.

Fire Regime Groups – A classification of fire regimes into a discrete number of categories based on frequency and severity. The national, coarse-scale classification of fire regime groups commonly used includes five groups: I - frequent (0-35 years), low severity; II - frequent (0-35 years), stand replacement severity; III - 35-100+ years, mixed severity; IV - 35-100+ years, stand replacement severity; and V - 200+ years, stand replacement severity.

Fire Severity – Refers to the effects of temperature, moisture content of the litter and fuels on the ground, heat of combustion of conductive/radiant heat affecting the soil and plants. It is dependent upon the intensity and residence of the burn. An intense fire may not necessarily be severe. For trees, severity is often measured as a percentage of basal area removed.

Fire Suppression Activity Damage – Damage to resources, lands, and facilities resulting from wildfire suppression actions, in contrast to damages resulting from a wildfire.

Fire Use – The combination of wildland use and prescribed fire applications to meet resource objectives.

Fuel – Combustible material, including vegetation, such as grass, leaves, ground litter, plants, shrubs and trees that feed a fire.

Fuel Loading – The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area.

Fuel Moisture – The quantity of moisture in fuel expressed as a percentage of the weight when thoroughly dried at 212 degrees Fahrenheit.

Fuel Reduction – Manipulation, including combustion, or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to wild fire control.

Fuel Type – An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

-H-

Hybrids – Occur when two species from the same genus cross. They may be created artificially or naturally in the wild where the ranges of two closely related species overlap.

-I-

Incident – A human-caused or natural occurrence, such as a wildfire, that requires emergency service action to prevent or reduce the loss of life or damage to property or natural resources.

Incident Command System (ICS) – The combination of facilities, equipment, personnel, procedure and communications operating within a common organizational structure, with responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident.

Interior Burned Area Emergency Response Group (IBAER) – The IBAER is a subcommittee of the NBAER (see below) consisting of the National ES&R/BAER Coordinators for the Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), and a representative of the Department of the Interior (DOI).

Introduced Species – A species that is established in a natural ecosystem in which it was not historically present.

Invasive Species – Species which become established and reproduce rapidly, often displacing native species. Can be aggressive native species, but are usually non-native species. However, not all non-native species are invasive. Such species become invasive when they cause problems with their new environment, drastically changing the ecology and landscape. When native plants are displaced, animals that depend on them suffer.

-J-

Joint Fire Science Program (JFSP) – A partnership of six federal wildland and fire and research organization established in 1998 to provide scientific information and support for fuel and fire management programs. The emphasis is on a scientist-manager partnership with transferring research findings to the field. In 2001, post-fire rehabilitation and stabilization research efforts were added. Focus is on short-term applied research that provides information to managers.

-M-

Monitoring – Sets goals for comparisons to be made, thresholds for changes to be detected and proposed actions that would be undertaken in the event thresholds are met for any item of interest being monitored. Monitoring is not an inventory which is repeated over time. A monitoring measure is established to answer questions. Standardized protocols are the preferred method to be used in collecting monitoring data. Specific monitoring questions are developed to ensure that monitoring and evaluation address the needs essential to measuring plan accomplishments and effectiveness. Such questions help identify issues of concern and reveal how they are changing. The evaluation process determines whether the observed changes are consistent with the plan's desired conditions, goals, or objectives, and what adjustments may be needed.

-N-

National Burned Area Emergency Response Coordinators Group (NBAER) – The NBAER is a Chartered organization consisting of the Department of the Interior (DOI) National BAER Coordinators (BLM, BIA, NPS, USFWS) and the USDA Forest Service National BAER Coordinator.

National Environmental Policy Act (NEPA) – The basic national charter for protection of the environment, enacted in 1969. It sets policy and procedures for environmental protection and authorizes Environmental Impact Statements and Environmental Assessments to be used as analytical tools to help federal managers make decisions.

Native plant species – A plant native to a specific region, where it grows naturally and where it evolved. Native plants are often noted as those which were present prior to the time of European settlement.

Naturalized – When a species that is not native to a certain area grows, reproduces and maintains itself without any assistance from human activities.

National Wildfire Coordinating Group (NWCG) – A group formed under the Secretaries of Agriculture and Interior and comprised of representatives of the U. S. Forest Service, Bureau of Land Management, Bureau of Indian Affairs, National Park Service, U. S. Fish and Wildlife Service and Association of State Foresters. The group's purpose is to facilitate coordination and effectiveness of the wildland fire activities and provide a forum to discuss, recommend action and resolve issues and problems of substantive nature. NWCG is the certifying body for all courses in the National Fire Curriculum.

Non-native plant – A plant that is accidentally or intentionally distributed outside of its historic range. A non-native plant is sometimes termed an exotic or introduced species.

Non-native, invasive plant species – Plants that live outside of their historic range, usually originating from human settings and activities (gardens, agricultural lands, roadways, etc.), and that continue to reproduce and displace native species, reducing biodiversity in natural areas.

Invasive plants, being free from herbivores and parasites which keep them in check in their native range, reproduce rapidly.

-O-

Original Source (Provenance) – The location of the native plant from which seed was collected.

-P-

Prescribed Fire – Any fire ignited by management actions under certain, pre-determined conditions to meet specific objectives related to hazardous fuels or habitat improvement. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

Prescribed Fire Plan (Burn Plan) – This document provides the prescribed fire burn boss information needed to implement an individual prescribed fire project.

Programmatic Emergency Stabilization & Rehabilitation Plan (PESRP) – A programmatic plan (prepared in advance and applicable to clearly defined types of incidents and situations) generally written by a field office unit at the landscape level, documented and analyzed through the appropriate NEPA process. These programmatic plans contain information about those areas where wildfires are most likely to occur, and where and what type of ES&R treatments are typically needed.

-R-

Rehabilitation – See Burned Area Rehabilitation.

Rehabilitation Plan – See Burned Area Rehabilitation Plan.

Remote Automated Weather Stations (RAWS) – An apparatus that automatically acquires, processes, and stores local weather data for later transmission to the GOES Satellite, from which the data is re-transmitted to an earth-receiving station for use in the National Fire Danger Rating System.

Resources – 1) Personnel, equipment, services and supplies available, or potentially available, for assignment to incidents, 2) The natural resources of an area, such as timber, grass, watershed values, recreation values and wildlife habitat.

Resource Advisor – A technical specialist appointed by the Agency Administrator and provides advice to the Incident Management Team on natural and cultural resource protection from wildfire and suppression operations. This position is also the liaison between the Incident Commander and the Agency Administrator and provides input required for the development of ES&R Plans. See NFES 1831/PMS 313 “Resource Advisor’s Guide for Wildland Fire” for additional duties of this position.

Restoration – The continuation of rehabilitation beyond the initial three years or the repair or replacement of major facilities damaged by the fire (620 DM 3.3 N). Restoration activities must be funded through sources other than the ES&R subactivities.

-S-

Source Identified Seed – A seed that has been verified through Seed Certification as to the species, origin and seed collection location of a plant ecotype or accession.

Suppression – A management action intended to protect identified values from a fire, extinguish a fire, or alter a fire's direction of spread.

Sustainability – The ability of an ecosystem to maintain ecological processes and functions, biological diversity, and productivity over time.

-T-

Treatments – Efforts which result in on-the-ground projects such as aerial seeding, drill seeding, culvert installation, weed spraying, etc.

-V-

Values-at-risk (Values to be protected) – Includes property, structures, physical improvements, natural and cultural resources, community infrastructure, and economic, environmental, and social values.

-W-

Watershed Response – A measure of how a watershed will respond to precipitation, based on soils moisture, cover, impermeable surface (rocks), hydrophobic soils, amount/ duration of precipitation, lag time from the start of the storm to peak discharge, etc.

Water Repellency – The resistance to soil wettability, which can be increased by intense fires.

Weed – Any plant that interferes with human activities and is not valued where it is growing. Where they displace native plants and animals, in effect decreasing biodiversity, a weed can be considered an invasive plant species.

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.

- **Wildfire –** An unplanned and unwanted wildland fire including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out. If fire suppression action is needed beyond initial attack, a Wildland Fire Situation Analysis (WFSA) is prepared to guide suppression efforts.

- **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. A Wildland Fire Implementation Plan (WFIP) is prepared to guide operational management.
- **Prescribed Fire** – Any fire ignited by management actions to meet specific objectives.

Wildland Fire Leadership Council – Made up of the heads of the five agencies responsible for wildland fire management (BIA, BLM, NPS, USFS, and USFWS) chaired by alternating DOI or DOA Assistant Secretaries

Acronyms
(See Glossary of Terms for additional Acronyms and their definition)

BAER Burned Area Emergency Response
BAR Burned Area Rehabilitation
BIA Bureau of Indian Affairs
BLM Bureau of Land Management

CFR Code of Federal Regulations
CX Categorical Exclusion

DOA Department of Agriculture
DOI Department of the Interior
DM Departmental Manual
DNA Documentation of NEPA Adequacy

EA Environmental Assessment
ES Emergency Stabilization
ES&R Emergency Stabilization and Rehabilitation

FAR Federal Acquisition Regulations
FMP Fire Management Plan
FOR Fixed Ownership Rates

IBAER Interior Burned Area Emergency Response Committee
IBLA Interior Board of Land Appeals
IDIQ Indefinite Delivery, Indefinite Quantity (a contract)
IT Information Technology (computers, etc)
LUP Land Use Plan (includes RMPs and MFPs)

MFP Management Framework Plan

NBAER National Burned Area Emergency Response Committee
NFP National Fire Plan (includes Ten-Year Comprehensive Strategy)

NEPA National Environmental Policy Act
NFPORS National Fire Plan Operations and Reporting System
NIFC National Interagency Fire Center
NLCS National Landscape Conservation System
NPS National Park Service
NRCS National Resource Conservation Service

OH&A Office of Hearings and Appeals
OWFC Office of Wildland Fire Coordination

PESRP Programmatic Emergency Stabilization & Rehabilitation Plan

RAWS Remote Automated Weather Station
RIPS Rangeland Improvement Project System (a computer database)
RMP Resource Management Plan

USFS United States Forest Service
USFWS United States Fish and Wildlife Service

WFLC Wildland Fire Leadership Council
WO Washington Office (Headquarters Office of BLM)
WSA Wilderness Study Areas

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Contour Straw Wattles, http://www.co.nrcs.usda.gov/technical/eng/STRAWWATTLESfactsheet.pdf

Erosion Control Netting, http://www.co.nrcs.usda.gov/technical/eng/ECNETTINGfactsheet.pdf

Hydroseeding and Hydomulching, http://www.co.nrcs.usda.gov/technical/eng/HYDROSEEDINGfactsheet.pdf

Sandbag Barrier, http://www.co.nrcs.usda.gov/technical/eng/SANDBAGBARRIERfactsheet.pdf

Wire and Fabric Gabion Barrier, http://www.co.nrcs.usda.gov/technical/eng/wire-and-fabricgabion-factsheet.pdf

Silt Fence, http://www.co.nrcs.usda.gov/technical/eng/SILTFENCEfactsheet.pdf

Straw Bale Check Dam, http://www.co.nrcs.usda.gov/technical/eng/BALECHECKDAMfactsheet2.pdf

Rock Check Dam, http://www.co.nrcs.usda.gov/technical/eng/ROCKCHECKfactsheet.pdf

APPENDIX 1 – CHECKLIST OF PRINCIPLE STEPS

Pre-Planning Phase

Step 1 – Prepare/review Programmatic ES&R Plan (PESRP) for the planning unit, with associated NEPA analysis documentation. Complete any needed consultations under the Endangered Species Act and the National Historic Preservation Act.
Step 2 – Insure PESRP is incorporated appropriately into unit's Fire Management Plan (FMP).

** It may also be helpful to have a pre-season meeting to anticipate needs for the upcoming fire season, identify potential ES&R personnel, and review current ES&R policy.

Planning Phase

Step 1 - While fire is still burning, assign a Resource Advisor (RA) to work with Suppression personnel.
Step 2 - Begin gathering pertinent information available from the Suppression Team (values at risk, GIS files, maps, burn severity, etc.).
Step 3 - Assemble an ES&R Plan ID Team with a team leader (Resource Advisor should be on the team) and determine if ES or BAR Treatments are required.
Step 4 - Assemble and review existing planning information (LUP, FMP, PESRP, and Biological Opinions, etc.).
Step 5 - Conduct a field assessment of the burn area to analyze ES or BAR Treatment needs.
Step 6 - Prepare and submit an Initial ES and/or BAR Plan (Form 1310-20- with continuation sheet). (Note: Form 1310-20 is required for both ES (2822) and BAR (2881) by BC-612)
Step 7 - Develop Objectives for the burned area based upon LUP guidance.
Step 8 - Write up treatment specifications with estimated costs.
Step 9 - Prepare a Complete ES (and/or BAR) Plan and submit for approval.
Step 10 - Enter the data into NFPORS and MIS/FBMS.
Step 11 - Assign an Implementation Team Leader (and Team if necessary).

Implementation Phase

Step 1 - Prepare or assemble any necessary contracts and arrange for certified COR(s) and PI(s) to administer the contracts.
Step 2 - Order any necessary materials (seed, seeding equipment, fence materials, etc.) and arrange for specific delivery dates and locations to meet implementation needs.
Step 3 - Secure commitments for any necessary in-house labor and equipment needs with time frames specified.
Step 4 - Put treatments on the ground or assure they are completed by contractors.
Step 5 - Pay all bills or assure they are paid by the Contracting Officer.
Step 6 - Enter all projects into RIPS, all accomplishments into MIS/FBMS and NFPORS. Prepare the first year Monitoring and Completion report and request funding for the next FY.
Step 7 - Prepare an Administrative File with all pertinent Plan information and documentation included. If contracts, etc. are housed within other files, make copies for the Administrative File and include them or at least reference where they are housed for future reference.
Step 8 - Assure Monitoring is scheduled with a responsible party.

Monitoring/Reporting Phase

Step 1 – Project Lead assures adequate monitoring is completed, analyzed and included in the Administrative File.
Step 2 - ID Team determines future ES or BAR needs, requests appropriate funding and assigns responsibility for these actions to a responsible person/group for completion.
Step 3 - Complete a Monitoring and Completion report for years two and three with year three being the closeout report for the project.
Step 4 – Update NFPORS data entry.

APPENDIX 2 – SAMPLE PESRP/EA OUTLINE

I. INTRODUCTION
- A. PURPOSE AND NEED
- B. CONFORMANCE WITH LAND USE PLANS AND OTHER RELATED PLANS

II. PROPOSED ACTION AND ALTERNATIVES
- A. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS
- B. NO ACTION ALTERNATIVE
- C. PROPOSED ACTION
  1. *Emergency Stabilization and Rehabilitation*
     - a. Natural Recovery
     - b. Seeding and Planting
     - c. Noxious and Invasive Weed Treatments
     - d. Erosion Control
     - e. Protective Fences
     - f. Closures
     - g. Repair/Replace Minor Facilities Essential to Public Health and Safety
     - h. Livestock and Wild Horse Management
     - i. Cultural Site Protection, Stabilization, and Repair
  2. *Specific Design Features for Sensitive Resources*
     - a. SSS Plants
     - b. SSS Terrestrial Wildlife
     - c. SSS Aquatic Wildlife
     - d. Riparian, Wetland, and Aquatic Habitats
     - e. Special Management Areas
     - f. Cultural Resources
  3. *Monitoring*

III. AFFECTED ENVIRONMENT
- A. SOILS
- B. WATER
- C. FLOODPLAINS/WETLANDS/RIPARIAN ZONES
- D. AIR
- E. VEGETATION
  1. *General Vegetation*
  2. *Special Status Plants*
     - a. Slickspot Peppergrass
     - b. Other Sensitive Plants
- F. TERRESTRIAL WILDLIFE
  1. *General Terrestrial Wildlife*
     - a. Pronghorn Antelope
     - b. Mule Deer and Elk
     - c. Migratory Birds
     - d. Sagebrush Obligate Birds
     - e. Other Terrestrial Wildlife

2. Special Status Terrestrial Wildlife
a. Type 1 Federally Threatened, Endangered, and Candidate Species
b. Type 2 Rangewide/Globally Imperiled Species
c. Type 3 Regional/State Imperiled Species

G. AQUATIC WILDLIFE
1. General Aquatic Wildlife
a. Coldwater Fishes
b. Warmwater Fishes
2. Special Status Aquatic Wildlife
a. Type 1 Federally Threatened, Endangered, and Candidate Species
b. Type 2 Rangewide/Globally Imperiled Species

H. RECREATION
I. SPECIAL MANAGEMENT AREAS
1. Wilderness Study Areas
2. Wild and Scenic Rivers
3. Other Special Management Areas
J. VISUAL RESOURCES
K. CULTURAL RESOURCES
L. GRAZING MANAGEMENT

IV. ENVIRONMENTAL CONSEQUENCES
A. NO ACTION ALTERNATIVE
B. PROPOSED ACTION
1. Soils
2. Water
3. Floodplains/Wetlands/Riparian Zones
4. Air
5. Vegetation
a. General Vegetation
b. Special Status Plants
6. Terrestrial Wildlife
a. General Terrestrial Wildlife
b. Special Status Terrestrial Wildlife
7. Aquatic Wildlife
a. General Aquatic Wildlife
b. Special Status Aquatic Wildlife
8. Recreation
9. Special Management Areas
10. Visual Resources
11. Cultural Resources
12. Grazing Management
C. CUMULATIVE IMPACTS

V. COORDINATION, CONSULTATION, AND PUBLIC INVOLVEMENT

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Appendix A: List of Species Commonly Used in Revegetation

APPENDIX 3 – NATIONAL BAER TEAM DISPATCH PRIORITIZATION CRITERIA

The use of a National Burned Area Emergency Response (BAER) Team is generally employed for a wildfire that involves multiple agency ownership or on large complex wildfires. A team of interagency specialists is brought in to assess the impacts of the fire and prepare a BAER Plan for emergency stabilization treatments. **Prior to requesting a BAER Team, the National BAER Team Dispatch Prioritization Criteria, shown in the table below, must be reviewed and mutually agreed upon with the National ES&R Program Lead.** A BAER team must be requested through the Incident Command System (ICS) prior to wildfire control or later through the appropriate line management decision process. See National Interagency Mobilization Guide Chapter 60, Section 69.4 at: http://www.nifc.gov/news/mobguide/index.html.

Question	Criteria	Points	
1	Does ordering land unit have the ability (lacking needed resources) to produce their own BAER Plan with local or regional assistance? If yes, instruct the unit to undertake plan development. Stop here; there is no need to complete this table. If no, complete the table below.	Yes/No	
2	Post-fire impacts pose immediate and significant threats to human life and property.	10	
	Post-fire impacts pose moderate threats to human life and property.	5	
	Post-fire impacts pose minor threats to human life and property.	1	
3	There are numerous emergency stabilization issues, fire damage assessments are difficult and require special skills not available at the local unit.	3	
	There are several emergency stabilization issues, fire damage assessments are difficult and require special skill not available at the local unit.	2	
	There are few emergency stabilization issues, fire damage assessments are routine and require some simple skills not available at the local unit	1	
4	BAER planning will involve multiple Federal/Tribal/State jurisdictions.	3	
	BAER planning will involve two Federal/Tribal/State jurisdictions.	2	
	BAER planning will involve one DOI bureau.	1	
		Total Points	

Point Score	**Recommended Action**
3-7	National Interagency BAER Team dispatch not appropriate at this level.
8-11	Consider using other local or regional resources.
12-16	Priority dispatch of National Interagency BAER Team.

APPENDIX 4 –EXPENDITURE GUIDANCE FOR ES&R FUNDS

When preparing Emergency Stabilization Plans and Burned Area Rehabilitation Plans it is important to understand which subactivity is the correct funding source so the treatment can be included in the appropriate plan. **The following lists provide a quick reference to some of the allowable or prohibited uses of ES&R funds. Actual policies are described in further detail in the ES&R Handbook (H-1742-1).**

Allowable Emergency Stabilization Treatments and Activities

- Installing (i.e. signs), replacing or repairing minor facilities essential to public health and safety when no other protection options are available.
- Placing structures to slow soil and water movement.
- Seeding to prevent unacceptable erosion of soils.
- Planting/seeding of shrubs, grasses, and forbs for the purpose of preventing permanent impairment of designated Critical Habitat for Federal and State listed, proposed or candidate threatened and endangered species.
- Road or trail work to increase drainage structure frequency and/or capacity to handle additional post-fire runoff.
- Installing protective fences or barriers to protect treated or recovering burned areas.
- Conducting assessments of critical habitat (ESA section 7) and significant heritage sites (NHPA section 106) in those areas that may be affected by emergency stabilization treatments.
- Stabilizing critical heritage resources to prevent further post-fire damage.
- Patrolling, camouflaging, or burying significant heritage sites to prevent looting.
- Seeding to prevent establishment of invasive plants.
- Using IPM techniques to minimize the establishment of non-native invasive species within the burned area, when there is an existing approved management plan that addresses non-native invasive species.
- Direct treatment of invasive species for up to one year from fire containment.
- Monitoring of treatments and activities for up to three years from fire containment.
- Overtime for fire preparedness (2810) funded employees (not base eight) when working on emergency stabilization projects.
- Base eight and overtime for fuels (2823, 2824) funded employees when working on emergency stabilization projects.
- Base eight and overtime for non- fire program funds (i.e., MLR, O&C, etc.) employees when working on emergency stabilization projects.

Allowable Rehabilitation Treatments and Activities

- Chemical, manual, biological, and mechanical removal of invasive species for up to three years from fire containment.
- Planting/seeding of shrubs for the purpose of reestablishing diversity in vegetative structure, vegetation recovery to pre-fire shrub condition, and wildlife habitat recovery.
- Tree planting to reestablish burned habitat, reestablish native tree species lost in fire, prevent establishment of invasive plants.

- Repair or replace minor operating facilities (e.g., fences, campgrounds, interpretive signs and exhibits, shade shelters, wildlife guzzlers, etc.).
- Awards for exceptional performance in the ES&R Program.
- Base eight and overtime for fire preparedness (2810) funded employees when working on rehabilitation projects.
- Base eight and overtime for fuels (2823, 2824) funded employees when working on rehabilitation projects.
- Base eight and overtime for non- fire program funds (i.e., MLR, O&C, etc.) employees when working on rehabilitation projects.

Prohibited Uses of ES&R Funds

- Emergency stabilization or rehabilitation treatments not in an approved ES&R Plan or Plan Amendment.
- The expenditure of funds for emergency stabilization treatments carried out beyond one year following containment of the fire (except for treatment failures; see Treatment Failure section of ES&R Handbook).
- Use of emergency stabilization funding for planting/seeding of shrubs, grasses, and forbs for the purpose of providing diversity in vegetative structure or wildlife habitat recovery.
- Expenditure of ES&R funding on non-federal lands (except where the Wyden Amendment applies; see Wyden Amendment section in ES&R Handbook).
- Monitoring to determine the short- or long-term response of a resource to the fire (i.e., fire effects monitoring).
- The expenditure of any ES&R funds beyond three years of the date of fire containment.
- Monitoring the effects of the fire on cultural resources.
- Monitoring the post-fire recovery of vegetation and wildlife, absent any treatments.
- Seeding at rates and methods that have not been proven to be effective in documented research and monitoring.
- The planning or replacement of major infrastructure, such as visitor centers, residential structures, administration offices, work centers, vehicle bridges, and similar facilities.
- The construction of new facilities that did not exist before the fire (except for temporary and minor facilities necessary for public safety or to implement ES&R treatments).
- Treatments to address effects to resources caused by prescribed fires or wildland fire use fires (unless the wildland fire use or prescribed fire is declared a wildfire).
- Extensive cultural resource field surveys of burned areas or documentation of cultural resource inventories not associated with NHPA section 106 compliance.
- Site and data recovery, cataloging, and other programmatic actions such as determination of National Historic Register eligibility not associated with NHPA section 106 compliance.
- Cultural resource or heritage site restoration.
- Treating fuels within the burned area to accomplish fuel management objectives.
- Treatments to address or resolve a pre-fire existing problem (see Preexisting Condition section in ES&R Handbook).
- Conducting cadastral survey work to resolve pre-fire ownership issues.

- Restoration, the funding of activities beyond the initial three years or the repair or replacement of major facilities (e.g., visitor, centers, residential structures, administration offices, work centers or similar facilities and their contents) damaged by the fire.
- Purchase of accountable/capitalized equipment (i.e., laptop computers, cameras, drills, snowmobiles, GPS units, OHVs, etc.) without National ES&R Program Lead approval and documentation that purchasing the equipment is more cost effective than leasing/renting equipment and is in the best interest of the government.
- Base-eight salary of employees funded with fire preparedness funds (i.e., 2810) engaged in emergency stabilization actions.
- Awards using emergency stabilization funding.
- Research.
- Normally scheduled road maintenance or improving a road to better than pre-fire conditions.
- Repair of wildfire suppression activity damage.

United States General Accounting Office

GAO

Report to Congressional Requesters

April 2003

WILDLAND FIRES

Better Information Needed on Effectiveness of Emergency Stabilization and Rehabilitation Treatments

GAO-03-430

April 2003

WILDLAND FIRES

Better Information Needed on Effectiveness of Emergency Stabilization and Rehabilitation Treatments

GAO Accountability • Integrity • Reliability

Highlights

Highlights of GAO-03-430, a report to the Chairman, House Committee on Agriculture, and the Chairman, House Subcommittee on Department Operations, Oversight, Nutrition, and Forestry, Committee on Agriculture

Why GAO Did This Study

Wildfires burn millions of acres annually. Most burnt land can recover naturally, but a small percentage needs short-term emergency treatment to stabilize burnt land that threatens public safety, property, or ecosystems or longer-term treatments to rehabilitate land unlikely to recover naturally. The Department of the Interior (Interior) and the Department of Agriculture's (USDA's) Forest Service—the two departments that manage most federal land—spend millions of dollars annually on such treatments. GAO was asked to (1) describe the two departments' processes for implementing their programs, (2) identify the costs and types of treatments implemented, and (3) determine whether these treatments are effective.

What GAO Recommends

To ensure effective emergency stabilization and rehabilitation treatments, GAO recommends Interior and USDA (1) specify procedures to be used to monitor treatment effectiveness, including type and extent of monitoring data collected and methods to collect these data, and (2) develop an interagency system to collect, store, and disseminate information on monitoring results.

Commenting on the draft report, Interior and USDA generally agreed they can do more to ensure that funds for emergency stabilization and rehabilitation are used effectively.

www.gao.gov/cgi-bin/getrpt?GAO-03-430.

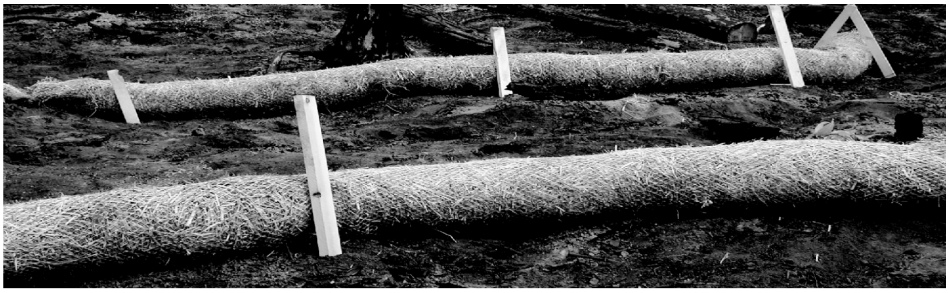
To view the full report, including the scope and methodology, click on the link above. For more information, contact Barry Hill at (202) 512-3841 or hillbt@gao.gov.

What GAO Found

Both Interior and USDA's Forest Service use multidisciplinary teams of experts, such as ecologists and soil scientists, to assess damage and potential risks burnt land poses and to develop emergency stabilization and rehabilitation plans that identify needed treatments to reduce or eliminate those risks. The two departments differ in how they manage their programs, however. Interior uses a single process to assess damage and identify treatments for short-term emergency stabilization and longer-term rehabilitation, while USDA's Forest Service uses different processes for each of these two treatment types. The two departments recognize these differences and recently agreed to work toward standardizing certain aspects of their programs, such as definitions and time frames.

Following the 2000 and 2001 fires, the Forest Service obligated $192 million and Interior $118 million for 421 emergency stabilization and rehabilitation treatment plans GAO reviewed. Treatments included seeding; fencing; installing soil erosion barriers such as straw bundles, or wattles; and road or trail work. Most of Interior's land—managed by the Bureau of Land Management—consists of rangeland. Thus, the bureau primarily seeded native grasses to retain soils and forage for cattle and wildlife and fenced to prevent grazing. Forest Service land is often steeply sloped and includes watersheds used for drinking water and timber. The Forest Service primarily seeded fast-growing grasses and built soil erosion barriers for emergency stabilization, and worked on roads, trails and reforested for rehabilitation.

Neither the departments nor GAO could determine whether emergency stabilization and rehabilitation treatments were achieving their intended results. The departments require that treatments be monitored, but they do not specify how and the type of data to collect or analyze for determining effectiveness. The departments have stressed the need to systematically collect and share monitoring data for treatment decisions. Yet neither has developed a national interagency system to do so. Therefore, the nature and extent of data collection, analysis, and sharing vary widely. The departments recognize that they need better information on treatment effectiveness. However, they have not yet committed to this effort.



Source: GAO.

Bundles of Straw, or Wattles, Used as Erosion Barries on Steep Slopes.

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Abbreviations

BLM	Bureau of Land Management
USDA	U.S. Department of Agriculture

GAO
Accountability * Integrity * Reliability

United States General Accounting Office
Washington, D.C. 20548

April 4, 2003

The Honorable Bob Goodlatte
Chairman, Committee on Agriculture
House of Representatives

The Honorable Gil Gutknecht
Chairman, Subcommittee on Department Operations,
Oversight, Nutrition, and Forestry
Committee on Agriculture
House of Representatives

In 2002—the second largest fire season in the past 50 years—wildland fires burned almost 7 million acres and destroyed timber, natural vegetation, habitat for wildlife, homes, and commercial businesses. Wildland fire is a natural occurrence and millions of acres burn annually. Some ecosystems rely on such fires to maintain their health, but unnatural fuel conditions have increased the severity and extent of some wildfires and, in some instances, the burnt landscape that remains after a catastrophic fire can threaten human safety, property, and the ecosystem. Rainstorms that pelt scorched and highly erosive soils can cause rock and mud slides in watersheds and ultimately contaminate municipal water supplies. In areas of steep terrain, sedimentary runoff can bury homes, destroy roads, and clog streams. Wildland fires can also create postfire environments that are ideal for the growth of noxious or invasive weeds. If these weeds replace native plant species, threatened or endangered animals can lose their habitat.

When burnt lands threaten human health and safety, property, and ecosystems, treatment measures, such as seeding, may be undertaken to stabilize soils and mitigate these risks. According to Department of the Interior (Interior) and U.S. Department of Agriculture's (USDA's) Forest Service data, only a small percentage of the many wildland fires that occur each year require such treatment. Specifically, of the roughly 39,000 wildfires that occurred in 2000 and 2001 on lands managed by Interior and the Forest Service, only about 600 required treatment.

The USDA's Forest Service and Interior's Bureau of Indian Affairs, its Bureau of Land Management (BLM), its Fish and Wildlife Service, and its National Park Service are responsible for implementing programs to manage wildland fire, including determining whether the burnt lands require treatment. Within Interior, BLM is the largest land manager and

oversees about half of the lands the department manages. In Interior agencies as well as in the Forest Service, local land units, such as national forests or national parks, are responsible for treating burnt lands that are not likely to recover on their own.

Interior and the Forest Service categorize postwildland fire treatments as either emergency stabilization or rehabilitation. Emergency stabilization treatments are those judged necessary to apply following a wildland fire to stabilize a burnt area and hence, any further damage; and protect valued resources, such as public health and safety. These actions usually are taken within a relatively short period of time following a wildfire, such as before the first storm event. On the other hand, rehabilitation treatments occur when the damages are deemed sufficiently severe that treatments for reestablishing habitat—such as planting shrubs and trees—and repairing fire damages—such as rebuilding burnt structures—when local land units judge them as being necessary. Interior funds emergency stabilization and rehabilitation treatments for up to 2 full growing seasons but no more than 3 years following a wildfire. The Forest Service specifies that emergency stabilization treatments generally be undertaken within the first 2 years following a wildfire, while rehabilitation treatments may be initiated for up to 3 years following a fire.

In response to the catastrophic wildland fires of 2000, Interior and USDA developed the National Fire Plan—a multibillion-dollar effort to address the nation's wildland fire threats. In supporting this plan, Congress targeted funds for treating burnt lands that were unlikely to recover naturally from the effects of wildland fire. In fiscal years 2001 and 2002, USDA received a total of $205 million and Interior received a total of $125 million for treating burnt lands.

You asked us to (1) describe Interior's and USDA's processes for implementing their emergency stabilization and rehabilitation programs, (2) identify the costs and types of treatments the departments have implemented, and (3) determine whether these treatments are effective. To answer these questions, we, among other things, reviewed 421 plans that the departments developed for carrying out emergency stabilization and rehabilitation treatments on lands burned by about 590 wildland fires in calendar years 2000 and 2001.[1] These plans represent about 90 percent of the plans that the departments developed for treating the wildland fires that occurred in 2000 and 2001. The plans identify the risks posed by these fires, the need for and type of emergency stabilization or rehabilitation treatments, estimated costs for those treatments, and the intended treatment results. In addition, we gathered monitoring data on up to 3, including some of the most expensive, treatments for 18 emergency stabilization and rehabilitation plans for fires that occurred in 2000 to determine if and how the departments are monitoring treatments, and whether treatments are effective. In total, the treatments we reviewed accounted for about 30 percent of the funding approved by the departments for treating the fires that occurred in 2000 and 2001. In addition, we reviewed departmental studies on monitoring and treatment effectiveness. We conducted our review from August 2001 through February 2003 in accordance with generally accepted government auditing standards. (See app. I for details on our scope and methodology.)

Results in Brief

Interior's and USDA's processes for stabilizing and rehabilitating severely burnt lands often start while a wildfire is still burning or immediately after it has been contained. To determine the need for emergency stabilization treatments, both Interior agencies and USDA's Forest Service use multidisciplinary teams of experts, such as wildlife biologists, ecologists, and soil scientists, who assess the extent of damage and the potential risks the burnt lands pose to public health and safety. However, Interior agencies and the Forest Service differ in their approaches to assessing the need for, and approval of, the longer-term rehabilitation of burnt lands. Interior uses the same process for emergency stabilization and rehabilitation by concurrently assessing both the need for and type of treatment after a wildland fire; and funding for such treatments. In contrast, the Forest

[1]Some Interior and Forest Service plans covered more than one fire. In those instances, several fires on an agency's local land unit occurred at about the same time, and local land unit officials decided to include treatments for those fires under one plan.

Service uses a separate planning process and funding to identify and set priorities for rehabilitation treatments, after much of the fire season has ended. According to Interior officials, it is easier to administer the program through one process. Forest Service officials said that the agency has two separate processes. This is because emergency treatments to stabilize burnt lands must be undertaken quickly and generally do not have long-term consequences for land management, whereas rehabilitation treatments can potentially have long-term consequences and potentially involve a number of different Forest Service programs. The departments are not required to develop a single process to administer their emergency stabilization and rehabilitation programs, although federal policy encourages the departments to standardize their processes and procedures. To this end, in January 2003, the two departments agreed to work towards standardizing certain aspects of their programs, such as definitions and timeframes.

Following the calendar year 2000 and 2001 fires, Interior obligated about $118 million, and USDA's Forest Service about $192 million, on emergency stabilization and rehabilitation for the 421 wildland fire plans we reviewed. The bulk of these funds—82 percent—were to treat burnt lands in Idaho, Montana, Nevada, and New Mexico. These four states experienced a relatively high percentage of the catastrophic fires in 2000 and 2001 that required treatment. Most of the departments' individual emergency stabilization and rehabilitation plans called for spending less than $1 million for one or more projects, but the plans varied widely in terms of the cost and scope of work, ranging from about $2,000 to over $40 million. Most of the funds were used to seed, reforest, and repair roads and trails. Although the Forest Service and Interior agencies used similar treatments, they varied in which treatments they used most frequently, primarily because the lands they manage have different characteristics. For example, most of Interior's land is managed by BLM. Because much of BLM's lands consist of rangeland, including land that is arid and semi-arid, it relies primarily on treatments such as seeding with native grasses to retain soils and forage for cattle and wildlife, and fencing to prevent grazing on burnt lands. In contrast, Forest Service land is often steeply sloped and includes watersheds that are used as drinking water sources and timber growth. As a result, the Forest Service relies primarily on emergency treatments, such as stabilizing soils and slopes by, for example, installing soil erosion barriers such as straw bundles, or wattles, and seeding with fast-growing grasses; the Forest Service's rehabilitation treatments include longer-term treatments such as road and trail work and reforestation.

The departments do not, and we could not, determine the overall effectiveness of emergency stabilization and rehabilitation treatments because most land units do not routinely document monitoring results, use comparable monitoring procedures, collect comparable data, or report monitoring results to the agencies' regional or national offices. Both departments either require or strongly encourage land units to monitor for treatment effectiveness, but neither department provides specific standardized guidance on how these units should monitor. As a result, we found that local land units used different monitoring methods, making it difficult to assess the effectiveness of treatments. Three national forests treating similarly burnt slopes with the same treatment—soil erosion barriers—illustrate this point. In one forest, staff only visually observed the treated slopes; in another the staff both visually observed and collected soil erosion data, which they analyzed to assess treatment effectiveness; and in the third the staff both visually observed and collected soil erosion data, which, because of data limitations, they were unable to analyze to assess treatment effectiveness. To judge whether soil erosion barriers were effective, each forest developed its own standard for treatment effectiveness. Because these national forests used different methods and standards to assess and judge treatment effectiveness, we could not draw overall conclusions about the effectiveness of erosion barriers in protecting resources at risk at these three forests. In addition, even when local land units collected data and made assessments of treatment effectiveness, they had not generally shared results with other land units or reported these results to the agencies' regional or national offices. The departments' internal reviews noted similar concerns about differences in monitoring procedures, the quality of monitoring data, the inability to assess the effectiveness of treatments, and the lack of data analysis and dissemination. The departments recognize the need for improved monitoring and data dissemination, but a lack of priority and concern about the extent of work that could be required to accomplish this has resulted in little effort being spent to address these issues. Consequently, the departments can neither compile nor verify the accuracy of monitoring results to determine overall treatment effectiveness or lessons learned.

To better judge the effectiveness of emergency stabilization and rehabilitation treatments in accomplishing their intended purposes and to benefit from lessons learned, we are recommending that the Secretaries of Agriculture and of the Interior specify the monitoring data that local land units should gather and require their agencies to collect, analyze, and disseminate the results of these data.

In responding to a draft of this report, the departments generally agreed with our recommendations and acknowledged that more needs to be done to ensure that funds for emergency stabilization and rehabilitation treatments on burnt lands are used as effectively as possible. The departments provided us with some examples on how they have tried or are trying to obtain and share better data on treatment effectiveness. For the most part, these examples are either (1) individual agency actions, as opposed to interagency or interdepartmental collaborative efforts, or (2) not extensive enough to ensure that sufficient data are routinely collected, analyzed, and disseminated.

Background

Recent fire seasons have shown that past fire suppression policies have not worked as effectively as was once thought. In fact, they have had major unintended consequences, particularly on federally owned lands. For decades, the federal wildland fire community followed a policy of suppressing all wildland fires as soon as possible. As a result, over the years, brush, small trees, and other vegetation accumulated that can fuel fires and cause them to spread more rapidly. This combination of accumulated underbrush and rapidly spreading fires heighten the potential for fires to become catastrophic. The buildup of excessive underbrush is not the only cause of catastrophic wildfires, however. The weather phenomenon known as La Nina, characterized by unusually cold Pacific ocean temperatures, changed normal weather patterns when it formed in 1998. It caused severe, long-lasting drought across much of the country, drying out forests and rangelands. This drought is cited by some as one of the major causes for the 2002 catastrophic wildland fires, which nearly surpassed those of 2000.

BLM, the Fish and Wildlife Service, the National Park Service, and the Forest Service manage about 700 million acres, or 96 percent of all federal lands. In addition, Interior's Bureau of Indian Affairs manages another 55 million acres. Most federal lands in the 48 contiguous United States are located in 11 western states, many of which have seen a dramatic surge in population over the last two decades, complicating the management of wildland fires. New development is occurring in fire-prone areas, often adjacent to federal lands, and creating a wildland-urban interface—an area where structures and other human development meet or intermingle with undeveloped wildland. This relatively new phenomenon means that more communities and structures are threatened by wildland fire and of potential postfire effects, including increased erosion and flooding.

Interior agencies and the Forest Service have undertaken postwildfire measures aimed at reducing potential postfire effects for several years. Since the early 1960s, BLM has had a program to curb damages often associated with wildfires—soil erosion and potential changes in vegetation. Similarly, the Forest Service has implemented postfire measures, such as seeding, since the 1930s. According to a Forest Service analysis of such measures implemented between 1973 and 1998 in the western United States, more than $110 million, in total, has been spent on treating burnt lands.[2] Furthermore, postfire expenditures have increased substantially, especially during the 1990s, as the number of Forest Service acres that burn annually increased and as the Forest Service used treatments more extensively. This finding is consistent with Interior's analysis of emergency stabilization fire treatments on BLM lands.[3] Similarly, according to Fish and Wildlife Service officials, even though it has undertaken postwildfire measures for several years, its policy on what measures are appropriate has evolved from measures aimed primarily at "keeping the soil in place" to those having additional functions such as combating invasive or noxious weeds or plants.

[2]USDA, Forest Service, Rocky Mountain Research Station, *Evaluating the Effectiveness of Postfire Rehabilitation Treatments*, General Technical Report RMRS-GTR-63 (Fort Collins, Colo.: Sept. 2000).

[3]U.S. Geological Survey, Forest & Rangeland Ecosystem Science Center and Oregon State University, Department of Rangeland Resources, *Emergency Fire Rehabilitation of BLM Lands in the Intermountain West: Revegetation & Monitoring*, Interim Report to the BLM (Corvallis, Oreg.: Jan. 26, 2002).

Responding in the aftermath of the disastrous 1994 fire season, when several lives were lost, Interior, the Forest Service, and other federal agencies undertook an extensive interagency review and revision of federal fire management policies.[4] The resulting 1995 Federal Wildland Fire Policy and Program Review proposed a set of uniform federal policies to enhance effective and efficient operations across administrative boundaries and improve the agencies' capabilities to meet challenges posed by wildland fire conditions.[5]

Large-scale wildfires continued to burn throughout the United States, with severe fire seasons in 1996, 1999, and 2000. Following the 2000 wildland fires, the administration asked USDA and Interior to recommend how best to respond to the 2000 fires and how to reduce the impacts of such fires in the future. The resulting report—the National Fire Plan—recommended increased funding for several key activities, such as suppressing wildland fires and reducing the buildup of unwanted hazardous fuels. The report also recommended expanded efforts to restore burnt lands because some of the fires burned with such intensity that they drastically changed ecosystems, and, without intervention, these ecosystems would recover slowly. The report recognized two key aspects of treatment activities: short-term treatments to remove hazards and stabilize soils and slopes, such as constructing dams to hold soil on slopes, and longer-term treatments to repair or improve lands unlikely to recover naturally from severe fire damage by, for example, reforesting desired tree species. To set priorities, restoration was to be undertaken on burnt lands that could affect

- public health and safety, as in the case of lands used as sources for domestic water supplies—that is, municipal watersheds;

- unique natural and cultural resources, such as salmon and bull trout habitat, and burnt land susceptible to the introduction of nonnative invasive species; and

[4]In addition to Interior and USDA, the Federal Emergency Management Agency, the Environmental Protection Agency, and the National Oceanic and Atmospheric Administration participated in the review.

[5]In 2001, the federal agencies responsible for the Federal Wildland Fire Policy updated the 1995 policy to clarify its purpose and intent and to address issues not fully covered in 1995. The 2001 review and update replaced the 1995 policy.

- other environmentally sensitive areas where economic hardship may result from a lack of reinvestment in restoring damaged land, such as land used for recreation and tourism.

To fund the National Fire Plan, Congress appropriated $2.9 billion for the two departments' fiscal year 2001 wildland fire needs—an increase of $1.4 billion over the departments' prior year funding of $1.5 billion. Of the $2.9 billion appropriated in 2001, $227 million was to be used for treating burnt lands. For fiscal year 2002 wildland fire needs, Congress appropriated $2.3 billion for the two departments and specified that $103 million was to be used for treating burnt lands. To carry out national fire plan goals and objectives, including those for treating burnt lands, Interior and the Forest Service have each designated national fire plan coordinators. To achieve more consistent and coordinated efforts in implementing the Federal Wildland Fire Policy and the National Fire Plan, and in response to a recommendation made by the National Academy of Public Administration,[6] the Secretaries of Agriculture and of the Interior established a Wildland Fire Leadership Council in April 2002. Comprised of members of both departments, the council is charged with, among other things, coordinating efforts to restore ecosystem health and monitoring performance.

Within the agencies of Interior and the Forest Service, wildland fire activities are largely carried out by local land units. Within Interior, BLM's local land units include district or field offices; the Fish and Wildlife Service's and the National Park Service's local land units consist of facilities, refuges, or parks; and the Bureau of Indian Affairs' local land units consist of agencies. The Forest Service's local land units consist of national forests and grasslands. BLM's state offices oversee the local land units, while the Bureau of Indian Affairs, Fish and Wildlife Service, National Park Service, and Forest Service regional offices oversee local land units.

[6]National Academy of Public Administration, *Managing Wildland Fire: Enhancing Capacity to Implement the Federal Interagency Policy* (Washington, D.C.: Dec. 2001).

Processes Differ between the Departments for Assessing the Need to Treat Burnt Lands and Approving Treatment Plans

Interior and USDA have different policies and procedures to assess whether burnt lands need to receive any short-term or longer-term treatments following wildland fire. Interior has one overall policy and procedure for its four land management agencies to determine the need for both short- and longer-term treatments. USDA's Forest Service has separate policies and procedures for assessing the need for short-term emergency stabilization treatments immediately following a wildland fire and for longer-term nonemergency treatments for rehabilitating burnt lands. Interior and the Forest Service have attempted to adopt the same policies and procedures for treating burnt lands, even though the National Fire Plan does not require them to do so and recently agreed to work towards standardizing certain aspects of their programs.

Interior Has a Single Process to Identify Both Emergency Stabilization and Rehabilitation Treatments

Under Interior's policy and procedure for implementing its emergency stabilization and rehabilitation program to treat burnt lands, its agencies are to take four key steps. The agencies are to (1) assess burnt lands to determine whether treatments should be taken to stabilize or rehabilitate them, (2) identify treatments when actions are considered necessary, (3) approve and fund necessary treatments, and (4) implement treatments once funding is available.

Local land unit managers are responsible for having burnt lands assessed to determine whether stabilization or rehabilitation is needed. Interior recommends that these managers start the process before a fire is contained in order to identify any emerging issues, conduct a preliminary risk analysis, and ensure a smooth transition from fire suppression to emergency stabilization and rehabilitation. Local land unit managers decide whether an intensive assessment of the burnt lands is warranted. In most cases, these managers decide that no such assessment is needed because they believe that the burnt lands pose no risk and that the lands will recover on their own within a relatively short period.

If local land unit managers decide that an intensive assessment is warranted, they assemble an interdisciplinary teams from the local land units to assess the burnt lands and where appropriate, propose treatment. The team's composition varies according to the complexity of the fire and availability of personnel with different skills and backgrounds. In general, Interior's interagency guidance recommends that teams comprised of staff specializing in, for example, wildlife, ecology, rangeland, soils, and watersheds. The guidance also suggests that managers include expertise

from cooperating agencies' offices, especially when needed skills are not available within the local office. The agencies can also have available state or regional staff assist local teams. While the teams are comprised of agency officials, they can and do consult, as needed, with other organizations and individuals, including those from local communities.

In some instances, wildland fires may encompass multiple agencies' lands, result in burnt conditions that are beyond the capability of the local staff to assess, or place many valued resources at risk. In these situations, the local land unit manager can ask Interior to deploy one of two interagency teams to assess large, multijurisdictional wildland fires. Interior's national wildland fire management office must approve any request for assistance. These teams include specialists from each of the affected agencies and represent a wide variety of skills. In 2000 and 2001, these multiagency teams were deployed eight times to assess fires we included in our review.

Both local and multiagency teams evaluate whether and what kinds of treatments are needed. They review any applicable land or resource management plans for the affected land management units to ensure that any recommended treatment action will be compatible with these plans.[7] The teams also review other available data that may help identify resources at risk, including data on cultural resources; threatened and endangered species; vegetation inventories, including information on invasive species; and soil types.

[7]Land or resource management plans serve as a basis for activities that occur on lands managed by Interior agencies. The Forest Service is required to develop similar plans for lands that it manages.

Upon completing their field inspections, teams brief local land unit managers on whether and what type of treatments may be appropriate. If the local land unit managers decide to proceed with treatment, they direct the team to prepare a treatment plan, which includes, among other things, a summary of activities and costs. In developing these plans, the team must consider the requirements of the National Environmental Policy Act and any other relevant statutes.[8] In general, a team requires about 2 to 3 weeks to review the necessary land and resource management plan, data associated with the wildland fire, and any other data that may identify resources at risk; conduct the site inspection; and prepare the treatment plan.

While Interior has a single process and uses the same funds and plans to identify both emergency stabilization and rehabilitation treatments, it recognizes that the treatments are intended for different purposes. Emergency stabilization treatments include those to (1) stabilize and prevent unacceptable degradation to natural or cultural resources, (2) minimize threats to life or property, or (3) repair, replace, or construct improvements to prevent land or resource degradation. Rehabilitation treatments include those to repair or improve lands unlikely to recover naturally. While Interior's guidance indicates that plans are to identify treatments undertaken for emergency stabilization purposes as opposed to rehabilitation, our review of Interior's emergency stabilization and rehabilitation plans for calendar year 2000 and 2001 fires indicates that they do not always make such a distinction. Interior's guidance also states that both emergency stabilization and rehabilitation treatments are to be designed to be cost-effective and to meet treatment objectives.

The agencies differ in how quickly they require that treatment plans be completed—from 5 days to 1 month. Once the treatment plan is completed,

[8]The National Environmental Policy Act requires all federal agencies to prepare detailed environmental impact statements for major federal actions that may significantly affect the quality of the human environment. Agencies may exclude categories of actions that do not significantly affect the environment from the act's environmental impact requirements. Some Interior agencies, such as the National Park Service and the Bureau of Indian Affairs, have developed categorical exclusions. Interior and USDA are currently proposing to categorically exclude stabilization and rehabilitation of all lands and infrastructure impacted by wildland fires or fire suppression. Other relevant statutes include the Endangered Species Act, which requires agencies to ensure that their actions are not likely to jeopardize the continued existence of species listed as threatened or endangered or to adversely modify habitat critical to their survival. In addition, the National Historic Preservation Act requires federal agencies to take into account the effects of their actions on sites or buildings on or eligible for inclusion on the National Register of Historic Places.

the Interior agencies must approve it, usually within 1 to 2 weeks. The agencies' processes for approval vary, depending upon the cost of the treatment. For example, BLM has delegated approval authority for plans of less than $100,000 to its state offices, while its national office must approve plans of $100,000 or more. In contrast, the National Park Service does not delegate any approval authority to its local land management units; its regional offices approve plans of less than $300,000, while its national office approves plans of $300,000 or more. When a treatment plan and funding is approved, the local land unit officials are generally responsible for having the treatments specified in the plan implemented. Interior requires that treatments be implemented within 3 years.

The Forest Service Has Different Processes to Identify Emergency Stabilization and Rehabilitation Treatments

The Forest Service distinguishes between short-term emergency treatments to stabilize lands burnt by wildland fires and longer-term rehabilitation treatments. Its process for short-term treatments is similar to Interior's. Under this process, local land units are responsible for assembling interdisciplinary teams of agency officials to survey fires that are 300 acres or larger to determine if emergency conditions exist and if so, whether treatments are needed. Forest Service teams can also consult with other agencies and individuals, as necessary. The Forest Service does not have a national team to assess large, multijurisdictional fires. However, Forest Service staff are members of Interior's interagency teams and these teams have assessed fires on National Forest System lands. The Forest Service's rehabilitation process, however, differs from Interior's.

Emergency Stabilization

Under the Forest Service's emergency stabilization process, local land units are to undertake only those treatments necessary to alleviate emergency conditions following wildfire. These treatments include those necessary to protect life and property and to prevent additional damage to resources. The Forest Service directs that treatments be undertaken only when an analysis of risks shows that planned actions are likely to reduce risks significantly and are cost-effective. Further, because the Forest Service funds emergency stabilization with emergency wildland fire funding, to qualify for funding the Forest Service requires that treatment measures provide essential and proven protection at minimum cost. According to Forest Service officials, because the treatments are considered as emergency actions, the Forest Service does not complete environmental impact statements.[9] In keeping with the emergency status of these treatments, the Forest Service requires that plans be developed and approved within 10 to 13 days following total containment of the wildland fire. Delegated approval authorities vary by Forest Service region. Certain regions, with a history of more frequent and larger fires, have higher approval authorities than other regions. For example, the Forest Service's Pacific Southwest and Pacific Northwest regions (regions 5 and 6, respectively), which generally have most of the catastrophic wildfires, could approve plans costing up to $200,000 in 2000, while the Southern and Eastern regions (regions 8 and 9, respectively), where large, catastrophic fires are rare, were delegated no approval authority. Forest Service headquarters must approve plans exceeding regional delegated levels of approval authority. As with the Interior agencies, once an emergency stabilization plan is approved, the local land unit officials implement the plan. The Forest Service generally requires that treatments be implemented within the first year, but provides for funding to maintain or install additional treatments the next year.

[9]The Council on Environmental Quality, in its regulations implementing the National Environmental Policy Act, states that there are "emergency circumstances [that] make it necessary to take an action with significant environmental impact without observing the provisions of these regulations." In such circumstances, however, agencies "should consult with the Council about alternative arrangements."

Longer-Term Rehabilitation

While the Forest Service's short-term process for emergency stabilization is similar to Interior's, its longer-term rehabilitation process is not. According to Forest Service officials, the agency developed a different process for undertaking longer-term treatment on burnt lands when the National Fire Plan was being developed and Congress was considering appropriating additional funds to the Forest Service for restoring damaged lands. Before the National Fire Plan, the Forest Service spent little money on rehabilitation because it did not receive appropriations specifically for such an effort. Once the agency realized that additional funding would be available through the National Fire Plan, it began planning a separate rehabilitation process. According to Forest Service officials, the agency decided to have two separate processes because emergency treatments to stabilize burnt lands are funded with emergency funding and must be undertaken quickly. Further, such treatments generally do not have long-term consequences for land management, whereas rehabilitation treatments can potentially have long-term consequences, which may require an environmental assessment,[10] and involve a number of different Forest Service programs.

In October 2000, the Forest Service asked the regional foresters to identify proposed rehabilitation projects that supported the National Fire Plan. In accordance with that plan, the Forest Service's national fire plan coordinator gave primary responsibility to the regions for implementing the rehabilitation program. The coordinator instructed the regions to focus rehabilitation efforts on restoring watershed conditions, including protecting basic soil, water resources, and habitat for various native species such as plants and animals. Projects were envisioned to be those long-term efforts to rehabilitate or improve lands unlikely to recover naturally from wildland damage, or to repair or replace minor facilities damaged by fire. The coordinator also stressed the need for projects to be (1) consistent with long-term goals and approved land use plans; (2) based on sound analyses of the projects' potential consequences; (3) developed cooperatively with other federal, state, or local jurisdictions when wildland fires crossed their jurisdictional boundaries; (4) those that meet the basic objective of protecting life, property, and unique or critical cultural and natural resources; and (5) undertaken within the perimeter of the burned area. Funding to the regions was allocated based on acres burned and acres

[10]The Forest Service is currently proposing to categorically exclude stabilization and rehabilitation of lands and infrastructure damaged by wildland fires or fire suppression from further analysis under an environmental assessment or an impact statement.

severely burned. The funding for such projects can be available for up to 3 years.

Building on these instructions, the Forest Service regions developed different processes to identify proposed rehabilitation projects, as illustrated by the experiences of the Northern and Intermountain regions, respectively (regions 1 and 4) and the Southwestern Region (region 3). Regions 1 and 4—which encompass Idaho, Montana, Nevada, North Dakota, Utah, and portions of South Dakota and Wyoming—were most affected by catastrophic wildland fires in 2000.[11] The two regions jointly developed additional criteria to use in identifying and reviewing rehabilitation projects for fires that occurred in 2000. These criteria included whether the proposed project would

- improve or protect water quality, or restore long-term watershed functions;
- restore municipal watersheds;
- involve community partnerships;
- involve nonfederal partners;
- integrate several components in the project;
- restore threatened or endangered species habitat;
- protect public health and safety;
- improve infrastructure as a necessary step in completing the project;
- address noxious or invasive weeds as a component of the project;
- be emphasized by the regional forester; or
- have visible accomplishments within the first year.

[11]Of the 275,036 Forest Service acres that were severely burned in 2000, about 176,062 acres, or 64 percent, were located in regions 1 and 4.

According to region 1 and 4 officials, the regions developed these additional criteria for reviewing their forests' rehabilitation proposals because Forest Service guidance was too general to assess and set priorities for projects. These additional criteria allowed the two regions to better compare proposals that the forests submitted.[12]

Region 3, which encompasses Arizona and New Mexico, and which was the next region most affected by wildland fires in 2000, used a different approach to identify and set priorities for projects.[13] According to the region 3 emergency stabilization and rehabilitation program coordinator, while Congress was considering appropriating additional funding for the National Fire Plan, the region assembled a team to determine which fires were catastrophic in 2000 based on the (1) value of the losses incurred as a result of the fire, (2) capability to repair or restore the loss**,** and (3) potential cost to repair or restore the loss. Given these criteria, region 3 considered as catastrophic 5 of the 18 largest fires that occurred in 2000 and eligible for rehabilitation projects.

Forest Service officials said that the agency and regions undertook similar processes to identify rehabilitation projects in 2002. However, the Forest Service did not distribute all of the $63 million appropriated in fiscal year 2002 because it needed some of these funds for wildfire suppression. The agency used some of this appropriation for suppression because putting out fires is the agency's top priority.[14] According to the Forest Service

[12]In 2001, USDA's Office of Inspector General reviewed controls over the National Fire Plan funds in Forest Service region 1 and concluded that the Washington office had not sufficiently overseen the selection process to ensure that projects met National Fire Plan goals and objectives. The Forest Service agreed to review selected projects as part of its fiscal year 2002 management review of regional operations. USDA, Office of Inspector General, *Forest Service National Fire Plan Implementation*, Western Region Audit Report No. 08601-26-SF (Washington, D.C.: Nov. 2001).

[13]Of the 275,036 Forest Service acres that were severely burned in 2000, about 41,800 acres, or 15 percent, were located in region 3.

[14]When fire suppression costs exceed annual fire suppression appropriations, including emergency funds, the Forest Service can transfer funds from any appropriation available to the agency to the fire management appropriation. While Congress provided emergency funding to the Forest Service in August 2002, the amounts provided were not sufficient to cover that year's suppression costs. As a result, the Forest Service was required to borrow funds from other programs, including rehabilitation. According to Forest Service officials, the agency's fiscal year 2003 appropriation was not sufficient to fully reimburse all the programs from which it borrowed in fiscal year 2002, and, as of March 2003, it was unclear how the rehabilitation program would be affected.

national rehabilitation program coordinator, the severe wildland fires in 2002 required the Forest Service to use $84 million in rehabilitation funding—a portion of the $63 million appropriated in fiscal year 2002 and a portion of the $142 million appropriated in fiscal year 2001 but not yet expended.

The Departments Are Working to Coordinate Their Processes for Administering Treatments Even Though Their Missions and Types of Land Differ

As noted previously, prior to receiving additional funding under the National Fire Plan, USDA's Forest Service largely limited its postwildland fire treatments to emergency stabilization. However, in 1998, Interior and USDA initiated an effort to apply a consistent approach for both emergency stabilization and longer-term rehabilitation. This included an effort to develop an interagency handbook that agencies in both departments could use. This effort was undertaken, in part, in response to the 1995 Federal Wildland Fire Policy, which recommended that agencies work toward standardizing their policies and procedures. The Wildland Fire Leadership Council recently addressed this effort, which was abandoned in 2002 because of differences the agencies perceived in their missions, lands, and use of resources.

According to Interior and Forest Service officials, they had worked to integrate their different approaches, but discontinued this effort in 2002 because they decided that integration would be too difficult. The difficulty arose because, according to these officials, their agencies and the lands they manage are too dissimilar to have a consistent approach for treating burnt lands. For example, BLM's emergency stabilization and rehabilitation efforts focus on stabilizing soils and ensuring a diversity of animal and plant species because its mission emphasizes sustaining its lands for multiple uses. The National Park Service's emergency stabilization and rehabilitation efforts focus on naturally preserving the lands and resources for use by people. In contrast, the Forest Service stated that, historically, its efforts have focused on short-term stabilization treatments that are intended to protect life and property and prevent additional resource damage because its mission emphasizes protecting and improving forests and preserving watersheds. With the advent of the National Fire Plan, however, the Forest Service enlarged this focus to consider not only watersheds but also longer-term treatments to improve lands unlikely to recover naturally by, for example, planting trees or monitoring for and treating noxious plants or weeds. Because of this emphasis and the funding specifically authorized for rehabilitation, the Forest Service established a separate process for these longer-term efforts. The following illustrates the extent of the difference between Interior and the Forest Service: Interior uses the same process, staff, and funds to implement its emergency stabilization and rehabilitation program because, according to Interior officials, it is easier to do so. The Forest Service uses different processes, staff, and funds to implement its emergency stabilization program and its rehabilitation program because emergency stabilization has existed for about 25 years while it considers rehabilitation as an expanded mission based on the National Fire Plan appropriations language.[15] The difference in how the two departments fund emergency stabilization and rehabilitation treatments resulted in the Office of Management and Budget directing the Department of the Interior to identify nonemergency funding options for its nonemergency treatments by March 2003.

Interior and Forest Service officials acknowledged that the Federal Wildland Fire Policy encourages federal agencies to standardize processes and procedures and said that their respective departments are working together to better coordinate their programs. Even though the Fire Policy

[15]Interior uses both emergency and nonemergency funds for its program, while the Forest Service limits its use of emergency funds to its emergency stabilization program.

and the National Fire Plan do not require that the departments have the same processes for their respective programs or that they be fully integrated, the Wildland Fire Leadership Council addressed differences in the departments' emergency stabilization and rehabilitation programs. In January 2003, the council decided that both departments should have standard and uniform definitions, time frames, and funding mechanisms for efforts they take under their respective programs. According to the Forest Service's national emergency stabilization program coordinator, the council's decision will result in the two departments resuming their efforts to develop and adopt the same interagency handbook for carrying out their emergency stabilization and rehabilitation programs.

Rehabilitation Plans Vary Widely in Cost and in the Number and Types of Treatments

Following the calendar years 2000 and 2001 fires, Interior and USDA's Forest Service approved 421 plans for stabilization and rehabilitation treatments for an estimated total of more than $310 million. Nearly all of the plans and costs were to treat fires that occurred in western states. Within Interior, BLM accounted for the most plans—210 out of 266—and approved the bulk of Interior's funds—$88 million out of $118 million. The Forest Service accounted for the next largest number of plans—155—and approved $192 million—$53 million for short-term emergency stabilization and $139 million for longer-term rehabilitation. While the two departments implemented the same types of treatments on their lands following wildland fire, such as seeding, the frequency with which they relied on these treatments varied, primarily because of the types of lands they manage.

Emergency Stabilization and Rehabilitation Plans Were Concentrated in Western States and the Cost of Treatment Varied

As shown in table 1 for both Interior and the Forest Service, most emergency stabilization and rehabilitation treatments occurred in western states. Treatments occurred there primarily because much of the lands Interior and the Forest Service manage are in these states. Furthermore, during the summers of 2000 and 2001, states in the intermountain west were especially hard hit by drought and persistently dry conditions, which gave rise to two of the worst wildfire seasons in the past 50 years.

Table 1: Amount of Funding and Number of Plans Approved, by State Where Wildland Fire Occurred, 2000 and 2001

Dollars in millions

State	Funding	Percent of total[a]	Number of plans	Percent of total
Montana	$96.0	30.9	33	7.8
Idaho	59.7	19.2	99	23.5
Nevada	56.1	18.1	98	23.3
New Mexico	42.9	13.8	26	6.2
Oregon	15.7	5.1	40	9.5
Utah	10.8	3.5	49	11.6
Other	29.0	9.3	76	18.1
Total	**$310.2**	**100.0**	**421**	**100.0**

Source: Forest Service and Interior.

Note: GAO analysis of Forest Service and Interior data.

[a]The sum of the numbers does not add to the total because of rounding.

As table 1 shows, Montana and Idaho received more than 50 percent of the stabilization and rehabilitation funding for the 2000 and 2001 fires. Montana, which received the largest allocation, proposed to use almost half of its funds for longer-term rehabilitation treatments in the Bitterroot National Forest.

According to the estimates provided in the stabilization and rehabilitation plans, the costs to treat wildfires varied widely. About 56 percent ($174.3 million) of the estimated $310 million was associated with only 18 of the 421 plans. Most of the plans (87 percent) estimated that treatment costs would be under $1 million and the majority of those were less than $100,000. Table 2 shows the number and percentage of plans that fall within various cost estimate ranges and the total estimated costs and percentage within these ranges.

Table 2: Number and Percent of Plans in Different Cost Ranges and Total Costs and Percentage of Total Costs within Those Ranges, 2000 and 2001

Dollars in millions

Range of costs per plan	Number of plans	Percent of plans	Cost	Percent of total cost
$10 million and over	5	1.2	$96.2	31.0
$4 million to $9.999 million	13	3.1	78.1	25.2
$2 million to $3.999 million	14	3.3	37.0	11.9
$1 million to $1.999 million	22	5.2	30.7	9.9
Under $1 million	367	87.2	68.1	22.0
Total	**421**	**100.0**	**$310.1**	**100.0**

Source: Forest Service and Interior.

Note: GAO analysis of Forest Service and Interior data.

The cost of individual emergency stabilization and rehabilitation treatments ranged from about $2,000 to about $42 million. Cost differences occurred primarily because of the number and type of treatments included in the plan and the number of acres to be treated. This is illustrated in the following examples:

- The most costly plan involved longer-term rehabilitation for the Bitterroot National Forest in Montana. In this plan, the Forest Service regional office included 5 different but almost simultaneous fires that engulfed about 185,000 acres in 2000.[16] This plan includes planting trees, roadwork—including cleaning drainage structures, restoring road surfacing, and taking roads out of service—and removing dead and dying timber. The entire proposed cost of the plan is about $42 million, which, according to Forest Service officials, would be spent over a period of several years.

- One of the least costly plans—for the Lower Rio Grande Valley National Wildlife Refuge in southern Texas—proposed spending only about $2,500. While the fire was relatively small and only grew to about 10 acres, the tract was in an urban area, surrounded by many homes and

[16]Similarly, all five fires were covered by one emergency stabilization plan.

farms. Given the fire's location and the unique climate, geology, vegetation, and wildlife of the site, the Fish and Wildlife Service proposed to revegetate 5 of the burnt acres with native brush.

Interior's Bureau of Land Management Used the Most Treatments, Primarily for Restoring Forage Used for Grazing and Wildlife Habitat

Interior's 4 agencies approved 266 plans, costing about $118.5 million. Of the four agencies, BLM approved the largest number of plans and had the largest share of total costs. Table 3 provides information on the number and cost of plans approved by Interior's agencies in 2000 and 2001.

Table 3: Number and Cost of Emergency Stabilization and Rehabilitation Plans Approved by Interior, 2000 and 2001

Dollars in millions

Agency	Number of plans	Percent of plans	Cost	Percent of cost
BLM	210	78.9	$87.9	74.2
Bureau of Indian Affairs	26	9.8	17.6	14.9
Fish and Wildlife Service	17	6.4	8.7	7.3
National Park Service	13	4.9	4.3	3.6
Total	**266**	**100.0**	**$118.5**	**100.0**

Source: Interior.

Notes: GAO analysis of Interior data.

Interior's plans include both emergency stabilization and rehabilitation treatments.

Most of the funds Interior approved were used for seeding and fencing, primarily because most of the fires occurred on rangelands BLM manages in Idaho, Nevada, and Utah. About $67.2 million, or 70 percent, of the $96.1 million were for these two treatments. Table 4 provides data on the treatments Interior used most frequently and the cost of these treatments.

Table 4: Costs of Different Interior Emergency Stabilization and Rehabilitation Treatments, 2000 and 2001

Dollars in millions

Treatment	Cost of treatment in agency plans[a]	Percent
Seeding	$57.5	59.8
Fencing	9.7	10.1
Reforestation	6.6	6.9
Cultural resource survey and/or cultural resource protection	5.2	5.4
Noxious or invasive plant monitoring and/or weed treatment	6.9	7.2
Checkdams,[b] straw wattles, contour felled trees or log terraces, mulch	2.9	3.0
Road or trail work	1.6	1.7
Other[c]	5.7	5.9
Total	**$96.1**	**100.0**

Source: Interior.

Note: GAO analysis of Interior data.

[a]Treatment cost excludes other costs associated with plans, such as plan development and monitoring costs.

[b]Check dams are small structures made of rocks, logs, plant materials, or geotextile fabric. They are designed to stabilize slopes and store small amounts of sediment.

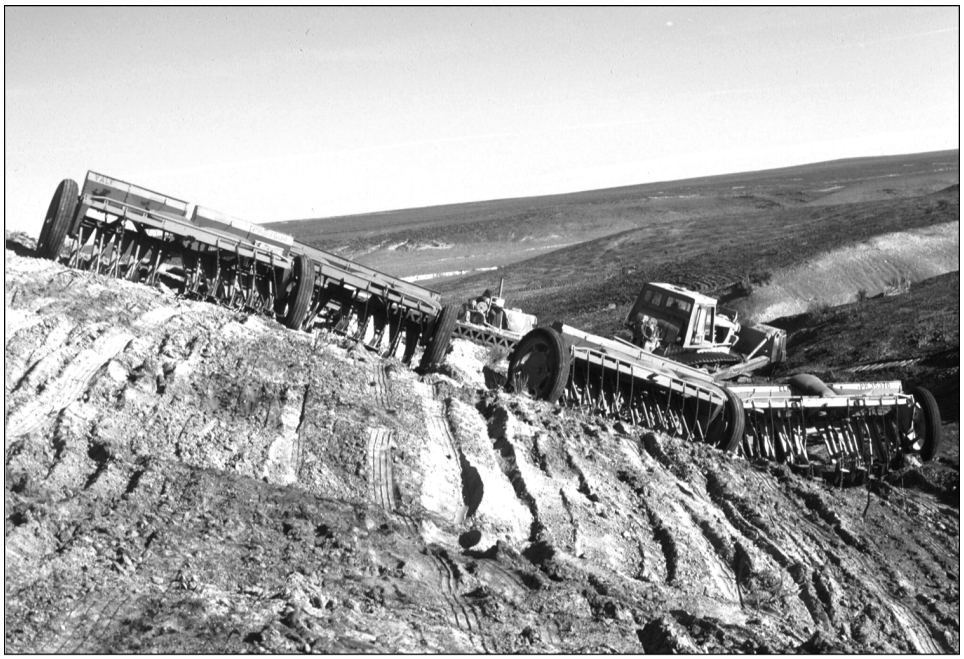
[c]Other includes a number of infrequently used and less costly treatments, such as building or cleaning out cachement basins, repairing or replacing minor structures, signs, felling trees that pose a hazard, constructing racks to trap large debris, removing horses, and installing flood warning systems.

Of the four Interior agencies, BLM accounted for the largest share of treatment costs and included some type of seeding as a treatment in about 190, or 90 percent, of its 210 plans. Similarly, BLM accounted for about $50 million of the $57.5 million that Interior approved for seeding. Much of the lands managed by BLM consist of rangelands that produce forage for wild and domestic animals, such as cattle and deer, as well as many other forms of wildlife; its lands include grasslands and deserts—both arid and semiarid land. Seeding was done to prevent soil erosion and to restore forage used by cattle, mule deer, or elk; habitat used by other species such as sage grouse; or reduce the potential for the invasion of undesirable or noxious plants or weeds. According to BLM officials, the method used to seed—whether by air or by drilling—depends primarily on the terrain, soil, and seed or seed mixture used. This is illustrated by the following examples:

- **Aerial seeding.** One of the largest seeding treatments occurred to aerially seed about 40,000 acres in Nevada burned by the Twin Peaks Fire in 2000, at a cost of $5.4 million. For seeding the entire burnt area with a native seed mixture of wheat grasses, sagebrush, and wildrye, the local office decided that aerially seeding would be the most appropriate method. The seeded area was hilly to mountainous and because of this, the use of a helicopter or fixed-wing aircraft was proposed to spread seed across the burnt area. The seeding was intended to reduce the invasion and establishment of undesirable or invasive species of vegetation, particularly noxious weeds. In addition, the seeding—if successful—would provide mule deer and livestock with critical forage.

- **Drilling**. According to BLM officials, BLM frequently uses rangeland drills to seed. For example, following the Flat Top, Coffee Point, and Tin Cup wildfires, which burned about 117,000 acres of the Big Desert in Idaho, BLM approved $1.5 million to drill and aerially seed the burnt acreage. For seeding a mixture of wheatgrass, ricegrass, needlegrass, wildrye, and rice hulls, the local office decided to use a rangeland drill because the terrain was relatively flat and could be easily drilled. According to BLM, if BLM had not seeded, the lack of remaining seed could have impaired the land's recovery and, in the long term, reduced species diversity and degraded habitat conditions for all wildlife species that used the Big Desert. Figure 1 depicts BLM seeding with a rangeland drill.

Figure 1: Rangeland Drill Seeding in Idaho



Source: BLM, Elko Field Office.

Interior agencies also frequently repaired or installed fencing following wildland fire, primarily to protect burnt rangelands from cattle grazing to allow for regeneration. Under Interior policy, BLM can exclude burnt lands from grazing that are recovering from wildfire for a minimum of 2 years. Of Interior's 266 plans, 171 included fencing at a cost of $9.7 million. Most of this cost—about $8.1 million—was for fencing on BLM lands. This is illustrated by the following examples:

- After the West Mona Fire burned more than 22,500 acres in Utah, BLM approved a $1.7 million plan, which included about $241,000 to remove about 28 miles of fencing that was destroyed by the fire, construct 34 miles of new protective fence, repair 11 miles of existing fence, and install 6 cattleguards. The new fencing was to be installed after the area was seeded. The fencing was to protect the burnt and seeded areas from livestock grazing for 2 years.

- After the Abert Fire burned 10,000 acres in Oregon, BLM approved a $61,000 plan that included about $10,500 for fencing. Much of the burnt

acreage, before the fire, consisted mainly of sagebrush and native bunch grasses. BLM concluded that the majority of the burnt area retained sufficient native seeds and plant material in the soil for it to recover naturally. However, to help ensure natural vegetative recovery, BLM concluded that the burnt area needed to be protected from livestock grazing for at least 2 years.

Figure 2 shows BLM grazing lands that were burnt and will require new fencing to exclude cattle.

Figure 2: Burnt BLM Lands Needing Fencing to Exclude Grazing

Source: BLM, Idaho.

Reforestation, while not frequently used, was fairly costly. Reforestation was used in 24 of the 266 plans, for a cost of $6.6 million, or an average of about $275,000 per treatment. The only other treatment that was comparable in cost was seeding, which averaged about $248,000 per treatment. Reforestation was generally approved for funding to control the spread of invasive species or to reduce wind and water erosion. For example, the Fish and Wildlife Service developed a $181,500 plan to treat the Ash Meadows National Wildlife Refuge in Nevada following a fire that

burned about 658 acres. The assessment team recommended that staff from the local land unit collect seeds from mesquite and ash trees, contract with nurseries to grow seedlings, and plant seedlings and cuttings primarily to control the spread of invasive species and reduce erosion.

In addition, the Bureau of Indian Affairs used reforestation to replace commercial timber trees that were lost as a result of wildfires. Beginning in 1998, the Bureau of Indian Affairs began to allow a limited amount of this treatment to help ensure that Indian forest land continued to be perpetually productive—a management objective established by the National Indian Forest Resources Management Act. According to bureau officials, catastrophic wildland fires can destroy viable seed necessary for regrowth and the additional funding provided by the National Fire Plan allowed the bureau to better meet reforestation needs after such wildfires. For example, following the Clear Creek Divide Fire in 2000 on the Salish and Kootenai Indian Reservation, the bureau approved $2 million to collect ponderosa and lodgepole pine and western larch tree seeds on the reservation, grow 2.5 million seedlings, and plant them on about 8,000 acres.

In conjunction with seeding and fencing, Interior agencies frequently included monitoring burnt areas to see if noxious or invasive plants or weeds had regenerated or moved into the area and treating them as necessary. Of Interior's 266 plans, 166, or more than 60 percent, included monitoring and/or treating noxious or invasive plants or weeds as a treatment, for a total cost of $6.9 million. BLM accounted for most of these treatments. According to BLM officials, noxious or invasive weeds, particularly cheatgrass, are one of the factors that has caused an increase in the number and size of wildland fires.[17] Such noxious or invasive weeds, which grow vigorously in the early spring, can crowd out native grasses and, during the arid summer months, can dry and provide excessive fine fuels for wildland fires to spread over large expanses of land. Because fire does not destroy some noxious or invasive plant seeds, the plants can resprout and grow with even greater vigor following a wildland fire. According to BLM officials, many local land units had completed the necessary environmental assessments to use selected herbicides on specified noxious or invasive weeds on its lands. As a result, the local land units could include noxious or invasive weed treatments in their emergency stabilization and rehabilitation plans. Figure 3 shows dried, flammable noxious or invasive weeds prone to wildfire.

[17]Cheatgrass is a winter annual plant introduced from Europe and Asia. It grows during the fall and winter and sets its seed in the early summer. Cheatgrass can take valuable mineral and water resources from the soil, leaving native grasses, which are summer annuals, with little nutrition. Because winter annuals set their seeds prior to the wildfire season in the summer, they can quickly resprout in the fall. However, because native grasses set their seeds in the fall, if they are consumed by wildfire in the summer, they are unable to leave any seed.

Figure 3: Burnt and Unburnt Flammable Noxious or Invasive Weeds

Source: BLM, Idaho.

Interior agencies also included cultural resource surveys in many plans and treatments for known artifacts damaged or threatened by wildfire. Over half of the plans included cultural resource surveys, for a total of $5.2 million. Although cultural surveys are not treatments, but activities, they were included as treatment costs. According to BLM, which conducted many of these surveys, it routinely conducts cultural surveys before conducting ground-disturbing activities that have the potential to affect sites or objects that could be or are eligible for the National Register of Historic Places. When BLM anticipated any ground-disturbing treatment, such as rangeland drill seeding or installing new fencing, it included cultural resource surveys.

Most Forest Service Funds Were Used for Rehabilitation

Most of the funds the Forest Service approved for emergency stabilization or rehabilitation were for longer-term rehabilitation. Of the $192 million that the Forest Service approved, $139 million was for longer-term rehabilitation while $53 million was for short-term emergency stabilization. As noted previously, the Forest Service did not use all of its fiscal year 2002

appropriation of $63 million on longer-term rehabilitation because it needed to spend some of these funds on suppressing wildfires.

Table 5 provides information on treatments and their costs in the Forest Service's 113 emergency stabilization plans and its 42 rehabilitation plans.

Table 5: Costs of Different Forest Service Emergency Stabilization and Rehabilitation Treatments, 2000 and 2001

Dollars in millions

Treatment	Cost of emergency stabilization treatments[a]	Percent	Cost of rehabilitation treatments[b]	Percent
Checkdams, straw wattles, contour felled trees or log terraces, mulch	$14.4	31.5	$0.0	0.0
Seeding	12.5	27.4	0.1	0.1
Road or trail work	12.3	26.9	39.7	28.8
Noxious or invasive weed monitoring and/or treatment	1.3	2.8	25.1	18.2
Fencing	0.8	1.8	4.2	3.0
Reforestation	0.5	1.1	35.3	25.6
Build or clean out cachement basins	0.5	1.1	0.8	0.6
Repairing or replacing minor structures	0.2	0.4	2.1	1.5
Cultural resource survey or protection	0.1	0.2	3.6	2.6
Other[c]	3.1	6.8	27.0	19.6
Total	**$45.7**	**100.0**	**$137.9**	**100.0**

Source: Forest Service.

Note: GAO analysis of Forest Service data.

[a]Treatment cost excludes other costs associated with plans, such as plan development and monitoring costs.

[b]The Forest Service distinguishes between emergency stabilization treatments and rehabilitation treatments and includes them in separate plans.

[c]Other primarily includes wildlife, fish, threatened or endangered species habitat or watershed restoration, which the Forest Service did not allocate to categories such as check dams, seeding, road or trail work, weed treatment, or fencing.

According to Forest Service officials, for short-term emergency stabilization, the agency relies on treatments that are intended to reduce soil erosion in watersheds that have the greatest potential to create further damage to people, property, or other valued resources if the agency does not act before the first major storm event after a wildfire. For example, some watersheds are used as sources of drinking water supplies for municipalities. Because much of its lands are steeply sloped, the agency relies on check dams, straw wattles (tubes of straw wrapped in netting), and other similar structures, such as logs, to retain soil, as well as seeding with fast-growing grasses. In contrast, for longer-term rehabilitation, the agency repairs resource damage caused by the fire through treatments, such as road or trail work to reduce erosion in other watersheds, reforestation to replace timber growth, and monitoring for or treating noxious or invasive weeds.

As shown in table 5, for stabilization treatments, the agency approved about 31.5 percent of its 2001 and 2002 funds for erosion treatments such as building check dams with rocks, logs, or straw, which are then placed in stream beds or in steeply sloped channels on hillsides in order to slow runoff from storm events and help prevent soil erosion. This runoff can consist of water, soil, rocks, branches, and trees. To trap sediment, the Forest Service uses felled logs or log terraces placed perpendicular to sloped hillsides. It may specify the use of straw wattles placed perpendicular to slopes to trap sedimentation when the number of logs is insufficient to trap erosion effectively. Straw mulch or branches cut from trees may also be placed on slopes to retard soil erosion. For example, following the Trail Creek Fire, which burned about 32,000 acres on the Boise National Forest in Idaho, the Forest Service approved an emergency stabilization plan that included about $3 million for straw wattles, $344,000 for cutting down burnt trees and positioning them along slopes, $203,000 for mulch, and $203,000 for straw bales and other soil erosion control structures. The Forest Service plan included multiple soil erosion treatments because the property at risk from soil erosion included homes, community centers, and businesses. Figures 4 and 5 show slope stabilization treatments on Forest Service lands, including straw wattles and mulch.

Figure 4: Straw Wattles Used to Help Retain Soils and Reduce Erosion

Source: GAO.

Figure 5: Mulching Used to Stabilize Soils

Source: Forest Service, Region 3.

As table 5 also shows, the Forest Service used more than 25 percent of both its stabilization and rehabilitation funds for road and trail treatments because, according to Forest Service officials, it has an extensive network of roads and trails on its forests that required treatment after the 2000 and 2001 fires. Road work includes installing and enlarging culverts so that additional runoff anticipated from burnt lands can pass under roadways, and regrading roads so that storm runoff will be less likely to erode road surfaces. Similarly, trail work includes regrading or repairing trails to reduce erosion and protect public safety. If the roads or trails pose a public health or safety risk, and if the treatments need to be implemented before a major storm event occurs, then short-term stabilization funds are used. In contrast, if the roads or trails do not pose a health or safety concern, then the Forest Service uses longer-term rehabilitation funds. For example, following the Bitterroot Complex of five fires or fire complexes that burned about 185,000 Forest Service acres, the Forest Service recommended about $4 million in emergency road and trail treatments, to prevent damage by

debris torrents and runoff. Treatments included installing larger culverts, cleaning ditches and culverts, recontouring roads, and repairing trails. If these treatments were not taken, the Forest Service anticipated that (1) fish habitat could be degraded and (2) private residences, a recreational development, and an irrigation system that were downstream from the burnt area could be harmed. In contrast, the rehabilitation plan included about $11 million for road and trail treatments. This funding is for roadwork along 400 miles of roads within the areas that burned with moderate to high intensity. Because vegetation no longer existed to stabilize road surfaces and slopes, the Forest Service stated it needed to perform work to reduce erosion from them. Similarly, 150 miles of trail were located in intensely burnt areas, which rendered some trails unsafe. Figure 6 shows a culvert installed to handle anticipated increased storm runoff.

Figure 6: Upgraded Culvert to Withstand Increased Storm Runoff

Source: GAO.

Seeding was another widely used stabilization treatment. This treatment accounted for more than 25 percent of the stabilization costs for 2000 and 2001 fires. Seeding was generally used to reduce erosion and thereby better protect watersheds. Forest Service plans included treatments such as seeding with fast-growing grasses—such as barley and winter wheat—that would be more likely to grow quickly or would be less likely to compete with the longer-term recovery of natural vegetation. For example, the Forest Service approved about $7 million for the Cerro Grande Fire for seeding to help stabilize soils. The assessment team concluded that natural regrowth of vegetation would be too slow to prevent significant runoff and soil erosion. It recommended grass seeding with annual ryegrass, barley, mountain brome, and slender wheatgrass, to quickly restore vegetation and reduce soil erosion, protect soil productivity, and reduce runoff.

Reforestation treatments were almost entirely done as a longer-term rehabilitation treatment and accounted for about 25 percent of the rehabilitation costs for the 2000 and 2001 wildfires. The Forest Service uses reforestation treatments sparingly and restricts their use as a stabilization treatment because (1) replanting commercial species burned by wildfire is viewed as the responsibility of the forest management program, as opposed to an emergency measure to be funded by the wildland fire program, and (2) planting trees does not meet the emergency stabilization objective of preventing additional damage to resources. Rather, replanting trees is generally considered as repairing resource damage caused by wildfire and therefore not a large part of the rehabilitation program. In keeping with its interpretation of the need to restrict emergency stabilization treatments as those necessary to prevent additional resource damage, the Forest Service generally restricts the use of reforestation to no more than $25,000 per treatment. However, once it received funding under the National Fire Plan for longer-term rehabilitation, the Forest Service used this funding to develop reforestation proposals for 21 national forests burned by wildland fire.

Similarly, the percentage of funding the Forest Service used for noxious or invasive weed monitoring or treatment varied depending on whether the treatment was for emergency stabilization or rehabilitation. According to Forest Service officials, noxious or invasive weed monitoring or treatment is not generally viewed as an emergency treatment. For example, the Forest Service proposed spending $1.3 million for noxious or invasive weed monitoring or treatment as an emergency stabilization measure; however, it proposed spending $25.1 million for such monitoring and treatment as a rehabilitation measure. Similarly, in its rehabilitation plan

for the Salmon Challis National Forest in Idaho, the Forest Service proposed spending $9.5 million on noxious or invasive weed treatments because of known infestations of noxious weeds where several fires occurred in 2000. The weeds were expected to spread rapidly through the burnt areas, especially where fire suppression activities, such as bulldozing, exposed bare soils. The Forest Service also proposed to conduct a National Environmental Policy Act analysis for treating noxious or invasive weeds in another portion of the forest that had also been burnt in 2000 and which had not yet had an environmental analysis completed for such a treatment.

Interior and the Forest Service Cannot Determine Overall Treatment Effectiveness

Neither we nor the Forest Service or Interior know the overall effectiveness of emergency stabilization and rehabilitation treatments because local land units do not routinely document monitoring results, collect comparable monitoring information, and disseminate the results of their monitoring to other land units or to the agencies' regional or national offices. As a result, it is difficult to compile information from land units to make overall assessments about the extent to which treatments are effective or about the conditions in which treatments are most effective. Furthermore, the departments have not developed an interagency system to collect, store, and disseminate monitoring results. Consequently, it is difficult for agency officials to learn from the results of treatments applied on other sites in order to most efficiently and effectively protect resources at risk.

Lack of Comparable Monitoring Data at the Local Land Unit Makes It Difficult to Comprehensively Assess Treatment Effectiveness

As noted previously, both Interior and the USDA's Forest Service require local land units to install treatments that are effective. In addition, Interior requires, and the Forest Service strongly encourages, local land units to monitor for treatment effectiveness. However, neither department specifies how land units should conduct such monitoring or how they should document monitoring results. Both our and the departments' own internal reviews found that inconsistencies in monitoring methods prevent a comprehensive assessment of treatment effectiveness.

Local Land Units We Reviewed Do Not Use Comparable Methods to Monitor and Document the Effectiveness of Identical Treatments

To determine the methods local land units use to monitor and document the effectiveness of their treatments, we reviewed 18 emergency stabilization and rehabilitation plans that were implemented on 12 local land units—6 of Interior's and 6 of the Forest Service's. We selected these 12 local land units because they obligated the most funds for emergency stabilization and rehabilitation treatments within their regions in 2000, the most recent year since the establishment of the National Fire Plan in which local land units could have accomplished significant monitoring at the time of our review.[18] For each of the 18 plans, we reviewed up to 3 of the most costly treatments, for a total of 48 treatments.[19] These 48 treatments are not a representative sample of all emergency stabilization and rehabilitation treatments implemented by the departments, and therefore our findings cannot be projected. However, the data do represent monitoring practices for a significant proportion of departmental outlays for treatments, since the total cost of the treatments we reviewed was $84 million, or 30 percent of the total funds obligated by Interior and the Forest Service for emergency stabilization and rehabilitation treatments undertaken for wildfires that occurred in 2000 and 2001.

Local land units monitored all of the 48 treatments we reviewed, but documented conclusions about treatment effectiveness for only half of the 48 treatments. Land units monitored some treatments through visual inspection alone and other treatments through both visual inspection and data collection. For treatments that entail building or repairing infrastructure—such as roadwork, trail repair, and fencing—local land units typically monitored treatment effectiveness solely through visual observation. Of the 19 such treatments, local land units visually observed all and collected monitoring data for only 1. For example, national forests often resurface roads and install drainage systems, such as culverts, to prevent storm runoff from concentrating into torrents, eroding road surfaces and depositing sediment into streams. To monitor the effectiveness of such treatments, according to local national forest officials, staff typically drive along repaired road segments and visually

[18]We did not select emergency stabilization and rehabilitation plans for wildland fires that occurred in 2001 because, at the time of our review, local land units would have had little time to monitor treatments that had been implemented.

[19]Of the 18 plans we selected for review, one included only two treatments—both of which we reviewed. In addition, the most costly treatments in some of the 18 plans had either not yet been fully implemented, or we could not get timely information on the treatment's status. We did not include these treatments in our analysis.

observe road surfaces for gullies or other signs of erosion. In contrast, for treatments designed to restore natural conditions—such as seeding, reforestation, weed treatment, and erosion barriers—staff often collect monitoring data, in addition to visually observing treatment sites. Of the 30 such treatments, local land units collected monitoring data on treatment effectiveness for 22 and visually observed all 30. For example, one BLM district office used two methods to monitor their seeding treatment: (1) they visually observed the seeded acreage and estimated the proportion of the burnt area covered by native plants, weeds, and bare soil; and (2) they collected data on the most abundant plant species, precipitation levels, soil types, and terrain within a selected number of small, delineated sections within the seeded acreage. Local land units documented conclusions about treatment effectiveness for 24 of the 48 treatments we reviewed. In documenting these results, land units used a wide variety of different formats, including summaries of visual observations, tables of data analyses, and presentations for academic conferences.

Even though the 12 local land units we reviewed generally monitored the effectiveness of treatments, each used a different method to do so. According to local land unit officials, departmental guidance does not identify the methods they should use to visually inspect different types of treatments, when they should collect and analyze monitoring data, the types of data they should collect, or the techniques they should use to collect and analyze monitoring data. In some instances, local land unit officials said they used monitoring methods prescribed for programs other than emergency stabilization and rehabilitation. For example, on three national forests, Forest Service officials said that they used monitoring methods specified by the agency's forestry, or silviculture, program to monitor reforestation treatments. In another instance, an interagency technical reference describes 12 procedures for monitoring vegetation, but the departments do not indicate which of these methods should be used to monitor the seeding applied to burnt lands.

As a result of the lack of clarity, the 12 local land units differed significantly in the methods they used to monitor the 30 treatments designed to restore natural conditions. Of these 30 treatments, local land units collected data to monitor the effectiveness of 22 of the treatments, in addition to making visual observations, and relied solely on visual observations to monitor the remaining 8 treatments. Likewise, local land units monitored untreated sites for comparison with treated sites in 17 instances, while they monitored just the treated sites in the remaining 13 instances. Furthermore, in judging whether a treatment was effective, local land units established

measurable standards of effectiveness for 9 of the 30 treatments and relied purely on the knowledge of local land officials to make this judgment for the other 21. As one local land unit official said, each staff member has his or her "own definition of success." Overall, local land unit officials judged most of the treatments as effective. However, because local land units (1) collected different monitoring data, (2) used different methods to collect monitoring data, and (3) developed their own definitions of treatment effectiveness, the results of monitoring treatments we reviewed for these 18 emergency stabilization and rehabilitation plans cannot be compared to determine if the treatments were effective.

For example, three national forests we reviewed spent more than $5 million to install erosion barriers on severely burnt slopes to protect homes and streams from flooding and sedimentation after catastrophic wildfires in 2000. Although all three forests installed the same treatment to accomplish the same objective, the forests' monitoring methods differed in the extent to which they collected monitoring data, type of monitoring data they collected, methods used to collect and analyze monitoring data, and standards for judging treatment success. This situation is illustrated by the following examples:

- In one forest, local land unit officials observed treated slopes for evidence of erosion but did not collect monitoring data or document their findings. Because the officials observed that only small amounts of sediment washed to the bottom of slopes after a rainstorm, they concluded that the treatments had been effective. Without collecting monitoring data, however, these officials could not accurately estimate the amount of erosion prevented by the barriers placed on the slope or the level of precipitation that would render the barriers ineffective.

- In another forest, local land unit officials worked with Forest Service researchers to collect data on precipitation levels and soil erosion from both treated and untreated slopes, in addition to conducting visual observations. The researchers used a computerized hydrological model to analyze the monitoring data and concluded that the erosion barriers decreased the risk of erosion by 19 percent—from an 86 percent risk on untreated slopes to a 67 percent risk on treated slopes—and documented these results in a presentation to a professional conference. However, during visual observations, local land unit officials disagreed on whether the presence of sediment trapped behind the erosion barriers constituted treatment success: some believed that the barriers were effective because they had trapped erosion from

washing further down the slope, while others concluded that the barriers were ineffective because they had not prevented soil from eroding at the top of the slope.

- In a third forest, local land unit officials collected monitoring data and visually observed the erosion barriers. However, they said it was difficult to accurately measure soil erosion and water quality in order to determine treatment effectiveness. They therefore did not report on their data collection and analysis and relied on visual observations to judge treatment effectiveness: after observing significant amounts of erosion, they concluded that the treatments were not effective.

Because these national forests used different methods to judge treatment effectiveness, we could not draw overall conclusions about the effectiveness of erosion barriers in protecting resources at risk at these three forests. We found similar inconsistencies in monitoring data, monitoring methods, documentation, and standards for treatment effectiveness among other Forest Service land units as well as Interior's. For example, at two BLM district offices, we reviewed how local land unit officials monitored seeding of burnt areas that was intended to establish native species and prevent the spread of noxious weeds. One district collected data from both seeded and unseeded plots, while the other only collected data from seeded plots. In addition, one district used a measurable standard to judge treatment success, while the other relied on the professional judgment of land managers.

Departments' Studies Could Not Determine Overall Treatment Effectiveness

Similarly, a 2000 USDA Forest Service study and a 2002 Interior study found that it is difficult to determine overall treatment effectiveness because land units use different methods to monitor identical treatments and rarely document monitoring results.[20] For example, as part of its study, Forest Service officials reviewed more than 150 monitoring reports for emergency stabilization and rehabilitation treatments undertaken at national forests. As part of its study, Interior reviewed techniques that BLM field offices in Idaho, Nevada, Oregon, and Utah used to monitor seeding treatments. Both of these studies concluded that local land units often did not collect or record data important to interpreting treatment effectiveness, including data on site conditions and treatment outcomes. In addition, both studies found that only approximately one third of local land units collected monitoring data, and among these local land units, few collected the same type of data or used the same data collection methods. Because of the lack of documentation and the differences in monitoring methods, neither study was able to determine the validity of monitoring results, to calculate the extent to which treatments were effective, or to compare the effectiveness of treatments in different regions or land units. According to Interior and Forest Service officials, including the authors of these studies, the departments know little about the extent to which emergency stabilization and rehabilitation treatments prevent erosion, protect water quality, restore native vegetation, reduce invasive weeds, or protect wildlife. In a separate 2001 study of its emergency stabilization program in the Northern and Intermountain regions, the Forest Service concluded that the agency is "often . . . uncertain that [treatments] actually work. There is a concern that treatments may look good, but their functional effectiveness is unknown."[21]

Improved monitoring would provide critical information to departmental officials making decisions about emergency stabilization and rehabilitation treatments, according to the Interior and Forest Service studies. According to the Forest Service study, knowing the effectiveness of particular

[20]USDA, Forest Service, Rocky Mountain Research Station, *Evaluating the Effectiveness of Postfire Rehabilitation Treatments*, General Technical Report RMRS-GTR-63 (Fort Collins, Colo.: Sept. 2000); and U.S. Geological Survey, Forest & Rangeland Ecosystem Science Center and Oregon State University, Department of Rangeland Resources, *Emergency Fire Rehabilitation of BLM Lands in the Intermountain West: Revegetation & Monitoring*, Interim Report to the BLM (Corvallis, Oreg.: Jan. 26, 2002).

[21] USDA, Forest Service, Watershed, Fish, Wildlife, Air and Rare Plants Staff, *Burned Area Emergency Rehabilitation (BAER) Program Review Report: Northern and Intermountain Regions.* (Washington, D.C.: June 2001).

treatments would help local land units select the most appropriate treatments for installation and could assist them in defending and explaining their decisions. For example, knowing the likelihood that erosion barriers will effectively prevent erosion on a certain soil type could help land unit officials determine whether installing such barriers is worthwhile, according to the lead author of the study. Likewise, the Interior study noted that a synthesis of monitoring data could assist BLM in restoring native plants and reducing invasive weeds in the Intermountain West.

In order to gather such information, these studies recommended that the agencies improve monitoring. The Forest Service study of treatment effectiveness recommended that national forests "increase monitoring efforts" to determine the effectiveness of treatments under various conditions, while the agency's review of the emergency stabilization program recommended "a quick format for minimal quantitative monitoring." Similarly, the Interior study recommended that BLM districts adopt a common monitoring technique and report whether treatments meet their objectives.

The departments have not implemented these recommendations, however. According to departmental officials responsible for overseeing their emergency stabilization and rehabilitation efforts, implementation has not occurred because of the difficulty associated with the development of standardized monitoring and data collection methods and the collection of such data. At the local level, even though land units typically conduct some type of monitoring and view monitoring as valuable, agency officials consider extensive monitoring to be a less important use of their time than other immediate wildland fire duties, such as serving on emergency stabilization and rehabilitation assessment teams and overseeing the installation of treatments. These wildland fire duties are in addition to their normal duties they must carry out on a routine basis. Furthermore, departmental officials said that because land characteristics and treatment objectives vary significantly from land unit to land unit and from agency to agency, it is difficult to establish standard monitoring or data collection methods that would apply in all circumstances. At the same time, however, they acknowledged that there are enough commonalities among land units, agencies, and treatments, that some aspects of monitoring and data collection could be standardized, such as consistently collecting and documenting data on precipitation, soil type, and terrain. BLM officials added that they have recently begun to discuss the development of standardized monitoring methods and possible criteria for treatment

success. Departmental officials commented, however, that if monitoring methods were standardized and data were routinely collected and analyzed, it might be more appropriate for an independent organization such as the department's science agency—the U.S. Geological Survey—to conduct this work and assess the relative success and failure of treatments.

The Departments Do Not Routinely Collect, Archive, and Disseminate Monitoring Results Collected by Local Land Units

Interagency and departmental policies direct the departments to collect, archive, and disseminate monitoring results collected by local land units so that the departments can make more informed decisions on the effectiveness of the treatments being used. According to Interior, for example, "Priority should be given to developing a simple interagency electronic mechanism for archiving and broadly disseminating the treatment and technique results." Similarly, the Forest Service cited the need for the agency to develop a clearinghouse of monitoring plans and a system for sharing monitoring results. Nevertheless, neither Interior nor the Forest Service developed an interagency system to collect, store, and disseminate monitoring results of emergency stabilization and rehabilitation treatments.

Based on our review of treatments for 18 emergency stabilization and rehabilitation plans at 12 local land units, we found that local land units did not routinely share monitoring results with other land units or with program management, even in instances when they learned valuable lessons about treatment effectiveness. For example, according to local land unit officials, they shared information with their peers through informal means such as phone calls to neighboring land units and conversations at regional meetings for only 24 of the 48 treatments we reviewed. Similarly, these officials said that they submitted their monitoring results to their agency's state or regional offices for only 19 of the 48 treatments. At the same time, local land unit officials said they learned lessons while monitoring that would be worth sharing with other land units in 37 of the 48 cases.

Currently, the departments do not have an interagency database that local land units can submit monitoring data and then use to determine the relative success of different treatments, according to Forest Service and Interior emergency stabilization and rehabilitation officials. Several local land unit officials said that if such information were accessible, they would be better able to select the most appropriate treatment to meet certain objectives in specific conditions. Officials in one BLM Nevada land unit said that the BLM state office was developing a database to collect, store,

and disseminate monitoring results. BLM Nevada officials said that the database would be used to collect and store the specifications and results of seeding treatments that have been applied on BLM lands in the entire state. When BLM officials in Nevada then consider using a seeding treatment following a wildfire, they would be able to search the BLM Nevada database to identify the results of prior seeding treatments that were applied in similar terrain, on similar soil types, at similar elevations, and with similar precipitation levels, according to these officials. Local land unit officials could use this information to make treatment decisions, such as whether to seed a burnt area or whether to allow it to recover naturally. BLM Nevada officials said that such a database would be "worth its weight in gold" because of the difficulty in identifying the most appropriate plant species and seed application techniques that will be effective in Nevada's arid rangelands.

According to Interior and Forest Service officials responsible for their emergency stabilization and rehabilitation programs, the departments had not developed an interagency monitoring database for the same reasons that they have not standardized monitoring and data collection methods: coordinating such a task with multiple agencies would require a substantial amount of work and monitoring has historically been considered a lower priority than other more pressing tasks. Departmental officials said that it would be time-consuming to develop a database to meet the needs of multiple agencies, each of which manages different types of land. Other departmental officials said that the departments typically respond well to emergencies, such as fire suppression, but have placed less emphasis on monitoring. These officials acknowledged, however, that a monitoring database would be valuable and said that they had scheduled interagency meetings in early 2003 to discuss developing such a database.

While the Forest Service has already begun work on a database of monitoring results, the database is limited in scope and application. The database includes information that the Forest Service collected as part of its 2000 study of the effectiveness of emergency stabilization treatments, according to the agency official who led that study. Beginning in 2003, this official said that local Forest Service land unit officials will be able to access information collected during the course of that study, including any monitoring information, to help inform their treatment decisions. This official noted, however, that because of differences and shortcomings in the ways that national forests collected and retained monitoring information for the emergency stabilization plans that were reviewed for that study, the database has several limitations: it will (1) not provide

quantitative data on the extent of treatment effectiveness; (2) not provide information necessary to determine the conditions—such as soil characteristics or vegetation types—under which treatments are most effective; (3) not provide a means by which local Forest Service land unit officials could report their current monitoring results to other local land units or to Forest Service regional or national offices.

Conclusions

Most lands burned by catastrophic wildfires will recover naturally, without posing a threat to public safety or ecosystems. However, in those relatively few instances where burnt lands threaten safety, ecosystems, or cultural resources, emergency stabilization and rehabilitation treatments can play a critical role—a role that is emphasized by the appropriations Congress has dedicated to postwildfire treatments.

The treatments Interior and the Forest Service use to protect and restore burnt lands—slope stabilization measures such as mulching to prevent soil from eroding into rivers and streams, seeding to regenerate important grasses and shrubs, and noxious or invasive weed monitoring and control—appear, on the face of it, to be reasonable. For the most part, however, Interior and the Forest Service are approving treatment plans without comprehensive information on the extent to which a treatment is likely to be effective given the severity of the wildfire, the weather, soil, and terrain. Such information could help ensure that the agencies, including the local land units, are using resources effectively to protect public safety, ecosystems, and cultural resources.

Interior and USDA's Forest Service have also done studies that recognize the need for information on treatment effectiveness, but they have not emphasized the importance of collecting, storing, analyzing, and disseminating such data. Nor can they reasonably take action to collect, store, analyze, or disseminate such data until the departments have comparable monitoring data from their local land units. Interior and the Forest Service have yet to set standards for data collection, develop reporting procedures, or establish criteria for judging treatment effectiveness, which makes it possible to assess treatment effectiveness. As their and our own analyses have shown, this situation has resulted in local land units using different monitoring methods, even when similar treatments are being used under similar conditions, and a lack of consistency in judging whether treatments have been effective.

Recommendations for Executive Action

In order to better ensure that funds for emergency stabilization and rehabilitation treatments on burnt lands are used as effectively as possible, we recommend that the Secretaries of Agriculture and of the Interior require the heads of their respective land management agencies to

- specify the type and extent of monitoring data that local land units are to collect and methods for collecting these data, and
- develop an interagency system for collecting, storing, analyzing, and disseminating information on monitoring results for use in management decisions.

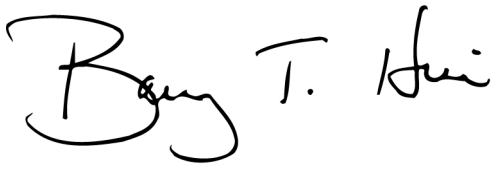
Agency Comments and Our Evaluation

We provided a draft of this report to the Secretaries of Agriculture and of the Interior for review and comment. The departments provided a consolidated response to our draft report, which is included in appendix II of this report. They generally agreed that more can be done to ensure that funds for emergency stabilization and rehabilitation on burnt lands are used as effectively as possible and with our recommendations that they obtain and disseminate better data for determining treatment effectiveness. In commenting on our recommendation that the departments obtain better data on treatment effectiveness, the departments said that they were aware that some of their own studies had previously identified the need to obtain and disseminate better data for determining treatment effectiveness. They cited several examples where they have or are trying to accomplish this, including an effort to determine the effectiveness of log erosion barriers, which is cited in this report. The departments, in their comments, said they recognize that many of the efforts are individual agency initiated actions, as opposed to a systematic approach, to collect data on treatment effectiveness. They said that they are currently planning actions that would address data collection concerns in a more collaborative manner by establishing an interdepartmental committee of scientists and managers to identify the dominant postfire stabilization and rehabilitation treatments for which monitoring methods will be established. An interdepartmental approach is essential, not only for identifying the amount and type of data that local land units should collect, but also for developing an interagency and interdepartmental system for routinely collecting, storing, analyzing, and disseminating these data. The departments also provided several technical changes that we incorporated into the report, as appropriate.

As arranged with your offices, unless you publicly announce the contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies of this report to the Chairman and Ranking Minority Member, Subcommittee on Public Lands and Forests, Senate Committee on Energy and Natural Resources; the Chairman and Ranking Minority Member, House Committee on Resources; the Chairman and Ranking Minority Member, Subcommittee on Forests and Forest Health, House Committee on Resources; the Chairman and Ranking Minority Member, Subcommittee on Interior and Related Agencies, House Committee on Appropriations; the Ranking Minority Member, House Committee on Agriculture; the Ranking Minority Member, Subcommittee on Department Operations, Oversight, Nutrition and Forestry, House Committee on Agriculture; and other interested congressional committees. We will also send copies of this report to the Secretary of Agriculture; the Secretary of the Interior; the Chief of the Forest Service; the Directors of BLM, the National Park Service, and the Fish and Wildlife Service; the Deputy Commissioner, Bureau of Indian Affairs; the Director, Office of Management and Budget; and other interested parties. We will make copies available at no charge to others upon request. This report will also be available at no charge on GAO's home page at http://www.gao.gov/.

If you or your staff have any questions about this report, please contact me at (202) 512-3841. Key contributors to this report are listed in appendix III.

Sincerely yours,



Barry T. Hill
Director, Natural Resources
and Environment

Scope and Methodology

To describe the Department of the Interior's and the U.S. Department of Agriculture's Forest Service processes for implementing their emergency stabilization and rehabilitation programs, we obtained departmental manuals, handbooks, and other guidance that describe Interior's process for implementing emergency stabilization and rehabilitation and the Forest Service's emergency stabilization program. We also interviewed Interior and Forest Service officials responsible for overseeing the department's respective programs to obtain an overview of Interior's and the Forest Service's processes for their programs. Because the Forest Service's rehabilitation program is relatively new and has not yet been incorporated into the Forest Service manual or handbook, we obtained guidance developed by the Forest Service and provided to Forest Service regional offices on the process used to implement that program. We also obtained additional guidance and documentation from the Forest Service's Northern, Southwestern, and Intermountain regions (regions 1, 3, and 4, respectively)—the three regions that received the largest share of Forest Service rehabilitation program funding in fiscal year 2001—to determine what additional processes these regions developed and used to implement the program. Further, we interviewed Bureau of Land Management (BLM), Bureau of Indian Affairs, Fish and Wildlife Service, National Park Service, and Forest Service officials at regional, state, and local land management units that had experienced wildland fires in 2000 or 2001 to discuss procedures used in assessing burnt lands and identifying appropriate treatments.

To identify the costs and types of treatments the departments have implemented, we obtained 266 emergency stabilization and rehabilitation plans that Interior agencies prepared for wildfires that occurred in calendar years 2000 and 2001 on

- BLM managed lands in Idaho, Nevada, Oregon, and Utah;
- Bureau of Indian Affairs managed lands in its Northwest, Rocky Mountain, Southwest, and Western regions;
- Fish and Wildlife Service managed lands in its Mountain Prairie, Pacific, Southeast, and Southwest regions; and
- National Park Service managed lands in its Intermountain and Pacific West regions.

For the Forest Service, we requested and obtained 155 emergency stabilization plans and rehabilitation plans for wildfires that occurred in calendar years 2000 and 2001 on Forest Service lands managed in its Intermountain, Northern, Pacific Northwest, Pacific Southwest, and Southwestern regions (regions 4, 1, 6, 5, and 3, respectively). We selected these Interior and Forest Service regions because they accounted for about 90 percent of the plans that the departments developed for treating wildfires that occurred in 2000 and 2001.

To identify the types of treatments implemented, we reviewed these 421 plans and identified treatments proposed and approved in the plans. To identify the costs of the plans and the treatments, we obtained estimated costs that the departments approved to carry out the plans and implement the individual treatments. Because these costs are estimates, they do not necessarily reflect actual costs that could be incurred in carrying out the plans during the 3 years that may be required to implement them. We did not obtain actual costs incurred, to date, in carrying out these plans because this data are not readily available.

To determine whether emergency stabilization and rehabilitation treatments are achieving their intended results, we reviewed 18 emergency stabilization and rehabilitation plans that were implemented on 12 land units—6 of Interior's and 6 of the Forest Service's. We selected these 12 land units because they obligated the most funds for emergency stabilization and rehabilitation treatments within their regions in 2000, the most recent year since the establishment of the National Fire Plan in which local land units could have accomplished significant monitoring at the time of our review. We did not select emergency stabilization and rehabilitation plans for wildland fires that occurred in 2001 because, at the time of our review, local land units would have had little time to monitor treatments that had been implemented. For each of the 18 plans, we reviewed up to 3 of the most costly treatments. One of the 18 plans we selected had only 2 treatments, both of which we reviewed. In addition, we did not review five treatments we initially selected either because the treatments had not yet been fully implemented, or because we were unable to obtain timely information on the treatment's status. Therefore, the total number of treatments we reviewed was 48. For each of these treatments, we interviewed the land manager responsible for monitoring and reviewed associated documentation of monitoring results, when available. These 48 treatments are not a representative sample of all emergency stabilization and rehabilitation treatments implemented by the departments, and therefore our findings cannot be projected. However, the data do represent

monitoring practices for a significant proportion of departmental outlays for treatments, since the total cost of the treatments we reviewed was $84 million, or 30 percent of the total funds obligated by Interior and the Forest Service for emergency stabilization and rehabilitation treatments undertaken for wildfires that occurred in 2000 and 2001.

In addition, we obtained program reviews or other studies conducted by the Forest Service or Interior on their emergency stabilization and rehabilitation reports to determine if the departments monitor treatments and, if so, the type and quality of departmental monitoring data. We also interviewed emergency stabilization and rehabilitation officials at the departments' national, regional, or state levels, and local land unit offices to determine what monitoring is being conducted by local land unit offices, whether data are collected, and what use is made of these data for assessing treatment effectiveness or sharing lessons learned.

We conducted our review from August 2001 through February 2003 in accordance with generally accepted government auditing standards.

Comments from the Departments of the Interior and Agriculture

THE DEPARTMENT OF AGRICULTURE

WASHINGTON

THE DEPARTMENT OF THE INTERIOR

March 6, 2003

Barry T. Hill, Director
Natural Resources and Environment
United States General Accounting Office
441 G. Street, N.W.
Washington, D.C. 20548

Dear Director Hill:

Thank you for the opportunity to review GAO's Draft Report entitled, "Wildfires: Better Information Needed on Effectiveness of Emergency Stabilization and Rehabilitation Treatments" (GAO-03-430).

In general, we agree with the Results in Brief that 1) Interior and the Forest Service have differences in the way the emergency stabilization and rehabilitation program has been administered in the two departments, 2) there are differences as well as similarities in the type and costs of treatments, and 3) to date effectiveness monitoring of these treatments has been inconsistent. We believe, however, that much has been accomplished in the relatively short time since the Departments of the Interior and Agriculture received direction and funding for these National Fire Plan activities.

A joint departmental committee has been established and is working to address revisions in policies and procedures to incorporate decisions made by the Wildland Fire Leadership Council in January 2003, which is referenced in the report. This effort makes significant organizational changes that will result in common program administration in both Departments at the national and field levels.

In general, the Departments of the Interior and Agriculture agree with the Recommendation for Executive Action that more can be done to ensure that funds for emergency stabilization and rehabilitation treatment on burnt lands are used as effectively as possible. The recommendation is consistent with reviews of this topic previously completed by the Forest Service in 2000 and the Department of the Interior in 2001. Responding to the earlier reports, the Forest Service and Department of the Interior have taken steps over the last three years aimed at developing the means to perform effectiveness monitoring. Both agencies view these efforts as only first steps and have plans to develop a more structured monitoring program as part of an adaptive management strategy to improve the Emergency Stabilization and Rehabilitation program.

The Wildland Fire Leadership Council directed the agencies to adopt standardized definitions for emergency stabilization, rehabilitation, and restoration in January 2003. Agreement on the definitions is an important first step in standardizing treatment practices across the agencies. For example, Interior will begin to differentiate between emergency stabilization and restoration. The agencies' budget and accounting practices will also reflect this agreement. Interior has included a proposal in the 2004 President's Budget to realign its budget structure to correspond to that of the Forest Service. Emergency stabilization after a fire will be grouped with emergency suppression operations while burned area rehabilitation will be a separate budget subactivity.

In response to the first recommendation to specify the type and extent of monitoring data that local land units are to collect and methods for collecting these data, the Departments previously identified this gap and offer the following examples reflecting some of the efforts we have initiated or accomplished.

- The Forest Service has implemented a program of effectiveness monitoring of log erosion barriers, a widely used post-fire practice, following a consistent protocol of treatments and quantitative measurements. The study will provide data to test the effectiveness of the treatments for controlling water and sediment runoff and also develop and validate new monitoring techniques for both Departments.

- The National Park Service has prepared two reports on the effectiveness of extensive treatments to protect cultural resources in severely burned areas at Mesa Verde National Park. These reviews will be used to help managers provide effective protection for cultural resources after future severe wildland fires.

- The Forest Service, the U.S. Geological Survey and the Joint Fire Science Program are conducting stabilization and rehabilitation research on a variety of techniques in both forest and rangeland ecosystems. Results of this research, when applied, will improve the planning and delivery of emergency stabilization and rehabilitation treatments.

We recognize that many of these actions to date have been individual agency initiated actions, but the intent is to share the results with all the agencies working on emergency stabilization and rehabilitation efforts. We are currently planning actions that will address these concerns in a more collaborative manner. An inter-departmental committee of scientists and managers will identify the dominant post-fire stabilization and rehabilitation treatments for which monitoring protocols will be established. Technical experts will then develop the monitoring protocols and identify research needs.

In response to the second recommendation to develop an interagency system for collecting, storing and disseminating information on monitoring results for use in management decisions, the Departments also previously identified this need and have initiated several efforts. Some of these efforts include:

- The National Fire Plan Operations and Reporting System (NFPORS), a joint USDA-DOI data management system, will be the mechanism for recording and reporting on projects for rehabilitation of burned areas. NFPORS is currently under development, with implementation of the rehabilitation component scheduled for late winter 2003.

- The Bureau of Land Management currently has a system for sharing lessons learned with some state organizations. These lessons will be distributed more widely to provide information to other states and agencies. The Forest Service is in the process of developing a comprehensive database for cataloging treatment effectiveness.

- Monitoring results are shared at interagency training sessions for burned area emergency rehabilitation practitioners. Two sessions were held in 2002 and another is planned in early 2004.

- The Fire Research Coordination Council, which includes broad membership from the Forest Service, Joint Fire Science Program, U.S. Geological Survey, National Association of Professional Forestry Schools and Colleges, Environmental Protection Agency and others, provides leadership in coordinating wildland fire science research. The council is vigorously promoting a program to transfer research knowledge on postfire rehabilitation to field managers to improve on-the-land performance.

In closing, let us restate that much has been accomplished in the time that the Agencies received funding for the National Fire Plan Rehabilitation and Restoration program. Even though overall funding has changed significantly from the $210 million obligated in FY 2001 and FY 2002 to the $27.1 million appropriated in FY 2003, the Agencies continue to work seamlessly across departments to protect communities from unnecessary damage after wildfires and to rehabilitate lands unlikely to recover naturally.

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In addition, Mark Braza, Marcia Brouns McWreath, Carol Herrnstadt Shulman, and Katheryn Summers made key contributions to this report.

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Implementation Plan

Secretarial Order 3336 – Rangeland Fire Prevention, Management, and Restoration

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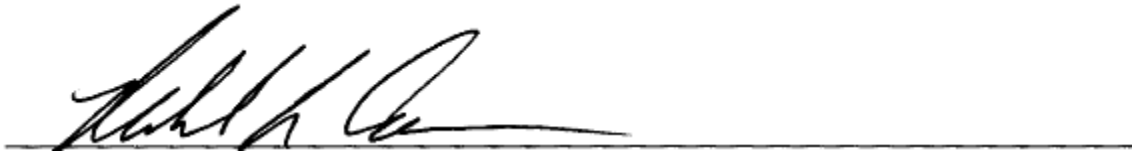
U. S. Department of the Interior Deputy Secretary Michael L. Connor, on behalf of the Rangeland Fire Task Force, approves this Implementation Plan, as provided for by Secretarial Order 3336 – Rangeland Fire Prevention, Management, and Restoration.



Michael L. Connor, Deputy Secretary
U. S. Department of the Interior

1/30/15

Date

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Executive Summary

This Implementation Plan (Plan) is the roadmap to accomplish the objectives of Secretarial Order 3336 – Rangeland Fire Prevention, Management, and Restoration (Order), signed by Secretary Jewell on January 5, 2015. The Plan provides a short background describing the importance of the sagebrush-steppe ecosystem and why the Order was issued.

The Plan lays out the timeline and methodology to be used in developing both the Initial Report, due March 1, 2015, and the Final Report, due May 1, 2015. It provides details on how the elements of Section 5 and each of the 9 topics in Section 7(b) of the Order will be accomplished and discusses how we will engage with tribes, states, and other partners and stakeholders throughout the implementation process and beyond, as part of a long-term integrated rangeland fire prevention, suppression, and restoration strategy.

Background

The accelerated invasion of non-native annual grasses, along with drought, and the effects of climate change, created conditions that are leading to increased threat of rangeland fires to the sagebrush landscape and the more than 350 species of birds, plants, and animals, including the golden eagle, mule deer, elk, and pronghorn antelope that rely on this critically important ecosystem. The threat of rangeland fire in the Great Basin region poses a particular threat to the continued viability of the greater sage-grouse – a species whose listing under the Endangered Species Act, by the U. S. Fish and Wildlife Service (FWS) was found to be warranted in 2010 and, for which the FWS must make a final determination by the fall of 2015. Most importantly, the increased frequency and intensity of rangeland fire poses a significant threat to the many tribal and local communities, ranchers, hunters, and others who live in, work, and/or value the iconic sagebrush-steppe landscape and who for generations have depended upon these lands and resources to sustain their way of life.

The Order places a priority on "protecting, conserving, and restoring the health of the sagebrush-steppe ecosystem and, in particular, greater sage-grouse habitat, while maintaining safe and efficient operations," and looks to the allocation of fire resources and assets associated with wildland fire to reflect that priority.

This Plan describes a strategy for developing enhanced policies and strategies for preventing and suppressing rangeland fire, controlling cheatgrass and other invasive grasses, and restoring sagebrush landscapes impacted by fire across the West. Efforts outlined in the Plan are built upon the experiences and successes of addressing rangeland fire, and broader wildland fire prevention, suppression, and restoration efforts to date, including the National Cohesive Wildland Fire Management Strategy. The recent conference, *The Next Steppe: Sage-Grouse and Rangeland Fire in the Great Basin* brought together leading scientific researchers, national experts in wildland fire management, key policymakers, land managers, and stakeholders. The Conference provided important information on the means to improve rangeland fire prevention,

suppression, and the restoration of fire-impacted landscapes, and provided an additional and important source of knowledge, information, and expertise. This Plan also includes measures to ensure improved coordination with other Federal, tribal, state, local, and regional efforts to address the threat of rangeland fire at a landscape-level.

Approach

On January 12, 2015, Deputy Secretary Connor convened the first Task Force meeting to discuss the Order and provide direction to senior officials at the Department of the Interior (DOI). A Federal Interagency Working Group (Working Group) comprised of principal program area leadership met the week of January 20, 2015, to review the Order and build the Plan, due no later than February 1, 2015.

The Working Group used the 10 elements of Section 5 of the Order as guiding principles and Section 6 as overarching expectations of the Task Force, as they focused on the 9 specific topics identified in Section 7(b) of the Order. The Working Group held in-depth discussions on each of the 9 topics and explored past and current activities, knowledge gaps, potential outcomes, science, opportunities to collaborate, and reasonable and achievable results.

The Task Force reviewed recommendations from the Working Group on January 27, 2015. This Plan identifies the issues, expected products, timeframes, and approach that each group will take to address the specific topics identified in Section 7(b) of the Order. The Initial (March 1, 2015) and Final (May 1, 2015) Reports will address the elements identified in Section 5 and the 9 specific topics found in Section 7(b) of the Order to develop actions that can be implemented in conjunction with the 2015 fire season and beyond, respectively. The Working Group identified lead agencies for each element. Those agencies will work, in the coming weeks, collaboratively with various partners from the states, tribes, other Federal agencies, and the private sector to identify and develop specific actions, tying those actions back to the guiding principles in Section 5, to implement the Order. As anticipated in Sections 5 and 6 of the Order, the actions identified in the 2 reports will be organized and presented as an integrated strategy to rangeland fire prevention, suppression, and restoration.

Implementation of the Order is the responsibility of the Task Force, supported by: 1) a Senior Steering Committee comprised of DOI senior leadership, 2) the Working Group, and 3) task groups that will focus on the specific elements and topics outlined in the Order.

Outreach to Partners and Stakeholders

Approach

The Working Group will take a three-pronged approach to engage with partners and stakeholders.

1. Topic leads will identify and reach out individually to partners, including tribal consultations, to solicit input in drafting the reports.

2. The Working Group as a whole will engage with partners and stakeholders for feedback on draft documents as they are ready.
3. Members of the Senior Steering Committee and Rangeland Fire Task Force will engage directly with certain key partners immediately upon approval of the Plan and throughout the development of the reports.

Partners and Stakeholders

Partners, including Federal agencies in addition to DOI and their staffs, the offices of the Governors in States most threatened by rangeland fire (Idaho, Utah, Nevada, Oregon, and California) and their representatives, and the Intergovernmental Policy Group established by *The Next Steppe: Sage-Grouse and Rangeland Fire in the Great Basin* conference will be invited to participate as members of the task groups and will assist in the drafting of the Initial and Final Reports. Partner agencies include the U. S. Department of Agriculture (USDA) – Forest Service (USFS) and Natural Resources Conservation Service (NRCS), and the Department of Homeland Security (DHS) – U. S. Fire Administration (USFA).

Tribes will be consulted through formal government-to-government consultations and will be invited to participate on implementation task groups.

Stakeholders, those likely to be affected by the proposed actions and recommendations, will be identified by the individual task groups and the Working Group as a whole, and will include at a minimum those stakeholders identified in Section 6(c) of the Order, including state wildland fire agencies and programs; scientists; and local community-based fire organizations such as the rangeland fire protection associations, weed collaboratives, seed production organizations, soil and water conservation districts, and various stakeholder groups with interest and expertise in rangeland fire prevention, suppression, and restoration.

Tools and Methodology

The Working Group established several tools and plans to provide information to, and receive input from, partners and stakeholders throughout the development of the Initial and Final Reports including:

1. Webpage for posting public-facing documents, including draft documents for public comment: Forests and Rangelands website (http://www.forestsandrangelands.gov);
2. A set of Key Themes and Questions and Answers regarding the Order and implementation process;
3. A monitored email account to field questions and comments at rangelandfire@ios.doi.gov;
4. Stakeholder engagement webinars on the Initial and Final Reports will be held the second half of February 2015 and in April 2015, respectively; and

5. The Working Group will also take advantage of existing meetings and may also schedule additional listening sessions via telephone or in-person to share draft documents and solicit individual feedback from stakeholders.

Once the Plan is approved, an email will be sent to partners and stakeholders announcing the opportunities to collaborate on the Initial and Final Reports. Continued outreach to *The Next Steppe: Sage-Grouse and Rangeland Fire in the Great Basin* conference participants will also occur throughout this process.

Who will implement: The Department Lead is the Deputy Assistant Secretary – Land and Minerals Management (DAS-ASLM).

Tribal Consultation Plan/Approach

Description

The Order requires a plan to consult and coordinate with affected tribes. The entire Federal Government, including the DOI and USDA, has a responsibility to honor the sacred trust relationships by protecting tribal trust assets, and conducting consultation with tribes on policies that have tribal implications (EO 13175, Consultation and Coordination with Indian Tribal Governments, Nov. 6, 2000).

Goals of Tribal Consultation

There are three main goals for consultation related to this Order: 1) develop a mechanism for continual tribal involvement in implementing the Order moving forward, 2) educate/inform tribes about the Order, its genesis, and its implementation, and 3) gather and consider tribal input throughout the development of the Initial and Final Reports and into the future as subsequent actions are planned.

Methodology

- **Before Reports are Issued (between now and May 1, 2015)**
  - A Dear Tribal Leader Letter was issued on January 16, 2015, detailing listening session and government-to-government consultation opportunities;
  - A listening session is scheduled for February 4, 2015;
  - Two face-to-face tribal consultations are scheduled—in Portland, Oregon, on February 19, 2015, and in Reno, Nevada, on April 7, 2015; and
  - Tribes will be provided the same updates and information provided to Federal, state, and local partners and stakeholders.
- **May 1 to September 30, 2015 (after the Initial and Final Reports are issued)**
  - A Dear Tribal Leader Letter will be sent explaining how the Initial and Final Reports addressed their comments;

- A Webinar will be held to explain the Initial and Final Reports and next steps;
- Additional consultations, if deemed necessary, or requested; and
- Face-to-face meetings with specific tribes, if requested.

- **2015, 2016 and Beyond**
  - Additional consultations, if deemed necessary, or requested; and
  - Discussions at Inter-Tribal meetings, (i.e., Alaskan Federation of Natives, Inter-Tribal Council of Nevada, Tribal-Interior Budget Council).

Who will implement: **Department Lead** will be Assistant Secretary – Policy, Management, and Budget (PMB), with assistance from the Assistant Secretary – Land and Minerals Management (ASLM), and Assistant Secretary – Indian Affairs (ASIA).

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Integrated Fire Prevention, Suppression, and Restoration Strategy

Develop a science-based strategy to reduce the threat of large-scale rangeland fire to habitat for the greater sage-grouse and the sagebrush-steppe ecosystem.

Description: Deliver to the Secretary a science-based strategy to reduce the threat of large-scale rangeland fire to habitat for the greater sage-grouse and the sagebrush-steppe ecosystem through effective rangeland management (including the appropriate use of livestock), fire prevention, fire suppression, and post fire restoration efforts at a landscape scale.

This strategy will address actions outlined in Section 5 of the Order, including:

- Enhancing the capability and capacity of state, tribal, and local government, as well as non-governmental fire management organizations, including rangeland fire protection associations and volunteer fire departments, through improved and expanded education and training.
- Improving coordination among all partners involved in rangeland fire management to further improve safety and effectiveness.
- Advancing the development and utilization of technologies for identifying areas of high ecological and habitat value in sagebrush-steppe ecosystems to enhance fire prevention and greater sage-grouse habitat protection efforts.
- Improving overall rangeland fire prevention, suppression and restoration efficiency and effectiveness.
- Piloting new strategies to reduce the threat of invasive, non-native plant species and rangeland fire to sagebrush-steppe ecosystems and greater sage-grouse conservation.
- Mechanisms to encourage continued collaboration and coordination of partners working at the regional, state, tribal and local levels to advance efforts in the Great Basin to implement efforts to increase the efficiency and effectiveness of rangeland fire prevention, fire suppression, and post fire restoration efforts at a landscape scale.
- Mechanisms for the distribution and effective communication of the findings and recommendations of this report in collaboration with partners to interested and affected stakeholders in the region.

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Minimum Additional Elements of the Initial and Final Reports

Section 7b (i)

Design and implement comprehensive, integrated fire response plans for the Fire and Invasives Assessment Team (FIAT) evaluation areas in the Great Basin that prioritize protection of low resilience landscapes most at-risk to detrimental impacts of fire and invasives.

Description: Apply risk based, cross-boundary approach to fire response planning and preparedness.

Products

Prior to the onset of the 2015 Western fire season

- Apply a risk-based approach to fire response; coordinate across jurisdictional boundaries; and review computer assisted pre-dispatch plans (WILDCAD) to assure initial attack response to identified critical sage-grouse areas.
- Units which manage critical sage-grouse habitat will develop a minimum draw-down level of resources which will clearly identify those suppression resources necessary in order to maintain an effective and aggressive initial attack capability.
- Develop additional guidance for the use of "severity funding" that provides specific sage-grouse stipulations to access funding and implement supplemental fire suppression resources.
- Provide national Leader's Intent that directs all Federal agencies to implement the above outlined items and develop mechanisms to communicate that Intent to agency administrators, fire staffs, and incident management teams.

During 2015

- Develop metrics for effectiveness monitoring of wildland fire response and reporting of success and/or failure as it pertains to Land Management Plans.

In 2016 and future years

- Conduct an annual review and update initial attack response and draw down levels.
- Incorporate the FIAT plans of work for fire suppression as part of revising Fire Management Plans in the FIAT areas as committed to the greater sage-grouse subregional environmental impact statement (EIS) amendments. Annual reporting of response effectiveness.

Methodology

The Lead Agency is Bureau of Land Management (BLM) Fire and Aviation, who will work with other Federal fire leadership and supporting agencies and organizations (including local dispatch Board of Directors, local Federal agency fire management staffs, local Federal and state

agency administrators, and local fire departments [as applicable]) to develop issuance of national Leader's Intent document outlining the required process and products. Local dispatch centers will implement in collaboration with their partners and local leadership. National leadership will develop severity funding language and reporting metrics.

Section 7 b (ii)

Provide clear direction on the prioritization and allocation of fire management resources and assets.

Description: Includes direction on pre-fire readiness and guidance, criteria, and protocols for allocation of resources for fires that escape initial attack.

Products

Prior to the onset of the 2015 Western fire season

- Issue Federal agency leadership policy direction, and coordinate with states on commensurate state policy direction, on prioritization and allocation of fire management assets that can be tiered from national to geographic to local levels.
- Establish criteria for national, geographic, and local prioritization and allocation decisions.
- Develop criteria for ensuring level of resources necessary to maintain an effective and aggressive initial attack capability in units that manage critical greater sage-grouse habitat.
- Update and amend mobilization guides and protocols at all levels as needed.

During 2015

- Agency administrators at national, geographic, and local levels are actively engaged in reviewing and setting priorities.

In 2016 and future years

- Refine and update prioritization and allocation direction and protocols based on experience.

Methodology

The DOI and USFS national leadership will coordinate with partners and stakeholders to exchange information and ideas to develop overall direction and protocols. National leadership of Federal agencies will provide Leader's Intent and direction. The National Multi-Agency Coordinating (MAC) Group, Geographic Area MAC Groups, local Dispatch Board of Directors, Federal agency fire management staffs, and local agency administrators will implement the direction. Outreach on purpose and intent of the prioritization and allocation direction is a key aspect of the work.

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Section 7b (iii)

Expand the focus on fuels reduction opportunities and implementation.

Description: Coordination and integration of fuels reduction activities across programs (fire, fuels, and resources), agencies/bureaus, and landscapes to plan and implement fuels treatments. Fuels reduction work should: 1) incorporate resilience and resistance concepts; 2) be designed to contribute to sage-grouse habitat conservation and restoration; and 3) support fire operations and reduced fire size.

Products

During 2015, 2016, and future years

- Continue to identify, prioritize, and address scientific research needs related to fuels reduction and treatment implementation.
- Identify existing tools and plan landscape-level fuels treatments.
- Incorporate goals and directives for fuels reduction treatments into BLM Resource Management Plans for the Great Basin greater sage-grouse plans and other plans where applicable.
- Identify opportunities to leverage fire resources and funding on 2015 projects and to plan and implement future fuels treatments.
- Identify and implement pilot projects that capitalize on fuels reduction opportunities.
- Identify and begin to resolve National Environmental Protection Act (NEPA) barriers, including through programmatic landscape approaches.
- Apply a risk-based, landscape-scale tool to prioritize fuels work.
- Implement integrated fuels program of work.
- Build fuels work into landscape-scale restoration.
- Develop monitoring and assessment protocols to determine effectiveness of fuels reduction projects and influence future plans.
- Apply tools to plan and implement landscape-level fuels treatments that lead to restoration and conservation of sagebrush-steppe and greater sage-grouse habitat.

Methodology

The Lead Agency is BLM (Fire and Aviation) who will coordinate with the DOI interagency fuels committee and other partners (including Office of Wildland Fire [OWF], Solicitor's Office, USFS, USGS, USFA, tribes, states, and non-governmental organizations [NGOs]) to, 1) develop a plan to review existing tools (e.g., Interagency Fuels Treatment Decision Support System) to help plan landscape-level fuels treatments, and develop guidelines for use of these tools; 2) identify actions to address barriers; 3) develop criteria and metrics to evaluate the effectiveness

of fuels treatments, and 4) utilize fuels program funding to promote fuels treatments that achieve the policy objectives of the Order.

Land management agencies will develop or enhance guidelines for integrating fuels and resources program work in sagebrush-steppe ecosystem.

Integrate fuels science needs with other science related tasked included in the Order.

Section 7b (iv)

Fully integrate the emerging science of ecological resilience into design of habitat management, fuels management, and restoration projects.

Description: Design management actions that utilize and integrate emerging scientific knowledge on ecological resistance and resilience thereby increasing the likelihood of sustaining greater sage-grouse habitat. Improve delivery and application of ecological resilience science to be used by land managers in habitat and fuels management, and restoration projects.

Products

During 2015

- Develop a directory of tech/science transfer groups and points of contact and directory of key NEPA subject matter experts.
- Inventory and review existing NEPA documents that incorporated principles and techniques of ecological resistance and resilience and emerging science.
- Identify best management practices (BMPs).
- Refine definition and understanding of what constitutes resilient and resistant greater sage-grouse habitat and what it means to apply resilience science to decision making at the site and landscape scales.
- Conduct a gap analysis of science and applied research capacity and identify policy needs.
- Commit to an adaptive management approach, including as a first priority development or refinement of monitoring protocols that will allow for a determination of whether management and restoration projects achieved desired objectives.

In 2016 and future years

- Enhance linkages and capacity within science and tech transfer groups.
- Enhance science delivery capability such as a science clearing house.
- Finalize BMPs for integrating ecological resilience science into the design of habitat management, fuels management, and restoration projects.
- Plan for ensuring accountability and recommended funding mechanisms.

Methodology

The BLM, in collaboration with USFS, will engage existing coordination groups and teams to initiate discussions on NEPA. The BLM, USGS, and the USFS will together initiate discussions on resilience and resistance concepts, and integration of concepts with management actions. A variety of assessments have been completed. The task group will, 1) leverage off previous efforts, 2) examine opportunities to connect to the BLM Planning 2.0 effort, and 3) establish

timelines and document key principles/techniques to improve integration of science into on the ground actions.

Section 7b (v)

Review and update emergency stabilization and burned area rehabilitation policies and programs to integrate with long-term restoration activities.

Description: Address funding, project prioritization, seeding, and resource issues to better integrate emergency stabilization and burned area rehabilitation activities with long-term restoration activities.

Products

Prior to the onset of the 2015 Western fire season

- Address funding continuity across fiscal years to avoid project work stoppage (e.g., acquisition and financial management constraints).
- Update and refine project prioritization criteria.
- Issue interim policy guidance to clarify funding, time, and program scope.

During 2015

- Explore options for additional resource needs to complete projects.
- Explore efficiencies in seeding operations.

In 2016 and future years

- Update Department Manual with associated handbook, including interim policy guidance.
- Ensure research and technology information is incorporated into projects.
- Address effectiveness monitoring program to provide adaptive management feedback.

Methodology

The Interior Burned Area Response (IBAER) National Coordinators for the BLM, FWS, NPS, and BIA will lead the implementation of these products, in cooperation with the USFS National BAER coordinator and the OWF liaison.

Section 7b (vi)

Commit to multi-year investments for the restoration of sagebrush-steppe ecosystems, including consistent long-term monitoring protocols and adaptive management for restored areas.

Description: Improve and strengthen interagency coordination and organization of existing, ongoing restoration activities and take steps to expand multi-year investments within the sagebrush-steppe ecosystem.

Products

During 2015

- Establish standing team(s) to provide executive and staff level coordination to enhance integration and commitment to long-term, multi-year restoration investments, including associated effectiveness monitoring and adaptive management within the sagebrush-steppe ecosystems.
- Document BLM, NPS, BIA, USGS, and FWS activities to execute their commitments to long-term, multi-year restoration investments, including associated effectiveness monitoring, data management and integration, and adaptive management, within the sagebrush-steppe ecosystem.
- Facilitate and support a cross jurisdictional consortium of agencies and organizations dedicated to robust, experimental research and development of resulting management tools necessary to execute restoration activities leading to a healthy ecosystem.

In 2016 and future years

- Develop policies and procedures that simplify implementation of multi-year restoration projects, including associated effectiveness monitoring and adaptive management.

Methodology

The BLM (Resources) will work with other DOI bureaus and USFS and NRCS to build a team comprised of managers, budget officers, and restoration and monitoring specialists from across the DOI and its bureaus that are tasked to address how to improve and strengthen interagency coordination and the organization of existing, ongoing restoration activities and take steps to expand multi-year investments within the sagebrush-steppe ecosystem.

Section 7b (vii)

Implement large-scale experimental activities to remove cheatgrass and other invasive annual grasses through various tools.

Description: Develop and identify appropriate tools and design experimental treatments to reduce and remove cheatgrass and other invasives from key sagebrush-steppe plant communities at a landscape scale. Plan, implement, and evaluate landscape scale removal activities and subsequent restoration activities.

Products

During 2015

- Continue early detection and rapid response efforts to address spread of invasives.
- Initiate and finalize assessment of all available (biological, physical, and chemical) cheatgrass control measures and subsequent restoration treatments.
- Identify opportunities to accelerate efforts to obtain Environmental Protection Agency (EPA) approval for use of effective cheatgrass control measures and herbicides where EPA registration and labeling is currently lacking.
- Identify efforts, as applicable with the ongoing BLM Vegetative Treatments Programmatic EIS.
- Identify funding sources, suitable locations, and key agency partners to conduct experimental testing of promising measures. Begin planning of pilot projects that progress from laboratory and small-plot tests to larger scale applications in the field. Identify ways to streamline NEPA for pilot treatments.

In 2016 and future years

- Solicit and review experimental designs for control of invasive annual grasses and subsequent restoration.
- Approve and initiate experimental treatments as well as monitoring.
- Develop a standardized long-term monitoring protocol to determine effectiveness of treatments.
- Develop a process to coordinate with the EPA to register and label new invasive grass control agents (biological and chemical).

Methodology

The BLM, USGS, and FWS, in collaboration and coordination with USFS, Agricultural Research Service (ARS), DOI Invasive Species Coordinator, DOI Bureau Invasive Species Coordinators, Joint Fire Science Program (JFSP), and Great Basin Landscape Conservation Cooperative (GB LCC) will implement an aggressive all-lands approach by integrated project

teams to assess, evaluate and build on existing work and results from the experimental treatments and proceed expeditiously.

Section 7b (viii)

Commit to multi-year investments in science and research.

Description: Scientific information is needed to support management and policy decisions to protect, conserve, and restore the sagebrush-steppe ecosystem, and in particular, greater sage-grouse habitat. A comprehensive research strategy will be developed to identify science gaps and priority research and monitoring needs in direct support of resource management issues. The strategy will be used to direct regular and recurring investments in scientific research and information delivery.

Products

During 2015

- Organize an interagency team, define scope and timeline, and resources needed to support the Order.
- Identify science capabilities with expertise to address fire, invasives, sage-grouse biology, and sagebrush-steppe ecosystem, and landscape scale restoration.
- Identify ongoing research and resources committed in FY 2015 and plans for FY 2016.
- Complete prioritization of restoration/rehabilitation research needs identified in the BLM/USGS July 2014 workshop.
- Review and categorize research needs identified in existing assessments, plans, and strategies

In 2016 and future years

- Create a research strategy of prioritized research and monitoring needs for fire and invasives relative to sagebrush-steppe ecosystems and greater sage-grouse conservation.
- Initiate highest priority research efforts and opportunities for collaboration.
- Develop efficient and effective mechanisms for science delivery to management practitioners.
- Develop a prioritization process for senior agency leadership to review and support priority research.
- Identify potential funding sources and seek new funding opportunities to support critical research priorities.

Methodology

The USGS will collaborate and coordinate with the DOI Science Coordinator and Science Advisors, BLM, FWS, USFS, NRCS, and other research and management agencies to identify and prioritize research and monitoring needs, articulate Department and agency commitment and involvement, communicate ongoing research efforts, and identify mechanisms for moving from a list of needs to a strategy.

Section 7b (ix)

Develop a comprehensive strategy for acquisition, storage, and distribution of seeds and other plant materials.

Description: Provide land management agencies the tools to address ecological restoration including acquisition, storage, and distribution of seed and other plant materials, utilizing locally-adapted seeds and native plant materials as appropriate to the location, conditions, and management objectives for vegetation management and restoration.

Products

Prior to the onset of the 2015 Western fire season

- Complete a draft National Seed Strategy and make available for review and comment.

During 2015

- Finalize the National Seed Strategy and associated business plan, which will describe what is needed to implement the Strategy.

In 2016 and future years

- Prepare a needs and capacity assessment to increase production, storage capacity, and use of appropriate seed and plant materials.
- Characterize genetic variation for restoration of species and seed zones delineated.
- Develop procurement tools to facilitate multiagency acquisition, as well as develop guidelines for appropriate use of plant materials.

Methodology

The BLM (current chair of Plant Conservation Alliance Federal Committee), with support from other offices within the BLM, BIA, Federal Highway Administration, NPS, Smithsonian Institution, U. S. Botanical Garden, USDA Agricultural Research Service, USFS, USDA National Institute of Food and Agriculture, NRCS, FWS, USGS, and relevant states will develop the draft and final National Seed Strategy, and work towards implementation of that strategy.

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Implementation Plan

Secretarial order 3336 – Rangeland Fire Prevention, Management, and restoration

January 30, 2015

Interagency Burned Area Emergency Response Guidebook

Interpretation of Department of the Interior 620 DM 3 and USDA Forest Service Manual 2523

For the Emergency Stabilization of Federal and Tribal Trust Lands
Version 4.0

February 2006

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2 Introduction

The purpose of the Interagency Burned Area Emergency Response Guidebook (Guidebook) is to provide general operational guidance for Department of Agriculture and the Department of the Interior emergency stabilization activities after a wildfire. In conjunction with Departmental and agency policy, it is designed to provide agency administrators and emergency stabilization specialists with sufficient information to:

- Understand emergency stabilization policy, standards, and procedures.
- Assess wildfire damage and develop a cost effective plan or report.
- Assess and report accomplishments.

It consolidates and provides an interagency interpretation of emergency stabilization policies, procedures, objectives, and standards where there is Departmental and agency agreement. Individual agency policy and procedure manual guidance can be more but not less restrictive than that presented in this Guidebook.

3 Emergency Stabilization Policy Implementation

3.1 Policy, Direction, and Program Coordination

Emergency Stabilization and Rehabilitation activities are an integral part of wildfire incidents, but are planned, programmed, and funded separately from each other. Guidance for Burned Area Rehabilitation is found in a separate guidebook which is currently under development for DOI agencies. Departmental emergency stabilization policies are found in Department of Agriculture (FSM 2523) and Department of the Interior (620DM3) policy documents. Individual agencies have supplemented this policy:

- USDA Forest Service
- Bureau of Indian Affairs (BIA)
- Bureau of Land Management (BLM)
- National Park Service (NPS)
- U.S. Fish and Wildlife Service (FWS)

3.2 Objective and Priority

To determine the need for and to prescribe and implement emergency treatments to minimize threats to life or property or to stabilize and prevent further unacceptable degradation to natural and cultural resources resulting from the effects of a fire. Natural recovery is preferable.

3.3 Employee and Public Safety

Employee and Public Safety Is the First Priority in Every Management Activity. All planning activities must reflect this commitment. Accordingly, planning team members conform to National Wildfire Coordinating Group (NWCG) safety, training, qualification (NWCG-PMS 310-1, Wildland Fire Qualifications), Interagency Standards for Fire and Fire Aviation Operations, and incident business management standards prior to control of the fire.

Assessment activities need to be closely coordinated with fire fighting activities to avoid conflicts between wildfire fighting efforts and emergency stabilization planning. Burned area assessment activities must be coordinated with the Incident Commander.

A job hazard analysis will be prepared for each incident activity.

3.4 Definitions

Agency Administrator:
Line officer (or designee) of the agency or jurisdiction that has responsibility for the incident. For the following agencies, this unit may include:

- Bureau of Indian Affairs (BIA) - Director, Office of Trust Responsibility, Regional Director, or Superintendent.

- Bureau of Land Management (BLM) - Director, State Director, District Manager or Field Office Manager.
- Fish and Wildlife Service (FWS) - Director, Regional Director, Complex Manager or Project Leader.
- National Park Service (NPS) - Director, Regional Director, Park Superintendent, or Unit Manager.
- USDA Forest Service - Chief, Regional Forester, Forest Supervisor, or District Ranger

Burned Area Emergency Response:
An agency response to a wildfire implementing the emergency stabilization program.

Burned Area Emergency Response Plan/Report (BAER Plan/Report):
This emergency stabilization document specifies treatments approved to implement post-wildfire emergency stabilization policies on an individual incident. This plan/report is prepared by an interdisciplinary team of specialists during or immediately after the containment of a wildfire. Department of the Interior uses the term "plan" and the USDA Forest Service uses the term "report". The Emergency Stabilization Plan and Burned Area Emergency Response Plan are synonymous.

Burned Area Emergency Response Team (BAER Team):
A standing or ad hoc group of technical specialists (hydrologists, rangeland management specialists, biologists, soil scientists, etc.) that are assigned to prepare a BAER Plan/Report.

Emergency Stabilization:
Planned actions to stabilize and prevent unacceptable degradation to natural and cultural resource, to minimize threats to life or property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources.

Fire Suppression Activity Damage:
Damage to resources, lands, and facilities resulting from wildfire suppression actions, in contrast to damages resulting from a wildfire.

National Burned Area Emergency Response Coordinators Group (NBAER):
The coordinators consist of a representative from the Department of the Interior (DOI) bureaus (BIA, BLM, FWS, NPS, Office Wildland Fire Coordination), and the USDA Forest Service.

Non-Native Invasive Species:
Species that were not components of pre-European settlement vegetative communities:
- which have been introduced, either deliberately or inadvertently;
- which have the capacity to aggressively invade new habitats, displacing and out-competing native species, and;
- whose introduction does or is likely to cause economic or environmental harm or harm to human health.

Rehabilitation:
Efforts (non-emergency) undertaken within three years of a wildfire to repair or improve fire-damaged lands which are unlikely to recover to management approved conditions; or to repair or replace minor facilities damaged by fire.

Restoration:
The continuation of rehabilitation beyond the initial three years, or the repair or replacement of major facilities damaged by the fire.

Values to be Protected (values at risk):
Includes property, structures, physical improvements, natural and cultural resources, community infrastructure, and economic, environmental, and social values.

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.

- **Wildfire** – An unplanned, unwanted wildland fire including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the wildfire out.
- **Wildland Fire Use** – The application of the appropriate management response to naturally-ignited wildland fires to accomplish specific resource management objectives in pre-defined designated areas outlined in Fire Management Plans. Operational management is described in the Wildland Fire Implementation Plan (WFIP).
- **Prescribed Fire** – Any wildland fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements (where applicable) must be met, prior to ignition.

3.5 Program Coordination

The BIA, BLM, NPS, FWS and USDA FS will coordinate emergency stabilization program activities locally and nationally. Coordination of emergency stabilization efforts with the incident management team, other federal land management agencies, other federal (e.g., NRCS, BOR, DOD, USGS, etc.), state and local agencies, tribes, and private landowners is encouraged to meet program objectives.

3.5.1 Preplanning

Internal/external coordination can be a critical process in the successful implementation and completion of all phases of emergency stabilization.

The local unit staff should:

- Identify key external agency contacts prior to the wildfire season.
- Hold a preseason meeting to discuss roles and responsibilities.
- Jointly review the rehabilitation and restoration section of the Fire Management Plan (FMP).

- Identify potential treatments for emergency stabilization within a unit's Fire Management Plan.
- Identify in advance suppliers, equipment, storage facilities and identifying seed mixes and implementation personnel.
- Meet with all emergency stabilization technical specialists, fire management staff, and other appropriate staff to discuss roles and responsibilities and to clarify areas of disagreement and/or confusion.

3.5.2 Incident Management Coordination

When appropriate, the agency administrator should assign/request a BAER Team before the wildfire is contained. The Incident Commander and BAER Team Leader should communicate and coordinate activities. Several Incident Management Team functions may provide support for the BAER team such as:

- Logistics Section – expanded dispatch, supply, ordering, etc.
- Finance Section – agency unit finance section (contracting officer)
- Plans Section – GIS and mapping services, Incident Action Plans
- Safety Officer
- Operations Section – suppression impact inventory, suppression rehab specifications, aerial reconnaissance
- Information Officer – news releases, media interviews, public meetings
- Other incident personnel as appropriate

3.5.3 BAER Plan/Report Implementation

The BAER Plan/Report may or may not be implemented by the same individuals involved in its development. The agency administrator should appoint an implementation leader before the assessment team demobilizes. The assessment team and implement team leader should coordinate.

3.5.4 Burned Area Rehabilitation Coordination

On wildfires where burned area rehabilitation is anticipated the agency administrator should identify a rehabilitation coordinator (not supported by emergency stabilization funds) as part of the BAER Team in order to collect and organize data for the rehabilitation plans and activities.

4 Emergency Stabilization Standards

Emergency stabilization treatments/activities are intended to protect public safety and stabilize and prevent further degradation to affected natural and cultural resources. These treatments/activities must be in accordance with approved management plans and applicable agency policy, standards, and all relevant federal, state, and local laws and regulations. Emergency stabilization funds can only be used for burned area assessments, BAER Plan/Report development and implementation, and monitoring on agency lands within the perimeter of the wildfire or potential impact area downstream from the burned area (see agency guidance on Wyden Amendment). The cost of emergency stabilization treatment(s) will be commensurate with the values to be protected.

4.1 Treatment Considerations

4.1.1 Cadastral Survey

Emergency stabilization funding for cadastral survey activities is only provided if the information is needed for BAER Plan/Report development and implementation. Project areas have cadastral survey work done with emergency stabilization funds only where land ownership adjacent to proposed emergency stabilization treatments is in question—not to answer long-standing, large-scale ownership questions. Survey monuments must be located and flagged for avoidance prior to any surface disturbing activity that could result in damage to or destruction of the survey monument.

4.1.2 Experimental Technology

Experimental technology (equipment, plant materials, etc.) that has not previously been field tested and proven to be effective is not funded with emergency stabilization funding. Research projects are coordinated through the local agency administrator and may be funded through the Joint Fire Science Program or other funding sources.

4.1.3 Prescribed Fire and Wildland Fire Use

Prescribed Fire - Emergency stabilization funding is not appropriate for prescribed fire actions. However, if a prescribed fire is converted to a wildfire, then emergency stabilization funding may be appropriate for only those acres that are delineated or partitioned following the conversion or declaration as a wildfire.

Wildland Fire Use - Emergency stabilization funding is not appropriate for wildland fire use. However, if a wildland fire use wildland fire is converted to a wildfire, then emergency stabilization funding may be appropriate for only those acres that are delineated or partitioned following the conversion or declaration as a wildfire.

Treatments that are determined to be necessary on prescribed or wildland fire use wildland fires that have not been converted or declare wildfires, are paid for by the prescribed fire, wildland fire use or benefiting activity project funds.

4.1.4 Fuels Management

Post-fire fuel management activities that are designed to address a fuels issue and not site stabilization are not appropriate for emergency stabilization funding.

4.1.5 Clean Water Act

The Corps of Engineers may require modifications to emergency stabilization treatments to ensure that the environmental impacts to stream channels or wetlands are minimal under General Permit 37.

4.1.6 Wildfire Suppression Activity Damage Repair

Suppression activity damage repairs are the responsibility of the Incident Commander and are funded using the suppression account. This work should be completed by the incident management team prior to final demobilization of the suppression forces whenever practical. However, it may be more cost-effective and practical to delay some repairs to improve the chance of success. It is the responsibility of the agency administrator to ensure suppression activity damage repair.

4.1.7 Wildlife

Wildlife populations may continue to degrade unburned areas in and adjacent to the burned area, and may have a major affect on the success of emergency stabilization treatments. Agreements with the appropriate fish and wildlife management agencies (if needed) should be developed before the emergency stabilization treatments are implemented, prescribing how wildlife is managed. The BAER Plan/Report should identify what measures are needed to prevent further burned area degradation from wildlife use, and treatment specifications should address timely implementation. If wildlife control techniques are not installed before next season's green-up, a majority of the animal damage will have occurred. By green-up, there will probably be enough forage in the burned area to prevent any concentrated damage in the unburned area, and treatment after green-up would not be cost effective.

Treatments to mitigate the loss of fish and wildlife habitat are not appropriate for emergency stabilization funding except to prevent permanent impairment of designated critical habitat for federal, state listed, proposed or candidate threatened and endangered species. See also Threatened and Endangered Species (See 4.2.8).

4.2 Treatment Standards

4.2.1 Cultural Resources

The objectives of cultural resource activities and treatments funded under emergency stabilization are to stabilize and prevent degradation to archeological sites, cultural landscapes, traditional cultural properties, and historic structures (until long-term cultural resource management strategies can be developed and implemented using other funding) and to ensure emergency stabilization treatments conform to Section 106 of the National Historic Preservation Act (NHPA).

Allowable Actions

- **Site Stabilization and Protection**
  - Determining whether known historic properties may be further degraded (e.g., site inspection record). Incidental discovery of cultural resource sites should be noted and may be protected.
  - Patrolling, camouflaging, or burying significant heritage sites are appropriate actions when necessary to prevent a critical loss of heritage site value when looting potential is high. Patrolling should be considered only where there are not other effective alternatives.

- **NHPA Section 106 Compliance**
  - Emergency stabilization treatments that disturb the soil surface are reviewed for potential effects on significant cultural resources. The appropriate agency cultural resource specialist should become involved in treatment planning as early as possible.
  - Treatments evaluated as No Historic Property (no historic properties present), or as actions permitted under existing agency programmatic agreements (PA) or memorandum of agreement (MOA) can be undertaken without further State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) consultation. Treatments with no adverse effect can be undertaken after appropriate consultation with SHPO or THPO. Treatments with adverse effect should be addressed by the agency cultural resource coordinator.

Prohibited Actions

- Systematic inventories or surveys.
- Assessments of the cultural resource damage caused by the fire.
- Site and data recovery, cataloging, and other programmatic administrative actions.
- Heritage site restoration.
- Wildfire suppression activity damage repair.

4.2.2 Non-native Invasive Control

Emergency stabilization funds can be used to control non-native invasive plants in burned areas only if an approved management plan and existing program is in place addressing non-native invasive species control.

The use of integrated pest management methods is preferred when addressing the management and control of existing or potential invasive non-native plant species. The emergency stabilization program funds the use of chemical, biological, mechanical, cultural, and physical treatments necessary to minimize the establishment of invasive species in conjunction with vegetative treatments, or for site preparation proposed for other emergency stabilization treatments. The pesticides proposed must be previously approved for use on public lands. All applicable label and environmental restrictions must be followed. Control of invasive species also complies with Executive Order 13112, Invasive Species which promotes the control of invasives to minimize their impact.

Allowable Actions

- Assessments to determine the need for treatment. Contingent:
  - Known infestations
  - Possibility of new infestation due to management actions
  - Suspected contaminated equipment use areas
- Treatments to prevent detrimental invasion (not present on the site) by non-native invasive species.
- Treatment of invasive plants introduced or aggravated by the wildfire. The treatment objective when the population is aggravated is to maintain the invasion at no more than pre-wildfire conditions.
- Treatments to prevent permanent impairment of designated Critical Habitat for Federal and State listed, proposed or candidate threatened and endangered species.

Prohibited Actions

- Systematic inventories of burned areas.
- Treatments designed to achieve historic conditions or conditions described in an approved land management plan, but did not exist before the fire.
- Treatments beyond one year post wildfire containment.

The treatment specification must include a threshold level where the treatment is initiated (e.g. presence of Canada thistle, 10 percent cover of cheat grass, etc.) and a practical, cost-effective management action to be undertaken (mechanical removal, broadcast herbicide application, etc.).

4.2.3 Re-vegetation

It is essential that the potential for recovery of native or seeded vegetation and invasion by weeds be evaluated prior to making a decision whether to seed a burned area. Re-vegetation of burned areas is not an appropriate use of emergency stabilization funds if natural regeneration will result in a vegetation type that meets emergency stabilization objectives.

Planting of seed or seedlings, for emergency stabilization in a burned area is an appropriate treatment if seeding or planting of vegetation is prescribed to be effective within Departmental policy and:

- Stabilizes the site and minimizes water or wind erosion,
- reduces the invasion of non-native invasive plants, or
- prevents critical habitat for federal listed threatened or endangered species from being more impaired than if nothing was done.

The use of pesticides must be identified in an existing approved management plan and have an existing program. Site preparation using integrated pest management methods on burned land may be funded with emergency stabilization funds for re-vegetation treatments (see non-native invasive species control section). The potential for invasive non-native plant invasion is considered when developing the seed prescription.

Native versus Non-native Plants - Species planted on burned areas must provide the protection required by BAER Plan/Report objectives, be consistent with the appropriate approved land management plan, and be in compliance with Executive Order 13112, Invasive Species, February 3, 1999.

Non-native seed may be used when allowed in agency policy. Use of native species is preferred to the use of non-natives for emergency stabilization treatments. However, a mixture of native and non-native species is preferable to using only non-natives if the desired natives are not available, and if the use of non-natives is consistent with approved land management plans.

Competitive non-natives should be minimized in the seed mixture to facilitate the establishment and persistence of the native species.

Testing of Seed and Vegetative Material - All seed is tested to ensure compliance with the State noxious-seed requirements recognized in the Administration of the Federal Seed Act. All purchased seed must meet all requirements of the Federal Seed Act (7 USC 1551-1610), the state seed laws where it will be delivered, and Federal specifications JJJ-S-181. All seed will be tested for purity and germination (Pure Live Seed or Tetrazoline) to meet contract specifications and should be tested for weed and noxious weed seed by an independent seed testing organization. Certified seed (e.g., source identified tag) ensures the genetic origins of the parent plant material or the collection origin.

Tetrazolium tests, performed by state seed laboratories, may be used on shrub seeds and for species where dormant or hard seeds are common. Tetrazolium tests may also be authorized by the agency when seed laboratories do not have enough lead time to use a full germination test.

The use of certified seed is required (if available) to ensure that desired genetic traits are present. The use of source-identified seed is recommended when native seed is collected from wildland sites to ensure that a local or otherwise adapted seed source is used to re-vegetate the burned area.

Straw and other vegetative mulch materials should be purchased as certified weed-free by a State agricultural agency or should be sampled and tested for noxious weeds prior to use.

4.2.4 Forest Management

Forest stabilization, reforestation, rehabilitation etc. are not appropriate use of emergency stabilization funding. Timber salvage is not authorized with emergency stabilization funding. A detailed timber salvage assessment and the costs associated with the actual salvage sale (e.g., timber inventory, contract preparation, etc.) cannot be charged to emergency stabilization.

4.2.5 Livestock, Wild Horse and Burro Management

Exclusion of livestock, wild horses or burros may be critical for the recovery of burned vegetation or establishment and maintenance of new seedings.

Recovery/Establishment Period – Re-vegetated and recovering areas may be closed to livestock grazing to promote recovery of burned perennial plants and/or facilitate the establishment of seeded species. An assessment is needed to determine the length of time livestock exclusion is required to meet emergency stabilization objectives. Livestock permittees must be informed of potential closures early during the plan preparation process.

Grazing Management - Wild horses and burros may need to be excluded from treatment areas. Emergency stabilization funds may be used for fencing or relocation (both actions must be consistent with approved land management plans and agency wild horse and burro policy) until the area recovers. Exclusion or relocation must occur before the animals can damage the remaining vegetation. Both actions must be consistent with approved land management plans, Wild Horse and Burro management plans, and agency wild horse and burro policy. Movement of animals must be completed within one year of containment of the fire.

4.2.6 Federal Field Unit Infrastructure

Facilities - The emergency stabilization of improvements and minor facilities (e.g., signs, guardrails, pit toilets, etc.) burned or damaged by wildfire is appropriate only for public health and safety.

HAZMAT and Facility Assessment and Stabilization - A visual inspection for hazardous conditions/materials and structural integrity of facilities affected by wildfire is required prior to their being reopened or made accessible to the public. Appropriate inspections are conducted by a qualified technical specialist. A written condition assessment (including hazardous materials - HAZMAT) of each affected structure is submitted as part of the approved BAER Plan/Report. Emergency stabilization funds are not to be used to develop reconstruction or repair plans, or to initiate or complete any of the work outlined in these documents. For safety purposes, safety measures required to block public access to damaged structures may be funded by emergency stabilization funds.

Hazardous materials discovered during field assessments may be secured with emergency stabilization funds. Hazardous material removal and mitigation are not funded with emergency stabilization funds.

Early Warning Flood/Evacuation System - Federal agencies should address flooding risks on Federal and Tribal lands. Known flooding risks to non-Federal lands should be coordinated with appropriate local emergency management agency.

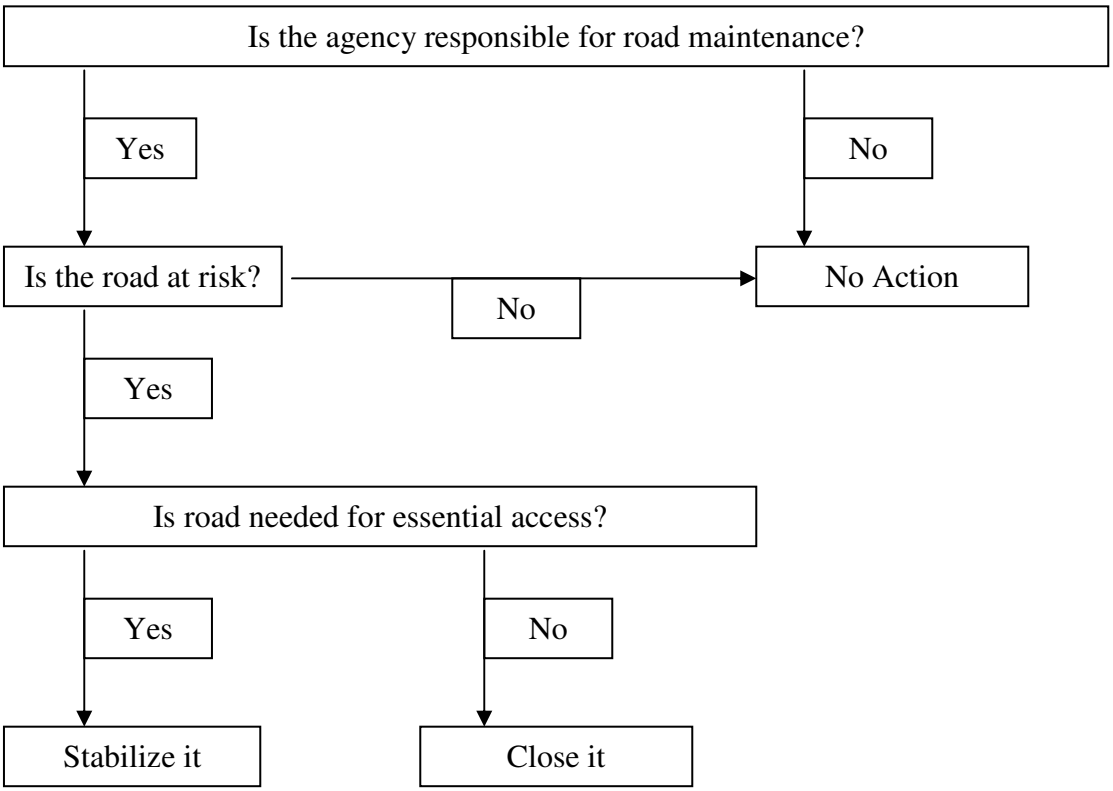
Coordination between federal, state, and local agencies is essential. Early warning systems rain gauges, or satellite driven systems are often necessary to monitor rainfall amounts and intensity in moderate to high intensity burns in immediate proximity to values to be protected (highways, structures, etc.).

The local emergency action agency is responsible for public evacuation planning, public notification, and evacuation on non-federal lands.

Emergency Road Repair and Maintenance - The responsibility for road repair and maintenance does not change due to wildfires. Identified road system issues and identified repair and maintenance needs are coordinated between all parties involved.

Road closure is preferable unless the road is needed to provide immediate access to essential activities (e.g., hospital post office access, threatened or endangered species management, communication systems).

Decision Tree for determining Emergency Stabilization actions on roads



Stabilization of a road includes the minimal work to keep the road passable according to agency standards. Bringing the road to the maintenance standard that existed before the fire is not necessarily covered by the emergency stabilization funds.

Access to recreation sites is not considered essential and does not provide justification for emergency stabilization treatments.

Prohibited Actions

- Normal road maintenance
- Road reconstruction
- Improving the road to better than pre-fire conditions
- Maintenance, construction, or reconstruction of bridges (major facility)

Fencing - Permittee agreements dictate the responsibility of fencing related to livestock management. The livestock owner has the responsibility to keep livestock out of burned areas.

Gates, cattle guards, and fencing that exceed the amount required to protect treatments or values to be protected should be funded with a separate benefiting account. Therefore, emergency stabilization funds are not to be used to fence the private/public land boundary unless state laws (such as those pertaining to herd districts) are in effect. Removal of temporary fencing using

emergency stabilization funds must be accomplished within the three year funding cycle. If the gates, cattle guards, or fencing is needed beyond three years then maintenance and/or removal must use other funds.

Protective fencing is allowed using emergency stabilization funding to protect installed treatments and for the health and safety of agency personnel and the public.

Boundary fencing, in and of itself, is not allowed for emergency stabilization funding.

Safety Signs - Signs necessary to close trails, warn of pending floods, promote public safety, or otherwise assist with emergency stabilization actions (directional, road, danger signs, etc.) may be procured, installed, maintained, and removed (within 3 years following containment of the fire) using emergency stabilization funds.

4.2.7 Monitoring

Emergency stabilization funds for monitoring are limited to:

Treatment Implementation: It is appropriate to determine if the treatment was implemented according to plan specifications.

Treatment Effectiveness: It is appropriate to monitor whether a treatment achieved its objective (e.g. log erosion barriers and straw mulching stabilized soils or whether willow and cottonwood trees successfully survived, grew, and stabilize the stream bank).

Prohibited Actions

- Monitoring to determine if the decision not to implement any treatment was appropriate (e.g., monitoring natural recovery). However, the use of an untreated area (control) in a paired comparison design to evaluate the effectiveness of a treatment is acceptable where values to be protected will not be affected by an untreated area.
- Monitoring the impacts or effects of the wildfire (e.g. water quality monitoring to evaluate the impacts of the burn on and post-fire recovery of an endangered species, post-fire monitoring of threatened and endangered species presence, reproductive status and reproductive success, etc.).
- Long-term monitoring (more than 3 years following containment of the fire) related to treatment longevity and effectiveness.
- Research
- It is not appropriate to monitor to determine the effects of treatment (e.g., changes in wildlife habitat structure, condition, or use).

Monitoring intensity should be commensurate with the treatment investment, complexity of the emergency stabilization treatments, and level of concern or controversy associated with the emergency stabilization treatment.

4.2.8 Public Use Management

Agency administrators should consider area closures to protect public safety, natural recovery, and active emergency stabilization treatments. Burned or seeded areas may be temporarily closed to the public by excluding vehicle, bicycle, horse, and foot use if unacceptable resource damage would occur or if danger to the public is present due to wildfire damage or emergency stabilization activities. Temporary fences may be appropriate to close areas where passive management closures have failed. Land management plans should be reviewed prior to prescribing emergency stabilization measures to identify other areas of special management concern to ensure emergency stabilization treatments are consistent with management objectives for these special management areas. Public information services concerning hazards, public use and area closures can be provided.

Tree Hazards - Hazard tree removal can only occur along roads and trails and in high use areas (e.g., developed campgrounds) when area closure is not possible. Trees to be felled must have been killed or damaged by the wildfire and must display an overall hazard rating of five in accordance with a Tree Hazard Rating System. Trees damaged by wildfire suppression actions and deemed hazardous must be removed under wildfire suppression accounts.

Trail Stabilization - To protect public safety, trails should be closed. When closure is not possible, burned slopes in the immediate proximity above and below the trail as well as the trail can be stabilized. Other funding (e.g. rehabilitation) are used to repair trails and other minor facilities to management plan standards. Appropriate trail stabilization measures which are funded with emergency stabilization funds include:

Allowable Actions

- Trail Slopes - Stabilization of burned slopes in immediate proximity above and below the trail to prevent further trail degradation. But only if closure is not possible or not effective in achieving treatment objectives.
- Waterbars (breaks) - The absence of or insufficient waterbars may create erosion induced safety hazards. Construction of the soil, rock or log waterbars is appropriate, but waterbars damaged or destroyed as a result of suppression efforts are repaired and/or replaced with wildfire suppression funding.

Prohibited Actions

- Repair or replacement of major facilities.
- The emergency stabilization of any trail to a standard above its pre-fire condition is also prohibited.

Public Safety - Area closure may be accomplished by signing/fencing or patrolling, whichever is most cost effective.

4.2.9 Threatened and Endangered Species

A burned area assessment should identify post-fire threats to federal and tribal listed or proposed threatened and endangered species and what, if any, cost effective stabilization measures can be implemented to prevent further post-fire condition degradation. Post-fire monitoring of threatened and endangered species status or recovery is not funded with emergency stabilization funds unless the monitoring is for the purpose of assessing treatment effectiveness of threatened and endangered species stabilization measures and is in an approved BAER Plan/Report.

Removal and relocation of threatened or endangered species:

- The FS, BLM, BIA, and NPS do not have the authority to move threatened or endangered species. When threatened or endangered species need protection, the appropriate federal or tribal managing authority must be identified and consulted.
- The land management agency and threatened and endangered species management authority can enter into agreement about how and who will remove and relocate the species.

All BAER Plans/Reports should be reviewed to determine if threatened or endangered species or their habitat would be benefited or adversely affected by the implementation of emergency stabilization treatments. Agencies must consult with the U.S. Fish and Wildlife Service (Ecological Services Offices) or National Marine Fisheries Service, as appropriate, on all emergency stabilization actions that may affect a threatened and endangered listed species or its habitat to ensure compliance with Section 7 of the Endangered Species Act. Timeframes for review and consultation may last several months. Therefore, every effort should be made to initiate these actions early in the emergency stabilization planning process.

4.2.10 Watershed Stabilization

Watershed stabilization includes those emergency stabilization treatments necessary to protect life, property, and watershed values (soil productivity and water quality and quantity). Watershed treatments may meet a prevention strategy, protection strategy, or removal strategy.

Prevention strategies are treatments applied at the potential source of an emergency to prevent an emergency from developing. Examples of prevention treatments are those applied to ground surfaces to prevent surface erosion, to control overland runoff, to trap sediment, to encourage infiltration into the soil profile, and to stabilize sites of potential deep erosion or mass wasting.

Protection strategies are based on recognition that an emergency cannot be prevented by direct application of prevention treatments to flood/debris flow source areas. Protection strategies are treatments designed to control an emergency when it happens, to slow or delay flood flows, to redistribute sediment loads, and to directly control flood runoff within channels.

Removal strategies are treatments designed to remove values to be protected from damage caused by increased water runoff.

Prevention Strategies – Treatments (e.g., mulch, geotextures, contour trenches, etc.) are designed to provide effective ground cover to reduce surface erosion potential, to increase infiltration rates, to control overland runoff, and to protect water quality. Seeding treatments should be implemented only for purposes of protecting life and property, prevent the establishment or reestablishment of non-native invasive species, or for preventing the loss of irreplaceable resources (including Threatened and Endangered species, candidate species, and historic properties). Specific legislation may also provide specific justification for protecting soil and/or watershed values. Seeding specifications for emergency stabilization purposes must be compatible with approved land management plans. Field units without specifically approved plans must submit seeding proposals in accordance with agency guidelines. Seed used for emergency stabilization treatments is subject to appropriate State seed and weed laws and is tested for purity and germination. Funding for stabilizing suppression impacts should come from the suppression funding.

Protection Strategies – Treatments (e.g., straw bale check dams, silt fences, debris removal, etc.) are designed to provide effective means to trap and stabilize in-channel sediments, control down-cutting, maintain the integrity of channel morphology, and minimize flash flooding.

Removal Strategies - Occasionally it is more feasible or cost effective to move some values to be protected than it is to attempt to protect those values on the site. The removal of a potential property loss from the path of a predicted flood can be funded via emergency stabilization funds.

4.2.11 Removal of Treatments

Any treatments, or parts thereof, installed using emergency stabilization funds can be removed using emergency stabilization funds if removal is completed within three years of containment of the wildfire. If treatments remain after three years of wildfire containment other funds must be used for removal costs.

5 Program Administration

5.1 Roles and Responsibilities

Agency Administrator directs and coordinates the development and implementation of all management operations of an administration unit. This includes developing and implementing the incident action plan, and the BAER Plan/Report.

Agency/Bureau BAER Coordinator coordinates program issues within their own agency/bureau.

Regional/State BAER Coordinator coordinates program issues within their own regions/states.

Burned Area Emergency Response (BAER) Team assesses the need for emergency stabilization treatments/activities and prepares a BAER Plan/Report for the agency administrator. BAER teams are established to quickly address emergency stabilization issues.

Incident Management Team plans and implements wildfire suppression activity damage repair (620DM3.10 and FSM 2523.4) for the agency administrator.

5.2 Emergency Stabilization Program Funding

Funding for emergency stabilization treatments/activities is provided under emergency fire management funding authorities. See Chapter 4 for appropriate and inappropriate use of the emergency stabilization funds.

Burned Area Rehabilitation is a separate program. Guidance for Department of the Interior rehabilitation activities and funding is found in a separate guidebook (Interagency Burned Area Rehabilitation Guidebook is currently under development for DOI agencies).

5.2.1 Cost Accounting

Agency specific cost tracking processes are used to accurately track expenditures. Use Fire Codes to track funding appropriated and spent for each specification found in the plan is useful for tracking expenditures. The complexity of the project dictates the complexity of the cost tracking system. Some factors to consider include:

Non-agency planning team members may be covered by an agency reimbursement authorization for salary, travel and per diem expenses issued by the host agency. This is exclusive of the agencies (BLM, BIA, FWS, NPS, USDA FS) covered in the Interagency Agreement Between the Bureau of Land Management, Bureau of Indian Affairs, National Park Service, U.S. Fish and Wildlife Service of the United States Department of the Interior and the Forest Service of the United States Department of Agriculture" (1997).

- Non-agency implementation team members may be covered by an agency reimbursement authorization for salary, travel and per diem expenses issued by the host agency. The affected agency must establish reimbursable account codes, as needed.
- An Implementation Cost Unit Leader or Incident Business Advisor should be a team member on complex projects involving multiple funding sources or agencies/bureaus.

5.2.2 Personnel Funding

All wildland fire funded personnel (except hazard fuels) will fund their base 8 hours from their base funding when working on wildfire suppression activity damage or emergency stabilization activities.

All non-fire funded and hazard fuels personnel may charge their base 8 hours to emergency stabilization accounts when performing those work activities.

Fire and non-fire funded personnel overtime hours will be charged to the emergency stabilization account.

For further information on overtime, hazard pay, and other personnel funding issues see Interagency Incident Business Management Handbook.

5.3 Planning

Each emergency stabilization project requires the preparation, submittal, and approval of a BAER Plan/Report.

5.3.1 BAER Plan/Report

The BAER Plan/Report must be consistent with approved land and resource management plans. Development of the BAER Plan/Report objectives are guided by resource management objectives and general management practices identified in approved land and resource management plans.

The emergency nature of the anticipated post-fire response dictates that the BAER Plan/Report must be developed expeditiously. The planning approach is the use of a local BAER team to assess the values at risk and recommend treatments to reduce the risk. A regional or national team may be used if the complexity of the plan exceeds the capability of the local unit, or includes multiple agency ownerships, or on large complex wildfires.

An approved BAER Plan/Report is required before any emergency stabilization funds can be obligated toward implementation. There are instances where emergency stabilization actions may need to begin while developing the plan. Written approval is required for all activities and treatments and will be documented in the final BAER Plan/Report.

5.3.2 Transition to Resource Management Activities

Occasionally, emergency stabilization treatments/activities initiates a management action that is significantly longer than the emergency funding limitations (e.g. structural emergency stabilization treatments, biotic community stabilization, non-native invasive species control, appropriate livestock and animal management, etc.) The BAER Plan/Report should identify the types of programs and steps that are needed to tie BAER to long term management programs and their goals. The Plan/Report may also identify other potential program areas able to accommodate these added long-term management commitments and actions beyond the emergency funding limits. Unless long-term activities are fully integrated into the other program areas, the ultimate success of the activity and the benefits to the resource may be jeopardized.

5.4 Emergency Acquisition Authorities

The Federal Acquisition Regulations (FAR) apply to procurements accomplished in support of BAER actives, are the same regulations that apply to procurements accomplished to support wildfire suppression activities. Both suppression and BAER are supported by the same wildfire incident mobilization, resource availability, and incident business management procedures as other aspects of the incident. BAER projects acquisitions must be expeditious because the emergency stabilization measures are needed before damaging or degrading events are likely to occur.

Using the authorities listed below, agencies may be able to shorten advertising time, limit the amount of competition obtained, and in extreme cases, not obtain competition. The important thing to note is that the agencies "shall request offers from as many potential sources as is practicable under the circumstances." (FAR 6.302-2(C)(2)).

It is the government's policy to obtain fair and open competition to ensure the best deal can be obtained and that agencies are spending the taxpayer's money wisely. When obtaining competition, always consider price as well as other factors such as past performance, experience, quality, etc. Following are some of the competition thresholds listed in the FAR:

- Acquisitions under $2,500 – Competition is not required, but should be obtained if possible.
- Acquisitions $2,500 to $25,000 – Competition should be obtained to the maximum extent practicable. Normally, a minimum of three quotes should be obtained. The number of quotes obtained is dependent on the nature of the supplies and services being obtained. If competition is not obtained, the file must be documented with the reasons.
- Generally, all acquisitions over $25,000 must be advertised and we must obtain full and open competition. Acquisitions over $100,000 must be published 15 days before the issue date of the solicitations, and the advertisement time must be at least 30 days. There are a number of exceptions to these advertising requirements. The authority used during fires is the following:
    - FAR 5.202 (a)(2) – The proposed contract action is made under the conditions described in 6.302-2 (or, for purchases conducted using simplified acquisition procedures. If unusual and compelling urgency precludes competition to the

maximum extent practicable) and the Government would be seriously injured if the agency complies with the time periods specified in 5.203;

- FAR6.302-2 – Unusual and compelling urgency. –
  - (a) Authority
    - (1) Citations: 10 U.S.C. 2304 (c)(2) or 41 U.S.C. 253(c)(2).
    - (2) When the agency's need for the supplies or services is of such an unusual and compelling urgency that the Government would be seriously injured unless the agency is permitted to limit the number of sources from which it solicits bids or proposals, full and open competition need not be provided for.
  - (b) Application. This authority applies in those situations where -
    - (1) An unusual and compelling urgency precludes full and open competition; and
    - (2) Delay in award of a contract would result in serious injury, financial or other, to the Government.
  - (c) Limitations.
    - (1) Contracts awarded using this authority shall be supported by the written justifications and approvals described in 6.303 and 6.304. These justifications may be made and approved after contract award when preparation and approval prior to award would unreasonably delay the acquisition.
    - (2) This statutory authority requires that agencies shall request offers from as many potential sources as is practicable under the circumstances.

Agencies are required to prepare justifications for the file whenever they do not obtain the maximum competition required. If preparation of the justification would unreasonably delay the acquisition, the justifications may be prepared and approved after contract award. It is the responsibility of technical and contracting personnel to work together to provide, and certify as accurate and complete, necessary data to support their recommendations for other than full and open competition. Specific information required for justifications may be obtained in Part 6.303-2 of the Federal Acquisition Regulations through the units contracting officer.

Justification may be on an individual or class basis. In years when there are a large number of fires, justifications have been prepared on a class basis. The approval for the justification is dependent on the total dollars involved.

National Fire Plan "Contracting and Assistance" is available on an interagency basis. (See National Fire Plan website: www.fireplan.gov).

5.5 Emergency Stabilization Program Accountability

Accountability for the emergency stabilization program lies with each agency's administrator. Individual agencies establish accountability responsibilities for:

- Plan review and approval/disapproval (resource and funding appropriateness)

- Financial accountability
- Plan implementation
- Plan implementation review and evaluation
- Program review and evaluation

Significant deviations from treatment specifications or costs as prescribed in the approved plan require a plan amendment. All treatments/activities, including plan amendments, must be completed within one year of wildfire containment.

Accomplishments are tracked and reported in the corporate database (e.g., NFPORS). Fiscal obligations and accomplishments are tracked and documented by an annual accomplishment report each fiscal year. A final accomplishment report is required after completion of the BAER project. Any emergency stabilization funds not expended following completion of the plan cannot be used for other purposes.

To sustain accountability for provided funding, annual and final accomplishment reports are to be submitted to the approval authority. The corporate database must be kept current. The annual accomplishment report may cover treatments applied, dollars spent, treatment effectiveness, monitoring results, and an assessment in narrative form of each aspect of the project. The annual and final accomplishment reports are a mandatory requirement for continued treatment effectiveness monitoring funding and account closure.

5.6 Information Management

Approved BAER Plan/Reports, treatment effectiveness reports, and accomplishment reports should be shared with other federal and non-federal agencies/bureaus. For DOI, data must be entered in the database of record in order to receive future emergency stabilization funding.

5.7 Agreements

Agreements can be made between agencies for the implementation of emergency stabilization activities and treatments. There will be no billing or reimbursement between bureaus of the Department of the Interior and the Department of Agriculture for personnel and other resources involved in burned area emergency stabilization planning. Funding for Bureau of Reclamation projects will be from Bureau of Reclamation funds only.

There must be an agreement before any service is performed. Without an agreement, there is no authority to obligate funds for services. If an agreement cannot be executed prior to the start of work, at a minimum there must be a letter of intent signed by the parties involved. Specifications for funding responsibilities should include billing procedures and schedules for payment. Any agreement that extends beyond one fiscal year must be made subject to the availability of funds. Any transfer of federal property must be in accordance with federal property management regulations. All agreements must undergo periodic joint review and, as appropriate, revision.

Agreements obligating emergency stabilization sub-activity funds cannot allow these funds to be expended beyond the one-year time limit following containment of the wildfire.

The chart below is a synopsis of the three basic agreement types, contract, interagency agreement, and memorandum of understanding.

TYPES OF AGREEMENTS

TYPE OF AGREEMENT	DEFINITION	SIGNATORY AUTHORITY	REFERENCES	CONTACT FOR INFORMATION
Contract	A mutually binding legal document obligating the seller to furnish supplies or services (including construction) and the buyer to pay for them.	Only warranted Contracting Officers may award contracts.	Federal Acquisition Regulations, 48 CFR; and Department Acquisition Regulation System.	Respective Headquarters or regional office Contracting Officer
Interagency Agreement	An agreement between Federal Agency(ies)/Bureaus used to reimburse an Agency for goods or services provided to the agency.	Warranted Contracting Officers are the only officials who may award Interagency/ Intra-Agency Agreements in combination with the respective agency administrator.	Federal Acquisition Regulations, 48 CFR 17.5; and Department Acquisition Regulation.	Same as above.
Memorandum of Understanding (MOU)	A written agreement between the agency and another entity(ies) that confirms the use of cooperative policies or procedures to promote mutual endeavors.	MOUs are signed by the Director/Deputy Commissioner or agency administrator.	Internal Guidance	Same as above.

5.8 Cooperation on Adjacent Lands

5.8.1 Wyden Amendment (16U.S.C.1011(a)) as modified by Section 136 of P.L. 105-277 as amended by P. L. 109-54 (expires 2011).

Appropriations made for the Bureau of Indian Affairs, Bureau of Land Management, National Park Service, US Fish and Wildlife Service and USDA Forest Service may be used for the purpose of entering into cooperative agreements for the protection, restoration, and enhancement of resources on public or private land and the reduction of risk from natural disaster where public safety is threatened on public lands.

Emergency stabilization funds may be used to enter into cooperative agreements with Federal, state, tribal, local governments, private nonprofit entities, and landowners. When emergency stabilization funds are used under the Wyden Authority, treatments must meet the same criteria for emergency stabilization appropriateness and timelines as emergency stabilization treatments accomplished on National Forest System (NFS) or DOI lands. Follow appropriate agency direction on entering an agreement (FSM2523.53). Appropriate cost-sharing protection and liability agreements should be included in the cooperative agreement with the land owner. A cooperative agreement must be signed and in place prior to commencement of any work on those private or non-federal lands.

5.8.2 Natural Resources Conservation Service (NRCS)

Large fires often cover both federal and private lands. The NRCS administers the Emergency Watershed Protection (EWP) Program, designed to help landowners respond to a range of natural disasters (e.g. fire, hurricanes, flood, earthquakes, etc.) (PL 81-516 and PL 95-334). When a disaster is declared (by a State Conservationist or the President), non-federal landowners may contact their local NRCS office for information about the EWP program. On large or complex intermingled land ownership patterns non-federal lands may be included in the federal burned area assessment, or NRCS personnel included on the assessment team.

5.8.3 Federal Emergency Management Agency (FEMA)

FEMA manages programs to assist state, local, and tribal governments as well as individuals before and after a disaster. FEMA is called in to assist when the President declares a disaster. Disasters may be "declared" after hurricanes, tornadoes, floods, earthquakes, wildfires or other similar events strike a community. The Governor of the state must ask for assistance from the President before FEMA can respond.

FEMA workers may help disaster victims find a place to stay if their homes were damaged or destroyed. FEMA also helps repair homes and works with city officials to fix public buildings that have been damaged.

In a large wildfire with significant Wildland Urban Interface, BAER Teams should coordinate their activities with FEMA.

6 Plan Development

Burned area assessments are conducted to validated anticipated emergency stabilization needs either defined in fire and resource management plans or identified in initial fact finding activities. The assessment determines what realistic and cost effective emergency stabilization treatments are needed; not to document the effects of the fire (i.e., natural or cultural resource damage, fire effects, etc.) or to validate whether an appropriate management response (e.g., limited or modified suppression) was appropriate.

6.1 Assembling the Planning Team

The agency administrator is responsible for BAER Plan/Report development which may include assembling an interdisciplinary planning team to conduct burned area assessments and begin plan development. If emergency stabilization actions are anticipated, the BAER team should be assembled and ready to work within sufficient time to complete the BAER Plan/Report to meet agency timelines. BAER Teams can be a standing or ad hoc group of technical or scientific specialists that may be local, regional, or national. BAER Plans/Reports can be multi/interagency when agency administrators agree that a multi/interagency plan is appropriate.

Team size and make-up will vary dependent on the wildfire size, values to be protected, time frames, and jurisdictions involved. Generally the team should include resource specialists (geomorphology, soils, hydrology, revegetation, wildlife, ecology, range, watershed, invasive species, historic properties, etc.), members knowledgeable about post-fire impacts and effective stabilization techniques and local unit resource advisors. Adding trainees to a BAER project is encouraged.

A team member may represent several skills. Inclusion in the team of expertise from cooperating agencies or offices is encouraged, especially when the needed skills are not available within the agency. Access to needed expertise can be obtained through the interagency coordination dispatch system or through contracts.

A National DOI Interagency BAER team may be resource ordered on a complex wildfire or a wildfire that crosses agency boundaries (mobilization procedures for the national interagency BAER team is described in the National Interagency Mobilization Guide). The Agency Administrator should plan to support the BAER Team with local resource specialists. The requesting agency may prepare a Letter of Direction for the BAER team to develop and prepare the BAER Plan/Report. Demobilization of dispatched personnel will be through normal interagency coordination dispatch channels and processes if available.

6.2 Review of Current Available Resources and Wildfire Data

Prior to field inspection of the burned area, the planning team should:

- Receive a start up briefing with agency administrator.

- Review the field unit fire, land, and resource management plans and relevant plans that are relevant.
- Review all wildfire suppression operational plans, resource advisor reports, and the Wildland Fire Situation Analyses. Suppression plans/actions provide valuable information concerning the relative values the field unit places on individual resources.
- Have all existing relevant resource management data including monitoring studies, inventories (vegetation, cultural, and Threatened and Endangered, including sensitive species), state comprehensive wildlife conservation strategies, and previously implemented BAER plans.
- Review monitoring studies and vegetation inventories which provide valuable information on pre-burn invasive species populations and plant composition that may be useful in deciding what actions may be necessary, or whether natural recovery may preclude the need for intensive treatments.
- Review information on fire history, fire ecology and effects, fire management planning, historic properties
- Review treatment effectiveness monitoring data on the success or failure of past wildfire stabilization treatments. This is essential in developing proposed treatments.
- Review soil surveys which contain important information on characteristics of soils relative to erosion potential, the success of seeding, ecological site information, seeding success potential, and other important information.
- The planning team should review and become familiar with the information contained in the Fire Effects Information System (FEIS) computerized database, the *Fire Effects Guide*, and other relevant literature, documentation, and expertise. The FEIS is described in *Fire Effects Information System: User's Guide*, *USDA Forest Service General Technical Report INT-GTR-327*. It contains information on 900 plant species, 90 animal species, and 25 plant communities. Summaries are updated periodically as new fire ecology information becomes available. The *Fire Effects Guide,* sponsored by the NWCG, is available from the Publications Management System manager at the National Interagency Fire Center (NIFC) warehouse as NFES 2394. Numerous other technical references should also be consulted and are available on the Internet (including the NRCS websites) and other locations to ensure that the appropriate techniques and plant species are utilized in planned projects.
- Another source of information about potential species to be used in re-vegetation is the NRCS-USGS Biological Resources Division VegSpec website (http://plants.usda.gov). The VegSpec is a web-based, expert system that aids technical people or managers in making sound decisions on what plants to plant on specific sites. It integrates the Natural Resources Conservation Service (NRCS) soils, plants, and climate databases for plant selection which addresses conservation problems. Other sources of information on vegetation (including the potential for invasion by undesirable species), soils, and site potential (ecological site) should also be reviewed to help determine if seeding is necessary is for the success of the emergency stabilization project.
- Review other relevant available information.
- Location of fire retardant drop locations. (So they can be evaluated for treatments.)

Areas of concern (e.g. wilderness and wilderness study areas, areas of critical environmental concern, erosion hazards, threatened and endangered species habitats, historic properties etc.) should also be identified from field unit records prior to field inspection.

Aerial photographs, GIS layers, and maps are essential tools for the planning team to include on initial wildfire inspections. Habitat improvements and other agency facilities within the wildfire perimeter are plotted on maps/photos to assist the team in identifying burned structures for reconstruction or replacement consideration.

The planning team may develop a burned area map delineating burn severity using accepted protocols and definitions for the purpose of focusing their assessment activities.

6.3 Burned Area Assessment

After the preliminary information has been reviewed and assembled, the planning team conducts one or more field inspections of the burned area to assess values at risk as a result of the wildfire. Aerial and ground assessments must be coordinated with the Incident Management Team Commander.

Values at risk may include human life, property, natural resources, historic properties, threatened and endangered species, potential for exotic invasives, soil productivity and Native American or other cultural values. Once identified, values at risk should be evaluated for appropriate emergency stabilization action. These evaluations may require coordination with local specialists and appropriate models should be used and referenced.

The planning team should develop a burned area map delineating burn severity using accepted protocols and definitions.

The planning team should evaluate burn severity and predicted watershed response to determine the potential for flooding, debris flows, surface erosion and other related processes, e.g., natural regeneration of vegetation.

6.4 Cost-Risk Analysis

A Cost-Risk Analysis of the proposed actions and no action alternative should be prepared to assure the treatment costs do not exceed the values to be protected.

6.5 Planning Team Recommendations

Upon completion of the burned area field inspections, the planning team reports its initial findings and recommendations and provides an agency administrator briefing. Identification of values to be protected and emergency stabilization needs are discussed with the agency administrator. Options for emergency stabilization, potential costs, consultation and cooperation needs, and potential controversies associated with the proposed treatments are presented at this time. The agency administrator accepts, modifies, or rejects the team's recommendations and gives direction to the team how to proceed with BAER Plan/Report development.

6.6 Preparing the BAER Plan/Report

In most cases, it is a local BAER team that will prepare the BAER Plan/Report. However, if a regional or national team is called in, it is expected that local resources will provide support and assistance in the preparation of the BAER Plan/Report. In preparing the BAER Plan/Report, the team should work with the field unit staff to take the following actions:

- Determine the availability and cost of the treatment or activity supplies (e.g. seed proposed for planting).
- Begin making arrangements for the cultural and threatened and endangered species consultations, including coordinating with agency contracting specialists.
- Determine the availability and make preliminary arrangements for necessary equipment.
- Coordinate with the agency administrator and with affected or interested parties regarding proposed emergency stabilization practices.
- Coordinate with the Regional/State/National Office on complex or controversial emergency stabilization funding issues or technical questions.

Information needed to complete the plan may include:

- Agency review and approvals.
- Summary wildfire narrative and activities and treatments needed.
- Fire location and background information.
- Type of plan (e.g., initial submission, or amendment).
- Values at risk.
- Values to be protected and their location.
- Emergency stabilization objectives.
- Planning team organization and membership.
- Activity and treatment specifications.
- Emergency stabilization funding needs.
- Consultations made by the planning team.
- Burn area assessments.
- Environmental compliance documentation
- Explanation of treatments with respect to values at risk.
- Maps, photo documentation, supporting documents, etc.
- Monitoring objectives and procedures/protocols.

BAER Plan/Report templates and examples are available at agency websites (DOI).

6.7 BAER Plan/Report Approval

The planning team completes the plan and obtains an initial review from policy, technical, or other interested parties prior to the submission of the plan to the agency administrator. If problems are defined, they should be worked out before the plan is submitted for approval. The agency administrator is responsible for submitting the BAER Plan/Report to the appropriate approving official for final approval.

	BIA	**BLM**	**FWS**	**NPS**	**FS**
Local Approval Level	$100,000 Agency Superintendent	$0 Field/District Manager	$0 Refuge Manager	$0 Park Superintendent	$0 District Ranger
					$0 Forest Supervisor
Regional/ State Certification Level	$100,000 - $250,000 Regional Director	<$100,000 State Director	< $500,000 Regional Director with Regional Fire Management Coordinator concurrence	< $300,000 Regional Director	$500,000 Western Regional Foresters
					$100,000 Eastern Regional Foresters
National Certification Level	>$250,000 Chief, Branch of Fire Management	>$100,000 Director	>$500,000 Chief, Branch of Fire Management	>$300,000 National Fire Management Officer	>$100,000 or $500,000 Chief

The agency administrator, planning team, or approving official is encouraged to request input from the State, Regional and/or National Office staffs on any BAER Plan/Report before submitting it for approval. The use of electronic means of transmitting plans is encouraged.

6.8 Transition to Plan Implementation

Ideally, BAER Plan/Report development personnel are the same people assigned to implementation. When the plan is implemented by a different team, the implementation team leader should be involved in the planning effort.

With regional/national teams, planning and implementation personnel may be different (e.g., standing BAER team completes the planning and the local unit personnel complete the implementation of approved treatments). In this case, it is important to prepare a transition memo (from the planning team to the affected agency administrator(s)) with implementation recommendations, and all BAER Plan/Report file(s). These measures should help to ensure a clean, organized transition from planning to implementation. It is also important that the departing planning team conduct a close-out and transition meeting with the affected agencies to discuss the findings of the burned area assessments, treatment proposals and other mitigation measures, and approval and funding procedures. This transition meeting should include the

following key transition individuals: agency administrator, planning team leader, implementation team leader, and administrative/procurement officer. The planning team may be contacted by implementation personnel to explain specific aspects of the plan.

Treatment specifications in the Plan/Report should be sufficiently detailed that the implementers do not have to reanalyze the treatment need, extent, character and costs or to question the practicality of the treatment.

6.9 Plan Amendment

For the first year following wildfire containment, the plan/report may be amended, if the initial burned area assessment(s) were incomplete or new information shows that the BAER Plan/Report may not accomplish its objectives. Maintenance, repair or replacement of emergency stabilization treatments can occur for up to three years following wildfire containment.

6.10 Planning of Treatment Effectiveness Monitoring and Evaluation

BAER Plans/Reports must include provisions for monitoring and evaluation of treatments.

Monitoring and evaluation of post-fire treatments are critical for understanding and improving such treatments. The objective of treatment effectiveness is to determine if plan objectives were met. Effectiveness monitoring is used to evaluate whether the installed treatment had the desired effect. This information is used to adapt management treatments and activities for the current and future projects to increase effectiveness.

Monitoring intensity should be commensurate with the complexity of the emergency stabilization treatments and the level of concern or controversy associated with the emergency stabilization treatment. The effectiveness monitoring specification should document the specific monitoring objective for that project, the monitoring protocol, personnel/equipment needed, and the funding needs. Those treatments that have been identified for effectiveness monitoring, must have monitoring provisions and procedures specified. Procedures for collecting, archiving and disseminating results are also necessary, and results should be entered into the existing corporate database.

7 Emergency Stabilization Plan Implementation

7.1 Implementation

Actions to implement emergency stabilization treatments should begin immediately upon plan approval. Implementation should begin as soon as necessary to complete the treatment prior to the rainy season, onset of winter, weather, or other shutdowns. Potential delays or issues should be addressed early in the implementation process to facilitate completion of treatments at the proper time to ensure maximum probability of success. Implementation complexity increases dramatically in situations where a wildfire has burned across property boundaries.

7.2 Responsibility and Coordination

Unlike the planning effort, which is often done by a single interagency team, each affected agency identified in the BAER Plan/Report must assume the overall responsibility for the implementation of treatments on its the lands it manages. Private, state, county, and city lands are typically coordinated by the Natural Resources Conservation Service (NRCS) through the Emergency Watershed Program (EWP). Whenever possible, treatment implementation should be coordinated across agency lines by "piggy-backing" on existing contracts, sharing contracting officer's representative (COR) responsibilities, etc. Cooperation between agencies charged with the implementation of similar or identical treatments within the same wildfire perimeter is not only possible, but is highly encouraged as an opportunity for real cost savings and management efficiency.

7.3 Project Management

The agency administrator should assign an implementation leader to assure ensure all plan treatments/activities are completed on time and according to the specification. Depending on the complexity of the plan, this may be a collateral or full time duty. The project implementation leader's duties may include:

- Safety of implementation activities.
- Supervising plan and individual treatment specification preparation and implementation.
- Equipment and supply procurement.
- Ensuring contract administration by certified CORs.
- Coordination with region/state/national coordinator.
- Implementation monitoring.
- Accomplishment reports (annual, final).
- Corporate database documentation.

Treatments must conform to federal procurement laws, rules and regulations and agency and Departmental manuals. The initial approved emergency stabilization spending authority is issued for the period up to one year following containment of the wildfire (monitoring and failed

treatment maintenance may continue for up to three years). After submission of the final accomplishment report or the emergency stabilization funding time limit lapses (whichever comes first), appropriate emergency stabilization obligations cease and unspent funding authority is withdrawn. Accurate actual cost accounting records of expenditures must be kept by fiscal year in the annual accomplishment report.

Complex, long-term projects on large fires may require a formal Implementation Plan. This plan may include: organizational chart, communications plan, safety plan, priority treatment implementation, responsibilities, etc.

7.4 Project Records

Accurate and up-to-date records of estimated and actual expenditures must be kept. Projects should be structured in order to reduce the local administrative unit record keeping. Project records are kept at the local administrative unit and available for review and audit.

7.5 Organization

The implementation team leader is responsible for identifying procurement needs to the administrative officer and agency administrator early in the implementation phase. The Agency Administrator is responsible for providing procurement services. The implementation team leader and local administrative staff are responsible for establishing and maintaining effective working relationships. It is recommended that in complex situations, the implementation team should be organized using Incident Command System (ICS) principles.

7.6 Contract Inspection

For every treatment/activity installed through a contract, it is necessary that a certified inspector inspect and accept the work completed. The inspection should verify that the work was completed according to the contract specifications. Contractors cannot be issued final payment until the inspection is completed and the work is acceptable and in compliance with contract specifications.

7.7 Preparation

Administrative units should anticipate (programmatic planning) and arrange for supplies, equipment, and services normally required for emergency stabilization work before the fire season. These arrangements may include blanket purchase agreements, open-end contracts, emergency equipment rental agreements, and so forth. Such arrangements may be done in conjunction with fire management activities. (See NWCG Interagency Incident Business Management Handbook).

7.8 Project Maintenance

Some treatments/activities may require periodic maintenance to ensure continuous and effective functioning and to protect the financial investment in the treatment. Adequate maintenance must be provided until the conditions specified in the plan are met and the treatment measures are no longer needed. Structures used in emergency stabilization may be removed rather than maintained or replaced after they have outlived their design life and after the objectives in the plan are met.

Maintenance and removal of emergency stabilization structures are funded through the emergency stabilization program for up to three years after containment of the fire. If this removal occurs after the three year funding period, removal costs must be programmed and charged to the appropriate agency funding account.

7.9 Implementation of Monitoring

The annual accomplishment report contains information on monitoring progress/results and is required in order to continue to receive funding to monitor for an additional year.

Cooperative efforts in monitoring the results of emergency stabilization projects are encouraged; these efforts could be with research organizations, neighboring offices, other office programs, agencies, or universities.

Monitoring information and results should be entered and retained in an easily accessible corporate database. Information gained in monitoring is strongly encouraged to be shared through websites, professional papers, technical bulletins, symposia, workshops, training, etc.

7.10 Accomplishment Reporting

To provide for accountability for funding approved, a standardized, final accomplishment report must be filed with the approving official. The submission of the final accomplishment report effectively closes out the emergency stabilization portion of the project.

The agency administrator reports accomplishments on projects and tracks expenditures of funds under the emergency funding authority. The agency administrator is also responsible for entering data into the corporate database.

The final accomplishment report is a statement of what activities and treatments were completed. The information in the final report should include:

- The original specification and subsequent submissions.
- Descriptions of the implementation of the treatments, including final treatment maps and specifications.
- Expenditures.
- Completion date of the treatment(s).

- Projected follow-up activities and treatments.
- Treatment effectiveness.

Assessments for each of the resources affected, e.g., cultural, forestry, vegetation, fish and wildlife, soil and watershed, etc.

7.11 After Action Review

An after action review (aka lessons learned) of every BAER Plan/Report is necessary to identify information and knowledge gaps, training needs and research opportunities. It can identify what worked and what didn't from a process perspective. The appropriate timing is conditional on plan/report implementation since actual implementation will identify the strengths and weaknesses in the plan/report.

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Interagency Burned Area Rehabilitation Guidebook

Interpretation of Department of the Interior 620 DM 3
For the Burned Area Rehabilitation of Federal and Tribal Trust Lands
Version 1.3

October 2006

Interagency Burned Area Rehabilitation Guidebook
Version 1.3

Approved by:

_____ Date _____
Bureau of Indian Affairs

_____ Date _____
Bureau of Land Management

_____ Date _____
National Park Service

_____ Date _____
U.S. Fish and Wildlife Service

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2 Introduction

The purpose of the Interagency Burned Area Rehabilitation Guidebook (Guidebook) is to provide general operational guidance for the Department of the Interior Burned Area Rehabilitation (BAR) activities after a wildfire. In conjunction with Departmental and agency policy, it is designed to provide agency administrators and BAR specialists with sufficient information to:

- Understand BAR policy, standards, and procedures.
- Assess wildfire damage and develop a cost effective plan or report.
- Assess and report accomplishments.

It consolidates and provides an interagency interpretation of BAR policies, procedures, objectives, and standards where there is Departmental and agency agreement. Individual agency policy and procedure manual guidance can be more but not less restrictive than that presented in this Guidebook.

3 BAR Policy Implementation

3.1 Policy, Direction, and Program Coordination

BAR and emergency stabilization activities are an integral part of wildfire incidents, but are planned, programmed, and funded separately from each other. Guidance for emergency stabilization is found in a separate guidebook. Departmental BAR policies are found in the Department of the Interior (620DM3) policy documents and available on the Department of the Interior Emergency Stabilization and Burned Area Rehabilitation website. Individual agencies have supplemented this policy:

- Bureau of Indian Affairs (BIA)
- Bureau of Land Management (BLM)
- National Park Service (NPS)
- U.S. Fish and Wildlife Service (FWS)

3.2 Objective, Priority and Allowable Actions

3.2.1 Objectives

Based on actions identified in approved land and fire management plans:

- To evaluate actual and potential long-term post-fire impacts to critical cultural and natural resources and identify those areas unlikely to recover naturally from severe wildfire damage.
- To develop and implement cost-effective plans to emulate historical or pre-fire ecosystem structure, function, diversity, and dynamics consistent with approved land management plans, or if that is infeasible, then to restore or establish a healthy, stable ecosystem in which native species are well represented.
- To repair or replace minor facilities damaged by wildland fire.

3.2.2 Priority

- To repair or improve lands damaged directly by a wildland fire; and
- To rehabilitate or establish healthy, stable ecosystems in the burned area. If it becomes necessary to prioritize, this will be done by the Department of the Interior National Burned Area Rehabilitation (NBAR) coordinators based on relative values to be protected, commensurate with rehabilitation costs. All burned area rehabilitation plans and actions must reflect these priorities.

3.2.3 Allowable Actions

- Repair or improve lands unlikely to recover naturally from wildfire damage by emulating historical or pre-fire ecosystem structure, function, diversity, and dynamics consistent with existing land management plans.
- Chemical, manual, and mechanical removal of invasive species, and planting of native and non-native species, consistent with 620DM3.8F, restore or establish a healthy, stable ecosystem even if this ecosystem cannot fully emulate historical or pre-fire conditions.
- Tree planting to reestablish burned habitat, reestablish native tree species lost in fire, prevent establishment of invasive plants, and regenerating Indian trust commercial timberland as prescribed by a certified silviculturalist to not regenerate for ten years following the fire.
- Repair or replace wildfire damage to minor operating facilities (e.g., campgrounds, interpretive signs and exhibits, shade shelters, fences, wildlife guzzlers, etc.). Rehabilitation may not include the planning or replacement of major infrastructure, such as visitor centers, residential structures, administration offices, work centers and similar facilities. Rehabilitation does not include the construction of new facilities that did not exist before the fire, except for temporary and minor facilities necessary to implement burned area rehabilitation efforts.

3.3 Safety

Employee and Public Safety Is the First Priority in Every Management Activity. All planning and implementation activities must reflect this commitment. A job hazard analysis will be prepared for each incident activity.

3.4 Definitions (as in 620 DM 3)

Agency Administrator:
Line officer (or designee) of the agency or jurisdiction that has responsibility for the incident. For the following agencies, this unit may include:

- Bureau of Indian Affairs (BIA) - Director, Office of Trust Responsibility, Regional Director, or Superintendent.
- Bureau of Land Management (BLM) - Director, State Director, District Manager or Field Office Manager.
- Fish and Wildlife Service (FWS) - Director, Regional Director, Complex Manager or Project Leader.
- National Park Service (NPS) - Director, Regional Director, Park Superintendent, or Unit Manager.

Burned Area Rehabilitation Plan (BAR Plan):
A document that specifies treatments required to implement post-fire rehabilitation policies. This plan may be programmatic (prepared in advance) and applicable to clearly defined types of incidents and situations, or prepared by an interdisciplinary team of specialists during or immediately following the containment of a wildland fire.

Burned Area Rehabilitation Team (BAR Team):

A standing or ad hoc group of technical specialists (hydrologists, rangeland management specialists, biologists, soil scientists, etc.) that are assigned to prepare a BAR Plan.

Burned Area Emergency Response:
Planned actions to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life or property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources.

Emergency Stabilization.
Planned actions to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life or property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources. Emergency stabilization actions must be taken within one year following containment of a wildland fire.

Fire Suppression Activity Damage:
Damage to resources, lands, and facilities resulting from wildfire suppression actions, in contrast to damages resulting from a wildfire.

National Burned Area Rehabilitation Coordinators Group (NBAR):
The coordinators consist of a representative from the Department of the Interior (DOI) bureaus (BIA, BLM, FWS, NPS) and the Office Wildland Fire Coordination.

Non-Native Invasive Species:
Species that were not components of pre-European settlement vegetative communities:

- which have been introduced, either deliberately or inadvertently;
- which have the capacity to aggressively invade new habitats, displacing and out-competing native species, and;
- whose in which introduction does or is likely to cause economic or environmental harm or harm to human health.

Rehabilitation:
Efforts (non-emergency) undertaken within three years of a wildfire to repair or improve fire-damaged lands which are unlikely to recover to management approved conditions; or to repair or replace minor facilities damaged by fire.

Restoration:
The continuation of rehabilitation beyond the initial three years, or the repair or replacement of major facilities damaged by the fire.

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.

- **Wildfire** – An unplanned, unwanted wildland fire including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the wildfire out.
- **Wildland Fire Use** – The application of the appropriate management response to naturally-ignited wildland fires to accomplish specific resource management objectives in pre-defined designated areas outlined in Fire Management Plans. Operational management is described in the Wildland Fire Implementation Plan (WFIP).
- **Prescribed Fire** – Any wildland fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements (where applicable) must be met, prior to ignition.

3.5 Program Coordination

The BIA, BLM, NPS, and FWS will coordinate BAR program activities locally and nationally. Coordination of BAR efforts with the incident management team, other federal land management agencies, other federal (e.g., NRCS, BOR, DOD, USGS, etc.), state and local agencies, tribes, and private landowners is encouraged to meet program objectives. BAR activities need to be closely coordinated with resource managers and other non-wildfire rehabilitation activities to avoid potential conflicts.

3.5.1 Preplanning

Internal/external coordination can be a important process in the successful implementation and completion of all phases of BAR.

The local unit staff should:

- Identify key external agency contacts prior to the wildfire season.
- Jointly review the rehabilitation and restoration section of the Fire Management Plan (FMP).
- Identify potential treatments for BAR within a unit's Fire Management Plan.
- Identify in advance suppliers, equipment, storage facilities and identifying seed mixes and implementation personnel.
- Meet with all BAR technical specialists, wildland fire management staff, and other appropriate staff to discuss roles and responsibilities and to clarify areas of disagreement and/or confusion.

3.6 Timeframes

- Burned Area Rehabilitation (BAR) finances post-fire efforts up to three years from the containment date of the fire. Treatments and activities are funded in one-year increments and are reviewed at the end of each fiscal year and funded with the next fiscal year funds, as appropriate.

- BAR is a non-emergency activity and the completion of the BAR Plan and plan approval is driven by any activity or treatment implementation needs (e.g., herbicide treatment effectiveness).
- Funding for this activity is competitive among bureaus and is based on proposed projects submitted through the National Fire Plan Operations and Reporting System (NFPORS).
- NFPORS data entry is accomplished following plan approval and upon activity or treatment accomplishment
- An annual accomplishments reports including monitoring results are required by the beginning of the fiscal year.
- A final treatment accomplishment report will be submitted within 60 days following the completion of planned burned area rehabilitation treatments, or at the latest, 3 years plus 60 days following wildfirecontainment which ever comes first.

3.7 Funding Rules

Funding for this activity is competitive among bureaus and is based on proposed projects submitted through the National Fire Plan Operations and Reporting System (NFPORS). The competitive funding awards are approved by the Interior National Burned Area Rehabilitation Coordinators on a priority basis using established common criteria. Rehabilitation treatments and activities are normally funded the fiscal year following the wildfire unless rehabilitation contingency funds are available that are distributed on a first come first serve basis. Treatments and activities are funded in one-year increments and are reviewed at the end of each fiscal year and funded with the next fiscal year funds, as appropriate. While there is no guarantee that subsequent year projects are funded, continuation of previous year funded projects is a priority in the BAR Funding Criteria (as found on the Department of the Interior Emergency Stabilization and Burned Area Rehabilitation web site). Should requests exceed available funding, plans are prioritized based on values at risk and priorities to meet resource objectives.

Selection of the funding awards on prior-year fires will occur shortly after the start of the fiscal year. Funding will be distributed upon passage of the Interior Appropriation bill. Projects may be funded in midyear if contingency funds are available. After the plan is approved, the National Burned Area Rehabilitation Coordinator will prepare a fund transfer request.

4 BAR Standards

BAR treatments/activities are intended to repair or improve lands damaged directly by the wildfire and unlikely to recover naturally from severe wildfire damage or repair or replace wildfire damage to minor operating facilities. These treatments/activities must be in accordance with approved management plans and applicable agency policy, standards, and all relevant federal, state, and local laws and regulations. BAR funds can only be used for burned area assessments, BAR Plan development and implementation, and monitoring on agency lands within the perimeter of the wildfire or potential impact area downstream from the burned area (see Departmental guidance on Wyden Amendment in Appendix I). The cost of BAR treatment(s) will be commensurate with the values to be protected.

Standard treatments are to be used that have been validated by monitoring data from previous projects, or when there is documented research establishing the effectiveness of such actions.

4.1 Treatment Considerations

4.1.1 Cadastral Survey

BAR funding for cadastral survey activities is only provided if the information is needed for BAR Plan development and implementation. Project areas have cadastral survey work done with BAR funds only where land ownership adjacent to proposed BAR treatments is in question—not to answer long-standing, large-scale ownership questions. Survey monuments must be located and flagged for avoidance prior to any surface disturbing activity that could result in damage to or destruction of the survey monument.

4.1.2 Experimental Technology

Experimental technology (equipment, plant materials, etc.) that has not previously been field tested and proven to be effective is not funded with BAR funding. Research projects are coordinated through the local agency administrator and may be funded through the Joint Fire Science Program or other funding sources.

4.1.3 Prescribed Fire and Wildland Fire Use

Prescribed Fire - BAR funding is not appropriate for prescribed fire actions. However, if a prescribed fire is converted to a wildfire, then BAR funding may be appropriate for only those acres that are delineated or partitioned following the conversion or declaration as a wildfire.

Wildland Fire Use - BAR funding is not appropriate for wildland fire use. However, if a wildland fire use wildland fire is converted to a wildfire, then BAR funding may be appropriate for only those acres that are delineated or partitioned following the conversion or declaration as a wildfire.

Any treatments determined to be necessary on prescribed or wildland fire use that have not been converted or declare wildfires, must be paid for by the prescribed fire, wildland fire use or benefiting activity project funds.

4.1.4 Fuels Management

Post-fire fuel management activities that are designed to address a fuels issue and not site rehabilitation are not appropriate for BAR funding.

4.1.5 Clean Water Act

The Corps of Engineers may require modifications to BAR treatments to ensure that the environmental impacts to stream channels or wetlands are minimal under General Permit 37.

4.1.6 Wildfire Suppression Activity Damage Repair

Suppression activity damage repairs are the responsibility of the Incident Commander and are funded using the suppression account. This work should be completed by the incident management team prior to final demobilization of the suppression forces whenever practical. However, it may be more cost-effective and practical to delay some repairs to improve the chance of success. It is the responsibility of the agency administrator to ensure suppression activity damage repair.

4.1.7 Wildlife

Wildlife populations may continue to degrade unburned areas in and adjacent to the burned area, and may have a major effect on the success of BAR treatments. Agreements with the appropriate fish and wildlife management agencies (if needed) should be developed before the BAR treatments are implemented, prescribing how wildlife is managed. The BAR Plan should identify what measures are needed to prevent further burned area degradation from wildlife use, and treatment specifications should address timely implementation.

Treatments to mitigate the loss of fish and wildlife habitat are appropriate for BAR funding. BAR treatments must be consistent with wildlife habitat management objectives in approved habitat management plans. As with other treatments, a combination of criteria including cost, adaptability, probability of successful establishment, etc., should be considered before finalizing a prescription in important wildlife habitats.

4.2 Treatment Standards

4.2.1 Cultural Resources

BAR funds cannot be used for restoration of any cultural resource or heritage site.

BAR funds are used to ensure burned area rehabilitation treatments conform to Section 106 of the National Historic Preservation Act (NHPA).

- Burned area rehabilitation treatments that disturb the soil surface are reviewed for potential effects on significant cultural resources. The appropriate agency cultural resource specialist should become involved in treatment planning as early as possible.
- Treatments evaluated as No Historic Property (no historic properties present), or as actions permitted under existing agency programmatic agreements (PA) or memorandum of agreement (MOA) can be undertaken without further State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) consultation. Treatments with no adverse effect can be undertaken after appropriate consultation with SHPO or THPO. Treatments with adverse effect should be addressed by the agency cultural resource coordinator.

4.2.2 Non-native Invasive Control

Burned area rehabilitation funds can be used to control non-native invasive plants in burned areas only if an approved management plan and existing program is in place addressing non-native invasive species control.

The use of integrated pest management methods is preferred when addressing the management and control of existing or potential invasive non-native plant species. The rehabilitation program funds the use of chemical, biological, mechanical, cultural, and physical treatments necessary to minimize the establishment of invasive species in conjunction with vegetative treatments, or for site preparation proposed for other rehabilitation treatments. The pesticides proposed must be previously approved for use on public lands. All applicable label and environmental restrictions must be followed. Control of invasive species also complies with Executive Order 13112, Invasive Species which promotes the control of invasives to minimize their impact.

Allowable Actions

- Assessments to determine the need for treatment. Contingent:
  - Known infestations
  - Possibility of new infestation due to management actions
  - Suspected contaminated equipment use areas
- Treatments to prevent detrimental invasion (not present on the site) by non-native invasive species.
- Treatment of invasive plants introduced or aggravated by the wildfire. The treatment objective when the population is aggravated is to maintain the invasion at no more than pre-wildfire conditions.

Prohibited Actions

- Systematic inventories of burned areas.

The treatment specification must include a threshold level where the treatment is initiated (e.g. presence of Canada thistle, 10 percent cover of cheat grass, etc.) and a practical, cost-effective management action to be undertaken (mechanical removal, broadcast herbicide application, etc.).

4.2.3 Re-vegetation

Natural recovery by native plant species is preferable to planting or seeding, either of natives or non-natives. It is essential that the potential for recovery of native or seeded vegetation and invasion by weeds be evaluated prior to making a decision whether to seed a burned area. Re-vegetation of burned areas is not an appropriate use of BAR funds if natural regeneration will result in a vegetation type that meets BAR objectives.

Planting of seed or seedlings for BAR is an appropriate treatment if seeding or planting of vegetation is prescribed to be effective within Departmental policy and it repairs or improves land unlikely to recover naturally from wildfire damage by emulating historical or pre-fire ecosystem structure, function, diversity, and dynamics consistent with existing land management plans.

The use of pesticides must be identified in an existing approved management plan and have an existing integrated pest management program and implement the bureau pesticide use permit process. Site preparation using integrated pest management methods on burned land may be funded with BAR funds for re-vegetation treatments (see non-native invasive species control section). The potential for invasive non-native plant invasion is considered when developing the seed prescription.

Native versus Non-native Plants - Species planted on burned areas must provide the protection required by BAR Plan objectives, be consistent with the appropriate approved land management plan, and be in compliance with Executive Order 13112, Invasive Species, February 3, 1999.

Non-native seed may be used when allowed in agency policy. Use of native species is preferred to the use of non-natives for BAR treatments. However, a mixture of native and non-native species is preferable to using only non-natives if the desired natives are not available, and if the use of non-natives is consistent with approved land management plans.

Competitive non-natives should be avoided in the seed mixture to facilitate the establishment and persistence of the native species.

Testing of Seed and Vegetative Material - All seed is tested to ensure compliance with the State noxious-seed requirements recognized in the Administration of the Federal Seed Act. All purchased seed must meet all requirements of the Federal Seed Act (7 USC 1551-1610), the state seed laws where it will be delivered, and Federal specifications JJJ-S-181. All seed will be tested for purity and germination (Pure Live Seed or Tetrazolium) to meet contract specifications and should be tested for weed and noxious weed seed by an independent seed testing organization. Certified seed (e.g., source identified tag) ensures the genetic origins of the parent plant material or the collection origin.

Tetrazolium tests, performed by state seed laboratories, may be used on shrub seeds and for species where dormant or hard seeds are common. Tetrazolium tests may also be authorized by the agency when seed laboratories do not have enough lead time to use a full germination test.

The use of certified seed is required (if available) to ensure that desired genetic traits are present. The use of source-identified seed is recommended when native seed is collected from wildland sites to ensure that a local or otherwise adapted seed source is used to re-vegetate the burned area.

Straw and other vegetative mulch materials should be purchased as certified weed-free by a State agricultural agency or should be sampled and tested for noxious weeds prior to use.

4.2.4 Forest Management

Forest management may be considered if the ecosystem is unlikely to recover naturally from wildfire damage as prescribed by a certified silviculturalist to not regenerate for ten years following the fire. Tree planting is limited to the following; the use of BAR funds to plant trees must be addressed in an approved land management plan:

- Facilitating the succession and stabilization of forest ecosystems.
- Re-establishing habitat for federally listed threatened or endangered species, or other special status species.
- Reintroducing or re-establishing native tree species and seed sources lost in a stand replacement fire.
- Reforestation on Indian trust lands.

BAR funds **cannot** be used for timber salvage assessment and the costs associated with the actual salvage sale (i.e., timber inventory, contract preparation, etc.).

4.2.5 Livestock, Wild Horse and Burro Management

Exclusion of livestock, wild horses or burros may be critical for the recovery of burned vegetation or establishment and maintenance of new seedings.

Recovery/Establishment Period – Re-vegetated and recovering areas may be closed to livestock grazing to promote recovery of burned perennial plants and/or facilitate the establishment of seeded species. An assessment is needed to determine the length of time livestock exclusion is required to meet BAR objectives. Livestock permittees must be informed of potential closures early during the plan preparation process.
Grazing Management - Wild horses and burros may need to be excluded from treatment areas. BAR funds may be used for fencing or relocation (both actions must be consistent with approved land management plans and agency wild horse and burro policy) until the area recovers. Exclusion or relocation must occur before the animals can damage the remaining vegetation. Both actions must be consistent with approved land management plans, Wild Horse and Burro management plans, and agency wild horse and burro policy.

Movement of animals must be completed within one year of containment of the fire.

4.2.6 Federal Field Unit Infrastructure

Minor Facilities

The repair or replacement of minor improvements and facilities (e.g., kiosks, fences, interpretive or boundary signs, recreation facilities, corrals, guzzlers, trails, permanent long-term monitoring plots, etc.) burned or damaged by wildfire to pre-fire specifications is authorized with the use of BAR funds only if these improvements or facilities are necessary for implementing an approved land management plan . It does not include the construction of new or upgraded facilities that did not exist before the fire. BAR treatments and maintenance of BAR improvements beyond 3 years from containment of the wildfire is funded by other program funding. Minor facility repair or replacement must be addressed in the BAR plan.

Major Facilities

Replacement or repair of major facilities (e.g., visitor, centers, residential structures, administration offices, work centers or similar facilities and their contents) with BAR funds is prohibited.

4.2.7 Monitoring

BAR funds for monitoring are limited to:

Treatment Implementation: It is appropriate to determine if the treatment was implemented according to plan specifications.

Treatment Effectiveness: It is appropriate to monitor whether a treatment achieved its objective (e.g. whether herbicide eradicated the invasive species or whether willow and cottonwood trees successfully survived, grew, and rehabilitated the stream bank).

Prohibited Actions

- Monitoring to determine if the decision not to implement any treatment was appropriate (e.g., monitoring natural recovery). However, the use of an untreated area (control) in a paired comparison design to evaluate the effectiveness of a treatment is acceptable where values to be protected will not be affected by an untreated area.
- Monitoring the impacts or effects of the wildfire (e.g. water quality monitoring to evaluate the impacts of wildfire on the recovery of an endangered species; post-fire monitoring of threatened and endangered species presence or reproductive status and reproductive success, etc.).
- Long-term monitoring (more than 3 years following containment of the fire) related to treatment longevity and effectiveness.
- Research

- It is not appropriate to monitor to determine the indirect effects of a treatment (e.g., changes in wildlife habitat structure, condition, or use).

Monitoring intensity should be commensurate with the treatment investment, complexity of the BAR treatments, and level of concern or controversy associated with the BAR treatment.

4.2.8 Public Use Management

Agency administrators should consider area closures to protect public safety, natural recovery, and active BAR treatments. Burned or seeded areas may be temporarily closed to the public by excluding vehicle, bicycle, horse, and foot use if unacceptable resource damage would occur or if danger to the public is present due to wildfire damage or BAR activities. Land management plans should be reviewed prior to implementing BAR measures to identify other areas of special management concern (Areas of Critical Environmental Concern, outstanding natural areas, primitive areas, Wild and Scenic Rivers, National Trails, Research Natural Areas, National Conservation Areas, National Monuments, etc.) to ensure BAR treatments are consistent with management objectives for these special management areas.

Law Enforcement - Law enforcement activities should be accomplished within existing capability and funding authority, or by shifting priorities. Law enforcement is not typically funded using BAR funds except in unusual circumstances.

4.2.9 Threatened and Endangered Species

All BAR Plans should be reviewed to determine if threatened or endangered species or their habitat would be benefited or adversely affected by the implementation of BAR treatments. Agencies must consult with the U.S. Fish and Wildlife Service (Ecological Services Offices) or National Marine Fisheries Service, as appropriate, on all BAR actions that may affect a threatened and endangered listed species or its habitat to ensure compliance with Section 7 of the Endangered Species Act. Timeframes for review and consultation may last several months. Therefore, every effort should be made to initiate these actions early in the BAR planning process.

Post-fire monitoring of threatened and endangered species status or recovery is not funded with BAR funds unless the monitoring is for the purpose of assessing treatment effectiveness of threatened and endangered species habitat rehabilitation measures and is in an approved BAR Plan.

4.2.10 Removal of Treatments

Any treatments, or parts thereof, installed using BAR funds can be removed using BAR funds if removal is completed within three years of containment of the wildfire. If treatments remain after three years of wildfire containment other funds must be used for removal costs and other programs must become responsible for managing and maintaining the treatments.

5 Program Administration

5.1 Roles and Responsibilities

Agency Administrator directs and coordinates the development and implementation of all management operations of an administration unit. This includes developing and implementing the BAR Plan.

Agency/Bureau BAER Coordinator coordinates program issues within their own agency/bureau.

Regional/State BAER Coordinator coordinates program issues within their own regions/states.

Burned Area Rehabilitation (BAR) Team assesses the need for BAR treatments/activities and prepares a BAR Plan for the agency administrator. BAR teams are established to quickly address BAR issues.

5.2 BAR Program Funding

Funding for BAR treatments/activities is provided under Wildland Fire Management funding authorities. See Chapter 4 for appropriate and inappropriate use of the BAR funds.

See Chapter 3.7 Funding Rules for how projects receive consideration for funding.

5.2.1 Cost Accounting

Agency specific cost tracking processes are used to accurately track expenditures. Use Fire Codes to track funding. The complexity of the project dictates the complexity of the cost tracking system.

5.2.2 Personnel Funding

All participants may fund their base 8 hours from BAR. Though BAR is a non-emergency activity, it is an unpredictable amount of unplanned work; however, careful planning should eliminate any need for overtime. If overtime is needed, overtime hours can be charged to BAR. Performance awards can be funded with BAR funding, but only with the approval of the bureau's National Burned Area Emergency Response Coordinator. Administratively Determined (AD) personnel cannot be used on BAR projects.

For further information on overtime, hazard pay, and other personnel funding issues see Interagency Incident Business Management Handbook.

5.3 Planning

Each BAR project requires the preparation, submittal, and approval of a BAR Plan. The BAR Plan is written separately from the Emergency Stabilization / Burned Area Emergency Response (BAER) Plan.

5.3.1 BAR Plan

The BAR Plan must be consistent with approved land and resource management plans. Development of the BAR Plan objectives are guided by resource management objectives and general management practices identified in approved land and resource management plans.

Though the non-emergency nature of BAR planning allows bureaus to use normal local unit resources and a normal planning approach, it is an unpredictable amount of unplanned work requiring careful planning.
An approved BAR Plan is required before any BAR funds can be obligated toward implementation. Written approval is required for all activities and treatments and will be documented in the final BAR Plan.

5.3.2 Transition to Resource Management Activities

Frequently, BAR treatments/activities initiates a management action that is significantly longer than the three year funding limitations (e.g., non-native invasive species control, appropriate livestock and animal management, etc.) The BAR Plan should identify the types of programs, funding and steps that are needed to tie BAR to long term management programs and their goals. The Plan may also identify other potential program areas and funding sources able to accommodate these added long-term management commitments and actions beyond the three year funding limits. Unless long-term activities are fully integrated into the other program areas, the ultimate success of the activity and the benefits to the resource may be jeopardized.

5.4 BAR Program Accountability

Accountability for the BAR program lies with each agency's administrator. Individual agencies establish accountability responsibilities for:

- Plan review and approval/disapproval (resource and funding appropriateness)
- Financial accountability
- Plan implementation
- Plan implementation review and evaluation
- Program review and evaluation

Significant deviations from treatment specifications or costs as prescribed in the approved plan require a plan amendment. All treatments/activities, including plan amendments, must be completed within three years of wildfire containment.

Accomplishments are tracked and reported in the corporate database (e.g., NFPORS). Fiscal obligations and accomplishments are tracked and documented by an annual accomplishment report each fiscal year. A final accomplishment report is required after completion of the BAR project. Any BAR funds not expended following completion of the plan cannot be used for other purposes.

To sustain accountability for provided funding, annual and final accomplishment reports (See section 7.10) are to be submitted to the approval authority. The corporate database must be kept current. The annual accomplishment report should include treatments applied, dollars spent, treatment effectiveness, monitoring results, and an assessment in narrative form of each aspect of the project. The annual and final accomplishment reports are a mandatory requirement for continued treatment effectiveness monitoring funding and account closure.

5.5 Information Management

Approved BAR Plans, treatment effectiveness reports, and accomplishment reports should be shared with other federal and non-federal agencies/bureaus.

5.6 Agreements

Agreements can be made between agencies for the implementation of BAR activities and treatments. Funding for Bureau of Reclamation projects will be from that Agency's funds only.

There must be an agreement before any service is performed. Without an agreement, there is no authority to obligate funds for services. Specifications for funding responsibilities should include billing procedures and schedules for payment. Any agreement that extends beyond one fiscal year must be made subject to the availability of funds. Any transfer of federal property must be in accordance with federal property management regulations. All agreements must undergo periodic joint review and, as appropriate, revision.

Because funding for burned area rehabilitation treatments is provided in one-year increments for no more than three years following containment of a wildland fire, agreement to obligate funds in one fiscal year for use in another is only done when there is not sufficient time to initiate and complete the contracting necessary to begin treatment work identified in an approved plan.

The chart below is a synopsis of the three basic agreement types, contract, interagency agreement, and memorandum of understanding.

TYPES OF AGREEMENTS

TYPE OF AGREEMENT	DEFINITION	SIGNATORY AUTHORITY	REFERENCES	CONTACT FOR INFORMATION
Contract	A mutually binding legal document obligating the seller to furnish supplies or services (including construction) and the buyer to pay for them.	Only warranted Contracting Officers may award contracts.	Federal Acquisition Regulations, 48 CFR; and Department Acquisition Regulation System.	Respective Headquarters or regional office Contracting Officer
Interagency Agreement	An agreement between Federal Agency(ies)/Bureaus used to reimburse an Agency for goods or services provided to the agency.	Warranted Contracting Officers are the only officials who may award Interagency/ Intra-Agency Agreements in combination with the respective agency administrator.	Federal Acquisition Regulations, 48 CFR 17.5; and Department Acquisition Regulation.	Same as above.
Memorandum of Understanding (MOU)	A written agreement between the agency and another entity(ies) that confirms the use of cooperative policies or procedures to promote mutual endeavors.	MOUs are signed by the Director/Deputy Commissioner or agency administrator.	Internal Guidance	Same as above.

5.7 Cooperation on Adjacent Lands

5.7.1 Wyden Amendment (16U.S.C.1011(a)) as modified by Section 136 of P.L. 105-277 as amended by P. L. 109-54 (expires 2011).

Appropriations made for the Bureau of Indian Affairs, Bureau of Land Management, National Park Service, and US Fish and Wildlife Service may be used for the purpose of entering into cooperative agreements for the protection, restoration, and enhancement of resources on public or private land and the reduction of risk from natural disaster where public safety is threatened on public lands.

Burned area rehabilitation funds may be used to enter into cooperative agreements with Federal, state, tribal, local governments, private nonprofit entities, and landowners. When emergency stabilization funds are used under the Wyden Authority, treatments must meet the same criteria for rehabilitation appropriateness and timelines as rehabilitation treatments accomplished DOI lands. Follow appropriate agency direction on entering an agreement. Appropriate cost-sharing protection and liability agreements should be included in the cooperative agreement with the land owner. A cooperative agreement must be signed and in place prior to commencement of any work on those private or non-federal lands.

See Appendix I. Department of the Interior Wyden Guidance

6 Plan Development

Burned area assessments are conducted to validated anticipated BAR needs either defined in fire and resource management plans or identified in initial fact finding activities. The assessment determines what realistic and cost effective BAR treatments are needed; not to document the effects of the wildfire (i.e., natural or cultural resource damage, fire effects, etc.) or to validate whether an appropriate management response (e.g., limited or modified suppression) was appropriate. BAR planning is funded through burned area rehabilitation if funds are available.

6.1 Assembling the Planning Team

The agency administrator is responsible for BAR Plan development which may include assembling an interdisciplinary planning team to conduct burned area assessments and begin plan development. If BAR actions are anticipated, the BAR team should be assembled and ready to work within sufficient time to complete the BAR Plan to meet agency timelines. BAR Teams can be a standing or ad hoc group of technical or scientific specialists that may be local, regional, or national. BAR Plans can be multi/interagency when agency administrators agree that a multi/interagency plan is appropriate.

Team size and make-up will vary dependent on the wildfire size, values to be protected, time frames, and jurisdictions involved. Generally the team should include resource specialists (geomorphology, soils, hydrology, revegetation, wildlife, ecology, range, watershed, invasive species, historic properties, etc.), members knowledgeable about post-fire impacts and effective rehabilitation techniques and local unit resource advisors. Adding trainees to a BAR project is encouraged.

A team member may represent several skills. Inclusion in the team of expertise from cooperating agencies or offices is encouraged, especially when the needed skills are not available within the agency. Access to needed expertise can be obtained through the Interagency Qualifications and Certification System or through contracts.

6.2 Review of Current Available Resources and Wildfire Data

Prior to field inspection of the burned area, the planning team should:

- Receive a start up briefing with agency administrator.
- Review Emergency Stabilization or Burned Area Emergency Response Plan if available.
- Review the field unit fire, land, and resource management plans.
- Review all wildfire suppression operational plans, resource advisor reports, and the Wildland Fire Situation Analyses. Suppression plans/actions provide valuable information concerning the relative values the field unit places on individual resources. Compile incident GIS data.

- Have all existing relevant resource management data including monitoring studies, inventories (vegetation, cultural, and Threatened and Endangered, including sensitive species), state comprehensive wildlife conservation strategies, and previously implemented BAR plans.
- Review monitoring studies and vegetation inventories which provide valuable information on pre-burn invasive species populations and plant composition that may be useful in deciding what actions may be necessary, or whether natural recovery may preclude the need for intensive treatments.
- Climate and hydrological data.
- Review information on fire history, fire ecology and effects, fire management planning, historic properties
- Review treatment effectiveness monitoring data on the success or failure of past wildfire stabilization and rehabilitation treatments. This is essential in developing proposed treatments.
- Review soil surveys which contain important information on characteristics of soils relative to erosion potential, the success of seeding, ecological site information, seeding success potential, and other important information.
- The planning team should review and become familiar with the information contained in the Fire Effects Information System (FEIS) computerized database, the *Fire Effects Guide*, and other relevant literature, documentation, and expertise. The FEIS is described in *Fire Effects Information System: User's Guide*, *USDA Forest Service General Technical Report INT-GTR-327*. It contains information on 900 plant species, 90 animal species, and 25 plant communities. Summaries are updated periodically as new wildland fire ecology information becomes available. The *Fire Effects Guide*, sponsored by the NWCG, is available from the Publications Management System manager at the National Interagency Fire Center (NIFC) warehouse as NFES 2394. Numerous other technical references should also be consulted and are available on the Internet (including the NRCS websites) and other locations to ensure that the appropriate techniques and plant species are utilized in planned projects.
- Another source of information about potential species to be used in re-vegetation is the NRCS-USGS Biological Resources Division VegSpec website **(**http://plants.usda.gov). The VegSpec is a web-based, expert system that aids technical people or managers in making sound decisions on what plants to plant on specific sites. It integrates the Natural Resources Conservation Service (NRCS) soils, plants, and climate databases for plant selection which addresses conservation problems. Other sources of information on vegetation (including the potential for invasion by undesirable species), soils, and site potential (ecological site) should also be reviewed to help determine if seeding is necessary is for the success of the BAR project.
- Review other relevant available information.

Areas of concern (e.g. wilderness and wilderness study areas, areas of critical environmental concern, erosion hazards, threatened and endangered species habitats, historic properties etc.) should also be identified from field unit records prior to field inspection.

Aerial photographs, geospatial data, and maps are essential tools for the planning team to include on initial wildfire inspections. Habitat improvements and other agency facilities within the

wildfire perimeter are plotted on maps/photos to assist the team in identifying burned structures for reconstruction or replacement consideration.

The planning team may develop a burned area map delineating burn severity using accepted protocols and definitions for the purpose of focusing their assessment activities.

6.3 Burned Area Assessment

After the preliminary information has been reviewed and assembled, the planning team conducts one or more field inspections of the burned area to assess values at risk as a result of the wildfire. Aerial and ground assessments must be coordinated with the Incident Management Team Commander.

Values to be protected may include natural and cultural resources, threatened and endangered species, potential for exotic invasives, and soil productivity and minor Federal facilities. Once identified, values to be protected should be evaluated for appropriate BAR action. These evaluations may require coordination with local specialists and appropriate models should be used and referenced.

Burn severity mapping may be useful for prioritizing assessment issues and areas for field evaluation.

6.4 Planning Team Recommendations

Upon completion of the burned area field inspections, the planning team reports its initial findings and recommendations and provides an agency administrator briefing. Identification of values to be protected and BAR needs are discussed with the agency administrator. Options for BAR, potential costs, consultation and cooperation needs, and potential controversies associated with the proposed treatments are presented at this time. The agency administrator accepts, modifies, or rejects the team's recommendations and gives direction to the team how to proceed with BAR Plan development.

6.5 Preparing the BAR Plan

In most cases, it is a local BAR team that will prepare the BAR Plan. However, if an outside team is called in, it is expected that local resources will provide support and assistance in the preparation of the BAR Plan. In preparing the BAR Plan, the team should work with the field unit staff to take the following actions:

- Determine the availability and cost of the treatment or activity supplies (e.g. seed proposed for planting).
- Begin making arrangements for the cultural and threatened and endangered species consultations, including coordinating with agency contracting specialists.
- Determine the availability and make preliminary arrangements for necessary equipment.

- Coordinate with the agency administrator and with affected or interested parties regarding proposed BAR practices.
- Coordinate with the Regional/State/National Office on complex or controversial BAR funding issues or technical questions.

Information needed to complete the plan may include:

- Agency review and approvals.
- Summary wildfire narrative and activities and treatments needed.
- Fire location and background information.
- Type of plan (e.g., initial submission, or amendment).
- Values at risk.
- Values to be protected and their location.
- BAR objectives.
- Planning team organization and membership.
- Activity and treatment specifications.
- BAR funding needs.
- Consultations made by the planning team.
- Burn area assessments.
- Environmental compliance documentation
- Explanation of treatments with respect to values at risk.
- Maps, photo documentation, supporting documents, etc.
- Monitoring objectives and procedures/protocols.
- Anticipated restoration activities

BAR Plan templates and examples are available at agency and the DOI website.

6.6 BAR Plan Approval

All BAR plans are approved by the appropriate line officer and funded at the national office. The planning team completes the plan and obtains an initial review from policy, technical, or other interested parties prior to the submission of the plan to the national office for funding approval. If problems are defined, they should be worked out before the plan is submitted for approval. The agency administrator is responsible for submitting the BAR Plan through the regional/state office to the national office for funding approval.

The agency administrator, planning team, or approving official is encouraged to request input from the State, Regional and/or National Office staffs on any BAR Plan before submitting it for approval. The use of electronic means of transmitting plans is encouraged.

6.7 Transition to Plan Implementation

Ideally, BAR Plan development personnel are the same people assigned to implementation. When the plan is implemented by a different team, the implementation team leader should be involved in the planning effort.

With regional/national teams, planning and implementation personnel may be different (e.g., standing BAR team completes the planning and the local unit personnel complete the implementation of approved treatments). In this case, it is important to prepare a transition memo (from the planning team to the affected agency administrator(s)) with implementation recommendations, and all BAR Plan file(s). These measures should help to ensure a clean, organized transition from planning to implementation. It is also important that the departing planning team conduct a close-out and transition meeting with the affected agencies to discuss the findings of the burned area assessments, treatment proposals and other mitigation measures, and approval and funding procedures. This transition meeting should include the following key transition individuals: agency administrator, resource advisor, fire management officer, planning team leader, implementation team leader, and administrative/procurement officer. The planning team may be contacted by implementation personnel to explain specific aspects of the plan.

Treatment specifications in the Plan should be sufficiently detailed that the implementers do not have to reanalyze the treatment need, extent, character and costs or to question the practicality of the treatment.

6.8 Plan Amendment

The Plan may be amended at any time. Maintenance, repair or replacement of BAR treatments can occur for up to three years following wildfire containment dependent on contingency or competitive funding being available.

6.9 Planning of Treatment Effectiveness Monitoring and Evaluation

BAR Plans must include provisions for monitoring and evaluation of treatments.

Monitoring and evaluation of post-fire treatments are critical for understanding and improving such treatments. The objective of treatment effectiveness is to determine if plan objectives were met. Effectiveness monitoring is used to evaluate whether the installed treatment had the desired effect. This information is used to adapt management treatments and activities for the current and future projects to increase effectiveness.

Monitoring intensity should be commensurate with the complexity of the BAR treatments and the level of concern or controversy associated with the BAR treatment. The effectiveness monitoring specification should document the specific monitoring objective for that project, the monitoring protocol, personnel/equipment needed, and the funding needs. Those treatments that have been identified for effectiveness monitoring, must have monitoring provisions and procedures specified. Procedures for collecting, archiving and disseminating results are also necessary, and results should be entered into the existing corporate database.

Provisions for monitoring beyond the three year limitation must be considered from other program funding.

7 BAR Plan Implementation

7.1 Implementation

Actions to implement BAR treatments should begin immediately upon plan funding approval. Implementation should begin as soon as necessary to complete the treatment prior to the rainy season, onset of winter, weather, or other shutdowns. Potential delays or issues should be addressed early in the implementation process to facilitate completion of treatments at the proper time to ensure maximum probability of success. Implementation complexity increases dramatically in situations where a wildfire has burned across property boundaries.

7.2 Responsibility and Coordination

Unlike the planning effort, which is often done by a single interagency team, each affected agency identified in the BAR Plan must assume the overall responsibility for the implementation of treatments on the lands it manages. Private, state, county, and city lands are typically coordinated by the Natural Resources Conservation Service (NRCS) through the Emergency Watershed Program (EWP). Whenever possible, treatment implementation should be coordinated across agency lines by "piggy-backing" on existing contracts, sharing contracting officer's representative (COR) responsibilities, etc. Cooperation between agencies charged with the implementation of similar or identical treatments within the same wildfire perimeter is not only possible, but is highly encouraged as opportunity for real cost savings and management efficiency.

7.3 Project Management

The agency administrator should assign an implementation leader to ensure all plan treatments/activities are completed on time and according to the specification. Depending on the complexity of the plan, this may be a collateral or full time duty. The project implementation leader's duties may include:

- Safety of implementation activities.
- Supervising plan and individual treatment specification preparation and implementation.
- Equipment and supply procurement.
- Ensuring contract administration by certified CORs.
- Coordination with region/state/national coordinator.
- Implementation monitoring.
- Accomplishment reports (annual, final).
- Corporate database documentation.

Treatments must conform to federal procurement laws, rules and regulations and agency and Departmental manuals. Rehabilitation treatments and activities are normally funded the fiscal year following the wildfire unless rehabilitation contingency funds are available. Treatments and activities are funded in one-year increments and are reviewed at the end of each fiscal year and

competitively funded with the next fiscal year funds, as appropriate unless this years contingency funds are available on a first come first served basis. The initial approved BAR spending authority is issued for the period up to one year following containment of the wildfire (monitoring and failed treatment maintenance may continue for up to three years). After submission of the final accomplishment report or the BAR funding time limit lapses (whichever comes first), appropriate BAR obligations cease and unspent funding authority is withdrawn. Accurate actual cost accounting records of expenditures must be kept by fiscal year in the annual accomplishment report.

Complex, long-term projects on large fires may require a formal Implementation Plan. This plan may include: organizational chart, communications plan, safety plan, priority treatment implementation, responsibilities, etc.

7.4 Project Records

Accurate and up-to-date records of estimated and actual expenditures must be kept. Projects should be structured in order to reduce the local administrative unit record keeping. Project records are kept at the local administrative unit and available for review and audit.

7.5 Organization

The implementation team leader is responsible for identifying procurement needs to the administrative officer and agency administrator early in the implementation phase. The Agency Administrator is responsible for providing procurement services. The implementation team leader and local administrative staff are responsible for establishing and maintaining effective working relationships. It is recommended that in complex situations, the implementation team should be organized using Incident Command System (ICS) principles.

7.6 Contract Inspection

For every treatment/activity installed through a contract, it is necessary to inspect and accept the work completed as specified in the contract. The inspection should verify that the work was completed according to the contract specifications. Contractors cannot be issued final payment until the inspection is completed and the work is acceptable and in compliance with contract specifications.

7.7 Preparation

Administrative units should anticipate (programmatic planning) and arrange for supplies, equipment, and services normally required for BAR work before the wildfire season. These arrangements may include blanket purchase agreements, open-end contracts, and so forth. Such arrangements may be done in conjunction with wildland fire management activities. (See NWCG Interagency Incident Business Management Handbook).

7.8 Project Maintenance

Some treatments/activities may require periodic maintenance to ensure continuous and effective functioning and to protect the financial investment in the treatment. Adequate maintenance must be provided until the conditions specified in the plan are met and the treatment measures are no longer needed. Structures used in BAR may be removed rather than maintained or replaced after they have outlived their design life and after the objectives in the plan are met.

Maintenance and removal of BAR structures are funded through the BAR program for up to three years after containment of the fire. If this removal occurs after the three year funding period, removal costs must be programmed and charged to the appropriate agency funding account.

7.9 Implementation of Monitoring

The annual accomplishment report contains information on monitoring progress/results and is required in order to continue to receive funding to monitor for an additional year.

Cooperative efforts in monitoring the results of BAR projects are encouraged; these efforts could be with research organizations, neighboring offices, other office programs, agencies, or universities.

Monitoring information and results should be entered and retained in an easily accessible corporate database. Information gained in monitoring is strongly encouraged to be shared through websites, professional papers, technical bulletins, symposia, workshops, training, etc.

7.10 Accomplishment Reporting

To provide for accountability for funding approved, a standardized, final accomplishment report must be filed with the approving official. The submission of the final accomplishment report effectively closes out the BAR portion of the project.

The agency administrator reports accomplishments on projects and tracks expenditures of funds under the Wildland Fire Management authority. The agency administrator is also responsible for entering data into the corporate database (NFPORS).

The final accomplishment report is a statement of what activities and treatments were completed. The information in the final report should include:

- The original specification and subsequent submissions.
- Descriptions of the implementation of the treatments, including final treatment maps and specifications.
- Expenditures.
- Completion date of the treatment(s).
- Projected follow-up activities and treatments.

- Treatment effectiveness monitoring results.
- Assessments for each of the resources affected, e.g., cultural, forestry, vegetation, fish and wildlife, soil and watershed, etc.

Failure to submit final accomplishment reports will curtail future BAR funding for the management unit.

7.11 After Action Review

An after action review (aka lessons learned) of every BAR Plan is necessary to identify information and knowledge gaps, training needs and research opportunities. It can identify what worked and what didn't from a process perspective. The appropriate timing is conditional on Plan implementation since actual implementation will identify the strengths and weaknesses in the Plan. These After Action Review reports should be shared.

7.12 Transition to Restoration

In order to support the initial burned area rehabilitation investment, provisions may be made to continue management and maintenance activities. Restoration funding comes from other funding sources.

8 References

Napper, C. 2005. draft Burned Area Rehabilitation Treatments Catalog. San Dimas Technology and Development Center, San Dimas, CA. 180p. http://fire.r9.fws.gov/ifcc/esr/baercat/baercat.htm

Department of the Interior Policy Manual 620DM3. http://elips.doi.gov/app_DM/act_getfiles.cfm?relnum=3610

Department of the Interior Emergency Stabilization and Burned Area Rehabilitation web site. http://fire.r9.fws.gov/ifcc/esr/home.htm

Fire Effects Information System http://www.fs.fed.us/database/feis/

NRCS-USGS Biological Resources Division VegSpec website. http://plants.usda.gov

Appendix 1. Department of the Interior Wyden Guidance

Department of the Interior Wyden Amendment Guidelines for use of Emergency Stabilization and Burned Area Rehabilitation Funding

Purpose: The purpose of this document is to provide Department of the Interior (DOI) bureaus with consistent guidance for entering into cooperative watershed agreements using emergency stabilization and burned area rehabilitation funds on lands managed by other Federal agencies, Tribes, States, local governments, private landowners, or nonprofit entities. These guidelines identify the types of treatments that may be covered using emergency stabilization or burned area rehabilitation funding, and how projects proposed under the authority of the Wyden Amendment will be managed.

Background. The expenditure of emergency stabilization and burned area rehabilitation funds are allowable under United States Code Title 16, Section 1011 (also known as the Wyden Amendment) on lands managed by other Federal agencies, Tribes, States, local governments, private landowners, or nonprofit entities.

The Wyden Amendment states: *For fiscal year 1997 and each fiscal year thereafter, appropriations made for the Bureau of Land Management including appropriations for the Wildland Fire Management account allocated to the National Park Service, Fish and Wildlife Service, and Bureau of Indian Affairs may be used by the Secretary of the Interior for the purpose of entering into cooperative agreements with the heads of other Federal agencies, tribal, State, and local governments, private and nonprofit entities, and landowners for the protection, restoration, and enhancement of fish and wildlife habitat and other resources on public or private land and the reduction of risk from natural disaster where public safety is threatened that benefit these resources on public lands within the watershed.*

DOI agencies may utilize the Wyden Amendment authority for the purpose of carrying out emergency stabilization (ES) or burned area rehabilitation (BAR) treatments utilizing ES or BAR funds. When the Wyden Amendment authority is used, a Watershed Restoration and Enhancement Agreement must be developed.

Emergency Stabilization Actions Allowed under Wyden

Emergency stabilization actions are limited under Wyden to minimizing threats to human life or property.

- Installing structures to slow soil and water movement endangering human life and property.
- Stabilizing soil to prevent mud and debris flows across public roads and into communities.
- Increasing road drainage frequency and/or capacity to handle additional post-fire runoff threatening public roads and communities.

- Installing protective fences or barriers to protect treated or recovering areas.
- Monitoring of treatments and activities for up to three years.

Burned Area Rehabilitation Actions Allowed under Wyden

Burned area rehabilitation actions are limited under the Wyden Amendment to repairing lands adjoining DOI bureau lands that protect investments on bureau lands and provide tangible benefits to bureau lands or resource responsibilities.

Before entering into a Watershed Restoration and Enhancement Agreement, the following conditions must be met:

The proposed action:

- is included in a Burned Area Emergency Response (Emergency Stabilization) and/or Burn Area Rehabilitation Plan.
- is adjoining DOI bureau (BLM, BIA, NPS, USFWS) lands.
- is part of the response to the same wildfire impacting DOI bureau lands.
- must be in combination or compatible with/support treatments proposed on DOI bureau lands.
- is subject to the planning, implementing, and funding policy and standards in the DOI policy manual 620 DM 3, Interagency Burned Area Emergency Response and Rehabilitation Guidebooks, and other relevant bureau guidance documents.
- must comply with all applicable Federal, State, and local laws and regulations, policies, and permit requirements (for example: National Environmental Policy Act, Clean Water Act, National Historic Preservation Act, and Endangered Species Act). Compliance and associated documentation for these acts must be negotiated, agreed to, and completed in advance.
- will be reviewed (Burned Area Rehabilitation plans only) by the national BIA, BLM, NPS, and USFWS burned area emergency response coordinators for the first three years of policy implementation for compliance with listed criteria and prioritization in the case of limited available funds.
- shall not supersede other emergency response statutory authorities provided for by the Homeland Security Act, National Response Plan, and the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Stafford Act) to provide a comprehensive, all-hazards approach to domestic incident management.
- must explore and document the potential use of other federal, state and local emergency programs such as the Natural Resources Conservation Service's Emergency Watershed Protection program.

Watershed Agreements. As stated in the Wyden Amendment, agreements may be either: (a) directly with a willing landowner or (b) indirectly through an agreement with a State, local, or Tribal government or other public entity, educational institution, or private nonprofit organization. A Watershed Restoration and Enhancement Agreement shall:

A. include such terms and conditions mutually agreed to by the Agency Administrator and the landowner;
B. improve the viability of and otherwise benefit the fish, wildlife, and other biotic resources on public land in the watershed;
C. authorize the provision of technical assistance by the Agency Administrator in the planning of management activities that will further the purposes of the agreement;
D. provide for the sharing of costs of implementing the agreement among the Federal government, the landowner, and other entities, as mutually agreed on by the affected interests;
E. ensure that any expenditure by the Agency Administrator pursuant to the agreement is determined by the Agency Administrator to be in the public interest.

Other Terms and Conditions:

The Wyden Amendment also states that the Agency Administrator may require such other terms and conditions as are necessary to protect the public investment on private lands, provided such terms and conditions are mutually agreed to by the Agency Administrator and the landowner.

For the purpose of conducting emergency stabilization and burned area rehabilitation treatments, the agreement:

- will not have an impact on states rights and responsibilities and will comply with the considerations, principles, and requirements of Executive Order 13132, Federalism.
- will identify which party to the agreement has responsibility for implementing each Burned Area Emergency Response and/or Burned Area Rehabilitation Plan treatment and activity.
- will stipulate neither emergency stabilization nor burned area rehabilitation funds are responsible for operation and maintenance of treatments beyond three years from containment of the wildfire.
- must state that the federal government will assume no liabilities.
- will include treatment effectiveness monitoring and reporting.

Tracking

All projects will be tracked via the National Fire Plan Operations and Reporting System (NFPORS). Projects will be tracked by the bureau administering the Watershed Agreement.

THE SECRETARY OF THE INTERIOR
WASHINGTON

ORDER NO. 3336

Subject: Rangeland Fire Prevention, Management and Restoration

Sec. 1 **Purpose**. This Order sets forth enhanced policies and strategies for preventing and suppressing rangeland fire and for restoring sagebrush landscapes impacted by fire across the West. These actions are essential for conserving habitat for the greater sage-grouse as well as other wildlife species and economic activity, such as ranching and recreation, associated with the sagebrush-steppe ecosystem in the Great Basin region. This effort will build upon the experience and success of addressing rangeland fire, and broader wildland fire prevention, suppression and restoration efforts to date, including the National Cohesive Wildland Fire Management Strategy, and ensure improved coordination with local, state, tribal, and regional efforts to address the threat of rangeland fire at a landscape-level.

Sec. 2 **Background**. The Department of the Interior is entrusted with overseeing the management of Federal lands for the benefit of current and future generations as well as the protection and recovery of imperiled species of flora and fauna and the ecosystems upon which they depend. Rangeland fires in the Great Basin of the Western United States have increased in size and intensity in recent years. The accelerated invasion of non-native annual grasses, in particular cheatgrass and medusahead rye, and the spread of pinyon-juniper across the sagebrush-steppe ecosystem, along with drought and the effects of climate change, have created conditions that have led to the increased threat of rangeland fires to the sagebrush landscape and the more than 350 species of plants and animals, such as mule deer and pronghorn antelope, that rely on this critically important ecosystem. As a result, the increasing frequency and intensity of rangeland fire also poses a significant threat to ranchers, livestock managers, sportsmen, and outdoor recreation enthusiasts who use the sagebrush-steppe ecosystem, and puts at risk their associated economic contributions across this landscape that support and maintain the American way of life in the West.

In 2010, the U.S. Fish and Wildlife Service (USFWS) found that the invasion of annual grasses and the loss of habitat from fire in the Great Basin is a significant threat to the greater sage-grouse in that portion of its remaining range. The USFWS is now considering whether protections under the Endangered Species Act are warranted. In response to this finding, the Bureau of Land Management (BLM) and the U.S. Forest Service are currently undertaking land use plan revisions and amendments to incorporate appropriate conservation measures to conserve, enhance, and restore greater sage-grouse habitat by reducing, eliminating, or minimizing threats to that habitat. More targeted actions to reduce the likelihood and severity of fire, to stem the spread of invasive species, and to restore the health and resilience of the landscape are necessary to preserve, protect, and restore greater sage-grouse habitat in the sagebrush-steppe ecosystem, and address important public safety, economic, cultural, and social concerns. This includes enhanced coordination and collaboration with partners and stakeholders, including rangeland fire protection associations.

Sec. 3 **Authorities**. This Order is issued under the authority of Section 2 of Reorganization Plan No. 3 of 1950 (64 Stat.1262), as amended. Other statutory authorities related to this Order include

and are not limited to the following:

a. National Environmental Policy Act (NEPA), 42 U.S.C. 4321 *et seq.*

b. The Endangered Species Act (ESA), 16 U.S.C. 1531 *et seq.*

c. The Migratory Bird Conservation Act, 16 U.S.C. 715 *et seq.*

d. The National Fish and Wildlife Foundation Establishment Act, 16 U.S.C. 3701 *et seq.*

e. The Fish and Wildlife Coordination Act, 16 U.S.C. 661 *et seq.*

f. The Federal Land and Policy Management Act (FLPMA), 43 U.S.C. 1701 *et seq.*

g. The Federal Land Assistance Management and Enhancement Act of 2009, Title V of Division A of P.L. 111-88.

Sec. 4 **Policy**. Protecting, conserving, and restoring the health of the sagebrush-steppe ecosystem and, in particular, greater sage-grouse habitat, while maintaining safe and efficient operations, is a critical fire management priority for the Department. Allocation of fire management resources and assets before, during, and after wildland fire incidents will reflect this priority, as will investments related to restoration activities.

Sec. 5 **Developing an Enhanced Fire Prevention, Suppression, and Restoration Strategy**. To accomplish protection, conservation, and restoration of greater sage-grouse habitat the Department, through the Rangeland Fire Task Force established in accordance with Section 6, will:

a. Work cooperatively and collaboratively with other Federal agencies, states, tribes, local stakeholders, and non-governmental organizations on fire management and habitat restoration activities, including: (i) Enhancing the capability and capacity of state, tribal, and local government, as well as non-governmental, fire management organizations, including rangeland fire protection associations and volunteer fire departments, through improved and expanded education and training; and (ii) Improving coordination among all partners involved in rangeland fire management to further improve safety and effectiveness.

b. Utilize risk-based, landscape-scale approaches to identify and facilitate investments in fuels treatments, fire suppression capabilities, and post-fire stabilization, rehabilitation, and restoration in the Great Basin.

c. Seek to reduce the likelihood, size, and severity of rangeland fires by addressing the spread of cheatgrass and other invasive, non-native species.

d. Commit wildland fire management resources and assets to prepare for and respond to rangeland fires.

e. Advance the development and utilization of technologies for identifying areas of high ecological and habitat value in sagebrush-steppe ecosystems to enhance fire prevention and sage-grouse habitat protection efforts.

f. Apply science and research to improve the identification and protection of resistant and resilient sagebrush-steppe landscapes and the development of biocontrols and other tools for cheatgrass control to improve capability for long-term restoration of sagebrush-steppe ecosystems.

g. To the extent practicable, utilize locally-adapted seeds and native plant materials appropriate to the location, conditions, and management objectives for vegetation management and restoration activities, including strategic sourcing for acquiring, storing, and utilizing genetically-appropriate seeds and other plant materials native to the sagebrush-steppe ecosystem.

h. Encourage efforts to expedite processes, streamline procedures, and promote innovations that can improve overall rangeland fire prevention, suppression and restoration efficiency and effectiveness.

i. Explore opportunities to pilot new strategies to reduce the threat of invasive, non-native plant species and rangeland fire to sagebrush-steppe ecosystems and greater sage-grouse conservation, including enhanced use of veteran fire crews and youth conservation teams, and efforts to further public-private partnerships to expand capacity for improved fire management.

j. Establish protocols for monitoring the effectiveness of fuels management, post-fire, and long-term restoration treatments and a strategy for adaptive management to modify management practices or improve land treatments when necessary.

Sec. 6 **Rangeland Fire Task Force**. A Rangeland Fire Task Force (Task Force) is hereby established and is chaired by the Deputy Secretary. Members of the Task Force shall include: Assistant Secretary – Policy, Management and Budget, Assistant Secretary – Land and Minerals Management, Assistant Secretary for Fish and Wildlife and Parks, Assistant Secretary – Water and Science, and Assistant Secretary – Indian Affairs. The Task Force will do the following:

a. Develop a science-based strategy to reduce the threat of large-scale rangeland fire to habitat for the greater sage-grouse and the sagebrush-steppe ecosystem through effective rangeland management (including the appropriate use of livestock), fire prevention, fire suppression, and post-fire restoration efforts at a landscape scale.

b. Conduct a comprehensive review of the existing programs, policies, and practices associated with current efforts to prevent, suppress, and restore rangeland fire-impacted sagebrush-steppe, including the outcomes of the recent rangeland fire conference *The Next Steppe: Sage-grouse and Rangeland Fire in the Great Basin*, and utilize the experience of the conference participants; and the expertise of the practitioners and senior policy groups in this effort.

c. Seek input from the U.S. Geological Survey and individual Bureau Fire Directors in the Department; the U.S. Forest Service and the Natural Resources Conservation Service in the

Department of Agriculture; various state wildland fire agencies and programs; the offices of the governors in the states most threatened by rangeland fire, including California, Oregon, Nevada, Utah, and Idaho, as well as the Western Governors' Association; affected American Indian tribes; scientists; and local, community-based fire organizations such as the rangeland fire protection associations, weed collaboratives, native seed production organizations, soil and water conservation districts, and various stakeholder groups with interest and expertise in rangeland fire prevention, suppression, and rangeland restoration.

Sec. 7 **Implementation Plan, Deliverables and Report.**

a. No later than February 1, 2015, the Task Force will provide a detailed plan for implementing this Order that includes a process for tribal consultation.

b. The Task Force will provide to the Secretary two reports that outline actions that can be accomplished prior to the onset of the 2015 Western fire season, actions that can be accomplished prior to the onset of the 2016 Western fire season, and actions that will require a longer period for implementation. At a minimum, these actions are to include the following: (i) Design and implement comprehensive, integrated fire response plans for the Fire and Invasives Assessment Tool evaluation areas in the Great Basin subject to fire and invasive species; (ii) Provide clear direction on the prioritization and allocation of fire management resources and assets; (iii) Expand the focus on fuels reduction opportunities and implementation; (iv) Fully integrate the emerging science of ecological resilience into design of habitat management, fuels management, and restoration projects; (v) Review and update emergency stabilization and burned area rehabilitation policies and programs to integrate with long-term restoration activities; (vi) Commit to multi-year investments for the restoration of sagebrush-steppe ecosystems, including consistent long-term monitoring protocols and adaptive management for restored areas; (vii) Implement large-scale experimental activities to remove cheatgrass and other invasive annual grasses through various tools; (viii) Commit to multi-year investments in science and research; and (ix) Develop a comprehensive strategy for acquisition, storage, and distribution of seeds and other plant materials.

c. No later than March 1, 2015, the Task Force will present its initial report on actions that will be implemented prior to the 2015 Western fire season. Individual bureaus are also encouraged to take immediate action to implement improvements within their respective areas of responsibility before the initial report is issued.

d. No later than May 1, 2015, the Task Force will present its final report on activities that will be implemented prior to the 2016 Western fire season, and longer term actions to implement the policy and strategy set forth in this Order, including to ensure continued implementation of approved actions associated with the strategy.

Sec. 8 **Implementation**. The Deputy Secretary is responsible for implementing all aspects of this Order. This responsibility may be delegated as appropriate. This Order does not alter or affect any existing duty or authority of individual Assistant Secretaries or bureaus.

Sec. 9 **Effect of the Order**. This Order is intended to improve the internal management of the

Department. This Order and any resulting report or recommendations are not intended to, and do not, create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, its departments, agencies, instrumentalities or entities, its officers or employees, or any other person. To the extent there is any inconsistency between the provisions of this Order and any Federal laws or regulations, the laws or regulations will control.

Sec. 10 **Expiration Date**. This Order is effective immediately. It will remain in effect until its provisions are converted to the Departmental Manual, or until it is amended, superseded or revoked, whichever occurs first.

Sally Jewell

Secretary of the Interior

Date: JAN 5 2015

Greater Sage-Grouse Wildfire, Invasive Annual Grasses & Conifer Expansion Assessment

June 2014

Introduction and Background

The purpose of this assessment is to identify priority habitat areas and management strategies to reduce the threats to Greater Sage-Grouse resulting from impacts of invasive annual grasses, wildfires, and conifer expansion. The Conservation Objectives Team (COT) report (USFWS 2013) and other scientific publications identify wildfire and conversion of sagebrush habitat to invasive annual grass dominated vegetative communities as two of the primary threats to the sustainability of Greater Sage-Grouse (*Centrocercus urophasianus*, hereafter sage-grouse) in the western portion of the species range. For the purposes of this assessment protocol, invasive species are limited to, and hereafter referred to, as **invasive annual grasses** (e.g., primarily cheatgrass [*Bromus tectorum*]). Conifer expansion (also called encroachment) is also addressed in this assessment.

The United States Fish and Wildlife Service (USFWS) will consider the amelioration of impacts, location and extent of treatments, degree of fire risk reduction, locations for suppression priorities, and other proactive measures to conserve sage-grouse in their 2015 listing decision. This determination will be made based in part upon information contained in the United States (US) Department of the Interior, Bureau of Land Management (BLM) resource management plan (RMP) amendments and Forest Service land resource management plan (LRMP) amendments, including this assessment.

This assessment is based in part on National Resources Conservation Service (NRCS) soil surveys that include geospatial information on soil temperature and moisture regimes associated with resistance and resiliency properties (see following section on *Soil Temperature and Moisture Regimes)*. While this assessment is applicable across the range of sage-grouse, the analysis is limited to Western Association of Fish and Wildlife Management Agencies' (WAFWA) Management Zones III, IV, and V (roughly the Great Basin region) because of the significant issues associated with invasive annual grasses and the high level of wildfires in this region. The utility of this assessment process is dependent on incorporating improved information and geospatial data as it becomes available. Although the resistance and resilience concepts have broad applications (e.g., infrastructure development), this assessment is limited to developing strategies to reduce threats to sage-grouse habitat (e.g., invasive annual grasses and wildfires).

Draft Greater Sage-Grouse Environmental Impact Statements (EISs) contain a suggested framework in the appendices ("Draft Greater Sage-Grouse Wildland Fire and Invasive Species Assessment") that provided a consistent approach to conduct these assessments. The current protocol was developed by the Fire and Invasive Species Team (FIAT), a team of wildland fire specialists and other resource specialists and managers, to specifically incorporate resistance to invasive annual grasses and resilience after disturbance principles into the assessment protocol. In October 2013, the BLM, Forest Service, and USFWS agreed to incorporate this approach into the final EISs.

The cornerstone of the FIAT protocol is recent scientific research on resistance and resilience of Great Basin ecosystems (Chambers et al. *In press*) and the USFWS-sponsored project with the Western Association of Fish and Wildlife Agencies (WAFWA) to assemble an interdisciplinary team to provide additional information on wildland fire and invasive plants and to develop strategies for addressing

these issues. This interagency collaboration between rangeland scientists, fire specialists, and sage-grouse biologists resulted in the development of a strategic, multi-scale approach for employing ecosystem resilience and resistance concepts to manage threats to sage-grouse habitats from wildfire and invasive annual grasses (Chambers et al. *In prep.*). This paper is being published as a Forest Service Rocky Mountain Research Station General Technical Report and is available at www._____. It serves as the reference and basis for the protocol described in this assessment.

The assessment process sets the stage for:

- Identifying important sage-grouse occupied habitats and baseline data layers important in defining and prioritizing sage-grouse habitats
- Assessing the resistance to invasive annual grasses and resilience after disturbance and prioritizing focal habitats for conservation and restoration
- Identifying geospatially explicit management strategies to conserve sage-grouse habitats

Management strategies are types of actions or treatments that managers typically implement to resolve resource issues. They can be divided into proactive approaches (e.g., fuels management and habitat recovery/restoration) and reactive approaches (e.g., fire operations and post-fire rehabilitation). Proactive management strategies can favorably modify wildfire behavior and restore or improve desirable habitat with greater resistance to invasive annual grasses and/or resilience after disturbances such as wildfires. Reactive management strategies are employed to reduce the loss of sage-grouse habitat from wildfires or stabilize soils and reduce impacts of invasive annual grasses in sage-grouse habitat after wildfires. Proactive management strategies will result in long-term sage-grouse habitat improvement and stability, while reactive management strategies are essential to reducing current impacts of wildfires on sage-grouse habitat, thus maintaining long-term habitat stability. Management strategies include:

Proactive Strategies-

1. **Fuels Management** includes projects that are designed to change vegetation composition and/or structure to modify fire behavior characteristics for the purpose of aiding in fire suppression and reducing fire extent.

2. **Habitat Restoration/Recovery**
    a. Recovery, referred to as passive restoration (Pyke 2011), is focused on changes in land use (e.g., improved livestock grazing practices) to achieve a desired outcome where the plant community has not crossed a biotic or physical threshold.
    b. Restoration is equivalent to active restoration (Pyke 2011) and is needed when desired species or structural groups are poorly represented in the community and reseeding, often preceded by removal of undesirable species, is required. Note: The Fuels Management program supports recovery/restoration projects through its objective to restore and maintain resilient landscapes.

Reactive Strategies-

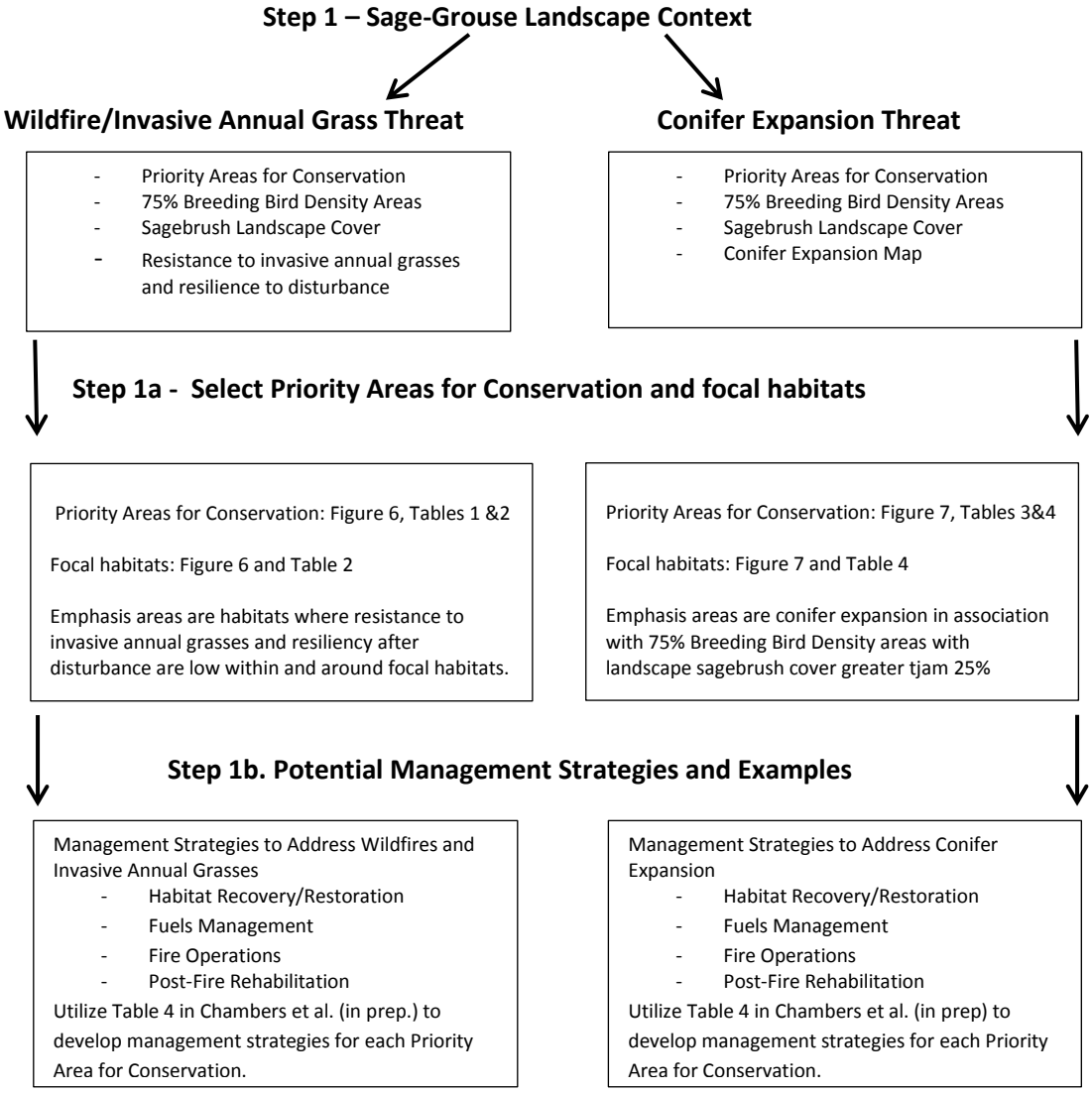
3. **Fire Operations** includes preparedness, prevention, and suppression activities. When discussing specific components of fire operations, the terms fire preparedness, fire prevention and fire suppression are used.

4. **Post-Fire Rehabilitation** includes the BLM's Emergency Stabilization and Rehabilitation (ES&R) Program and the Forest Service's Burned Area Emergency Response (BAER) Program. Policy limits application of funds from 1 to 3 years, thus treatments to restore or enhance habitat after this period of time are considered habitat recovery/restoration.

The assessment process included two steps with sub-elements. First, important Priority Areas for Conservation (PACs) and focal habitats are identified (**Step 1a**). Second, potential management **strategies** (described above) are identified to conserve or restore focal habitats threatened by wildfires, invasive annual grasses, and conifer expansion (primarily pinyon pine and/or juniper species; **Step 1b**). Focal habitats are the portions of a PAC with important habitat characteristics, bird populations, and threats (e.g., wildfires, invasive annual grasses, and conifer expansion) where this assessment will be applied. Areas adjacent to or near the focal habitats can be considered for management treatments such as fire control and fuels management if these locations can reduce wildfire impacts to focal habitats. Soil temperature and moisture regimes are used to characterize capacity for resistance to invasive annual grasses and resilience after disturbance (primarily wildfires) within focal habitats to assist in identifying appropriate management strategies, especially in areas with good habitat characteristics that have low recovery potential following disturbance. Soil moisture and temperature regime relationships have not been quantified to the same degree as for conifer expansion; however, Chambers et al. (*In prep.*) discuss preliminary correlations between these two variables.

The results of Steps 1a and 1b, along with associated geospatial data files, are available to local management units to complete Step 2 of the assessment process. Step 2 is conducted by local management units to address wildfire, invasive annual grasses, and conifer expansion in or near focal habitat areas. First, local information and geospatial data are collected and evaluated to apply and improve on Step 1 focal habitat area geospatial data (**Step 2a**). Second, focal habitat activity and implementation plans are developed and include prioritized management **tactics and treatments** to implement effective, fuels management, habitat recovery/restoration, fire operations, and post-fire rehabilitation strategies (**Step 2b**). This assessment will work best if Step 2b is done across management units (internal and externally across BLM and Forest Service administrative units and with other entities). **Figure 1**, Assessment Flow Chart, contains an illustration of the steps in the assessment process.

This analysis does not necessarily address the full suite of actions needed to maintain the current distribution and connectivity of sage-grouse habitats across the Great Basin because resources available to the federal agencies are limited at this time. Future efforts designed to maintain and connect habitats across the range will be needed as current focal areas are addressed and additional resources become available.



Step 2 – Management Unit Applications for Invasive Annual Grasses and Conifer Expansion

Step 2a

1) Evaluate the accuracy and utility of Step 1 geospatial layers and incorporate relevant local information.
2) Develop framework for incorporating management strategies to initiate implementation/activity plans.

Step 2b

Develop collaborative implementation/activity plans to address threats to focal habitats in Priority Areas for Conservation.

Figure 1, Assessment Flow Chart

Step 1

The first component of the Wildfire and Invasive Annual Grasses Assessment describes the factors that collectively provide the sage-grouse landscape context. Step 1a provides this context by discussing PACs, breeding bird density (BBD), soil temperature and moisture regimes (indicators of resistance to annual grasses and resilience after disturbance), landscape sagebrush cover, and conifer expansion. See Chambers et al. (2014 in prep.) for a detailed description of Invasive Annual Grass and Wildfire threats to sage-grouse habitat. Priority PACs and focal habitats are derived from the information provided in this sage-grouse landscape context section.

Step 1a- Sage-grouse landscape context

This component of the assessment identifies important PACs and associated focal habitats where wildfire, invasive annual grasses, and conifer expansion pose the most significant threats to sage-grouse.

The primary focus of this assessment is on sage-grouse populations across the WAFWA Management Zones III, IV, and V (**Figure 2**, Current PACs for WAFWA Management Zones III, IV, and V). Sage-grouse are considered a landscape species that require very large areas to meet their annual life history needs. Sage-grouse are highly clumped in their distribution (Doherty et al. 2010), and the amount of landscape cover in sagebrush is an important predictor of sage-grouse persistence in these population centers (Knick et al. 2013). States have used this information combined with local knowledge to identify PACs to help guide long-term conservation efforts. FIAT used data sets that were available across the three management zones as an initial step for prioritizing selected PACs and identifying focal habitats for fire and invasive annual grasses and conifer expansion assessments. These data sets (also described in Chambers et al. *In prep.*) include:

Priority Areas for Conservation (PACs)

PACs have been identified by states as key areas that are necessary to maintain redundant, representative, and resilient sage-grouse populations (USFWS 2013; see Figure 2). A primary objective is to minimize threats within PACs (e.g., wildfire and invasive annual grasses impacts) to ensure the long-term viability of sage-grouse and its habitats. A secondary priority is to conserve sage-grouse habitats outside of PACs since they may also be important for habitat connectivity between PACs (genetic and habitat linkages), habitat restoration and population expansion opportunities, and flexibility for managing habitat changes that may result from climate change. PACs have also been identified by the USFWS as one of the reporting geographic areas that will be considered during listing determinations for sage-grouse.

The combination of PACs with BBD data (described below) assists us in identifying connectivity between populations. PAC boundaries may be modified in the future requiring adjustments in focal habitat areas and management strategy priorities.

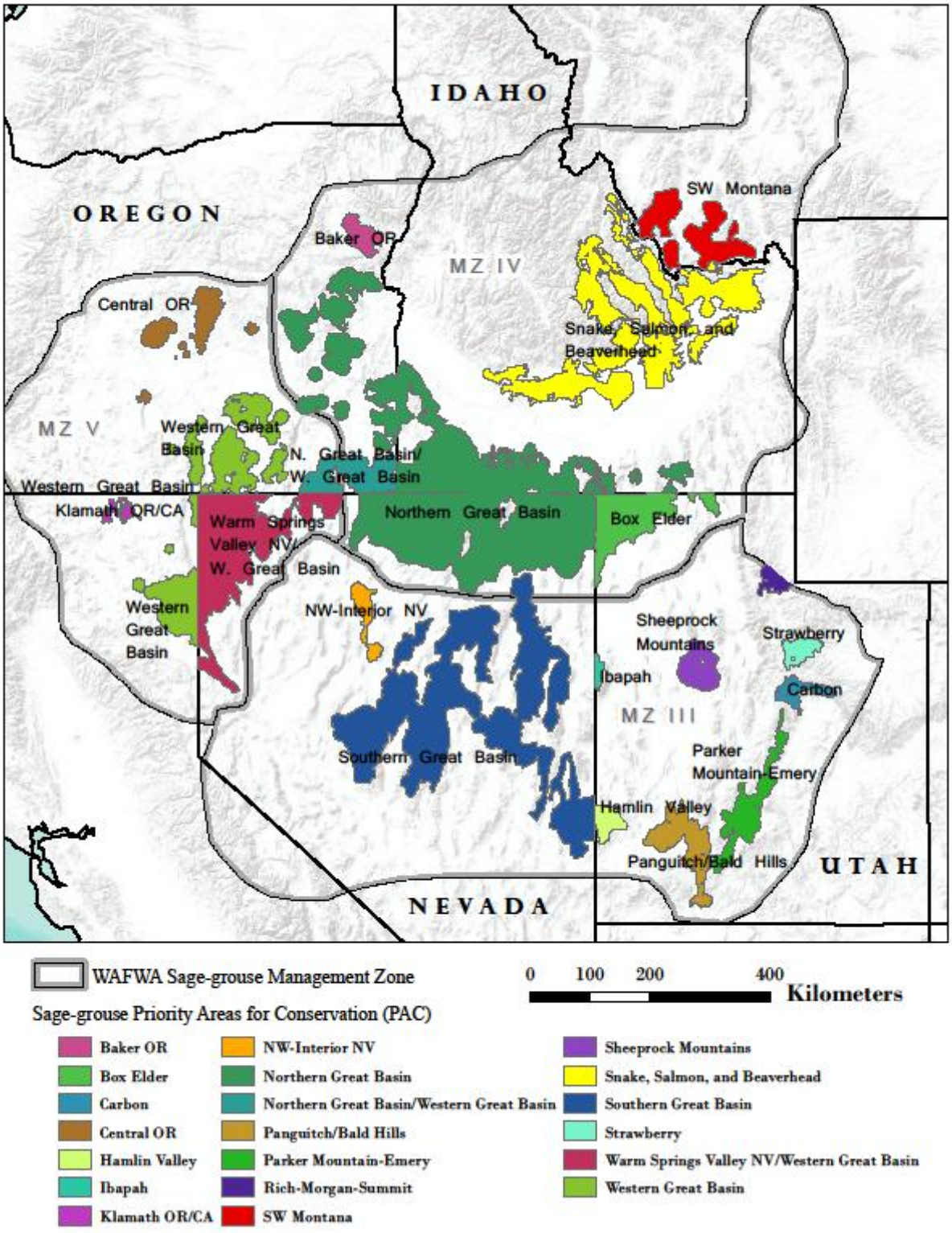


Figure 2, Current PACs for WAFWA Management Zones III, IV, and V. Bi-State sage-grouse populations were not included for this analysis and are being addressed in separate planning efforts.

Breeding Bird Density

Doherty et al. (2010) provided a useful framework for identifying population concentration centers in their range-wide BBD mapping. FIAT used maximum counts of males on leks (4,885 males) to delineate breeding bird density areas that contain 25, 50, 75, and 100 percent of the known breeding population. Leks were then mapped according to abundance values and buffered by 4 to 5.2 miles (6.4 to 8.5 kilometers) to delineate nesting areas. Findings showed that while sage-grouse occupy extremely large landscapes, their breeding distribution is highly aggregated in comparably smaller identifiable population centers; 25 percent of the known population occurs within 3.9 percent (7.2 million acres [2.92 million hectares]) of the species range, and 75 percent of birds are within 27 percent of the species range (50.5 million acres [20.4 million hectares]; Doherty et al. 2010). See **Figures 3**, Sage-Grouse Breeding Bird Density Thresholds.

This analysis places emphasis on breeding habitats because little broad/mid-scale data exists for associated brood-rearing (summer) and winter habitat use areas. Finer scale seasonal habitat use data should be incorporated (or, if not available studies, should be conducted) at local levels to ensure management actions encompass all seasonal habitat requirements. Federal administrative units should consult with state wildlife agencies for additional seasonal habitat information.

For this assessment, FIAT chose to use the 75 percent BBD as an indicator of high bird density areas that informed the approach used by state wildlife agencies to initially identify PACs. Range-wide BBD areas provide a means to further prioritize actions within relatively large PACs to maintain bird distribution and abundance. FIAT used state level BBD data from Doherty et al. (2010) instead of range-wide model results to ensure important breeding areas in Management Zones III, IV, and V were not underweighted due to relatively higher bird densities in the eastern portion of the range. BBD areas of 75 to 100 percent are included in Appendix 1 to provide context for local management units when making decisions concerning connectivity between populations and PACs.

Note that breeding density areas were identified using best available information in 2009, so this range-wide data does not reflect the most current lek count information and changes in conditions since the original analysis. Subsequent analysis should use the most current information available. Also, BBD areas should not be viewed as rigid boundaries but rather as a means to regionally prioritize landscapes where step down assessments and actions should be implemented quickly to conserve the most birds.

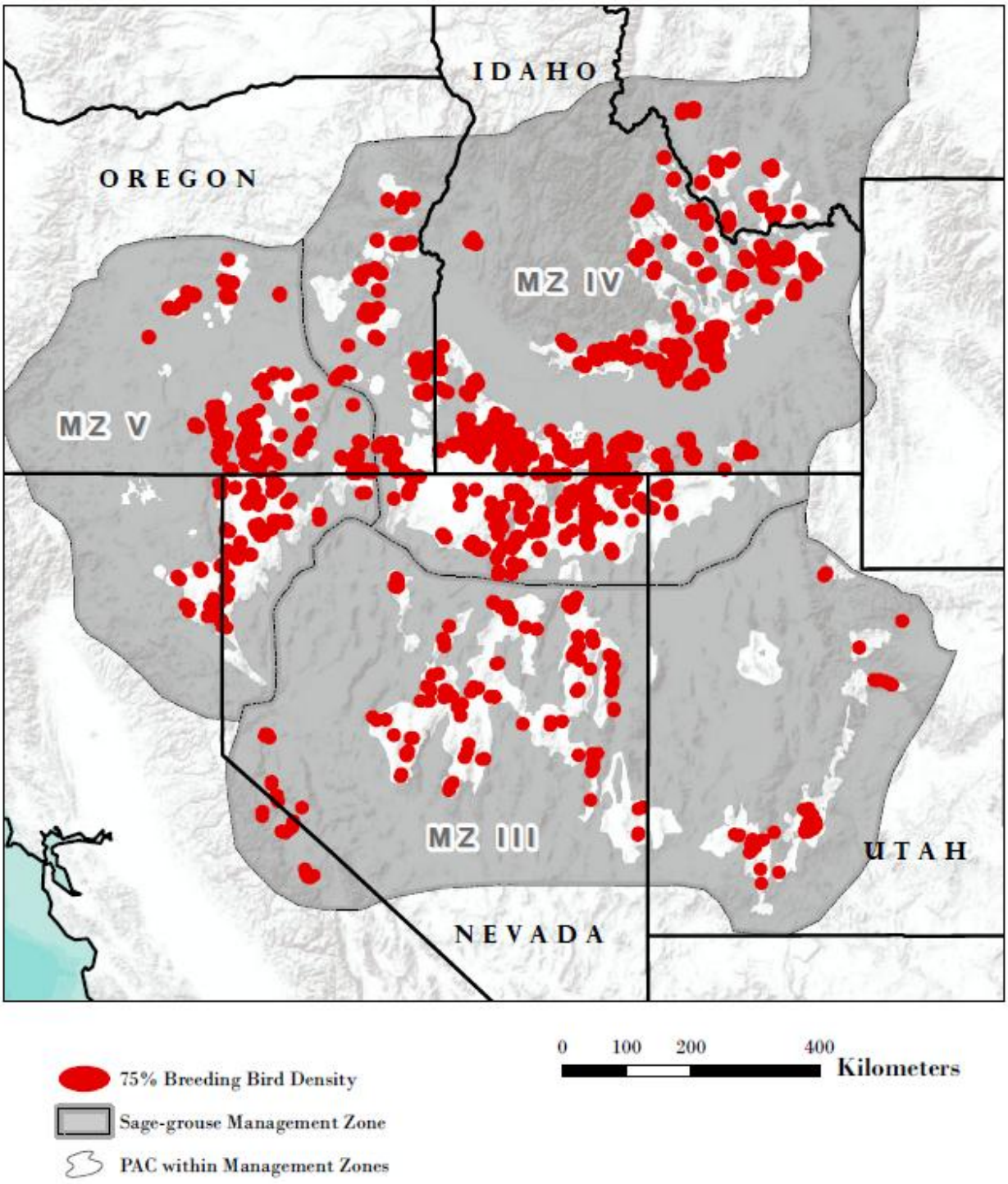


Figure 3, Sage-Grouse Breeding Bird Density Thresholds for 75% of the breeding birds, Management Zones, and PACs. Breeding bird density of 75 to 100% is shown in Appendix 1 to provide context for local management units when making decisions concerning connectivity between populations and PACs.

Soil Temperature and Moisture Regimes

Invasive annual grasses and wildfires can be tied to management strategies through an understanding of resistance and resilience concepts. Invasive annual grasses has significantly reduced sage-grouse habitat throughout large portions of its range (Miller et al. 2011). While abandoned leks were linked to increased nonnative annual grass presence, active leks were associated with less annual grassland cover than in the surrounding landscape (Knick et al. 2013). Invasive annual grasses also increases fire frequency, which directly threatens sage-grouse habitat and further promotes the establishment of invasive annual grasses (Balch et al. 2013). This nonnative annual grass and fire feedback loop can result in conversion from sagebrush shrublands to annual grasslands (Davies 2011).

In cold desert shrublands, vegetation community resistance to invasive annual grasses, especially cheatgrass, and resilience following disturbance is strongly influenced by soil temperature and moisture regimes (Chambers et al. 2007; Meyer et al. 2001). Generally, cooler and moister soil temperature/moisture regimes are associated with more resilient vegetation communities as indicated by increases in vegetation productivity and ability to compete and recover from disturbance along elevation gradients (Chambers et al. 2007; Chambers et al. *in press*). Also, colder soil temperatures are associated with more resistant communities due to limitations on invasive annual grass growth and reproduction. Thus, communities with warm and dry soil temperature and moisture regimes tend to have relatively low resilience and resistance. Communities with cool and dry soil temperature and moisture regimes also can have relatively low resilience and resistance with the degree of resistance to cheatgrass depending on soil temperature (see Figure 9 in Chambers et al. *In prep.*). A continuum in resistance and resilience exists across soil temperature and moisture regimes that will need to be considered when developing implementation or activity plans in Step 2. These relationships can be used to help prioritize management actions within sage-grouse habitat using broadly available data.

To capture relative resistance and resilience to disturbance and invasive annual grasses across the landscape, soil temperature and moisture regime information (described in greater detail in Chambers et al. *In prep.*) were obtained from the Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) data. Where gaps in this coverage existed, the NRCS US General Soil Map (STATSGO2) data was used (Soil Survey Staff 2014; see Appendix 1). The STATSGO2 database includes soils mapped at a 1:250,000-scale; the SSURGO database includes soils mapped at the 1:20,000 scale. Interpretations made from soil temperature and moisture regimes from the STATSGO2 database will not have the same level of accuracy as those made from the SSURGO database.

Areas characterized by warm and dry soil temperature and moisture regimes (low relative resistance and resilience) were intersected with sage-grouse breeding habitat and sagebrush landscape cover to identify candidate areas (emphasis areas) for potential management actions that mitigate threats from invasive annual grasses and wildfire (**Figure 4**, Soil Moisture and Temperature Regimes for Management Zones III, IV, and V, and **Figure 5**, Intersection of High Density (75% BBD) Populations). These data layers provide the baseline information considered important in prioritizing areas where conservation and management actions could be developed to address invasive annual grasses in a scientifically defensible manner (see Table 4 in Chambers et al. *In prep.*).

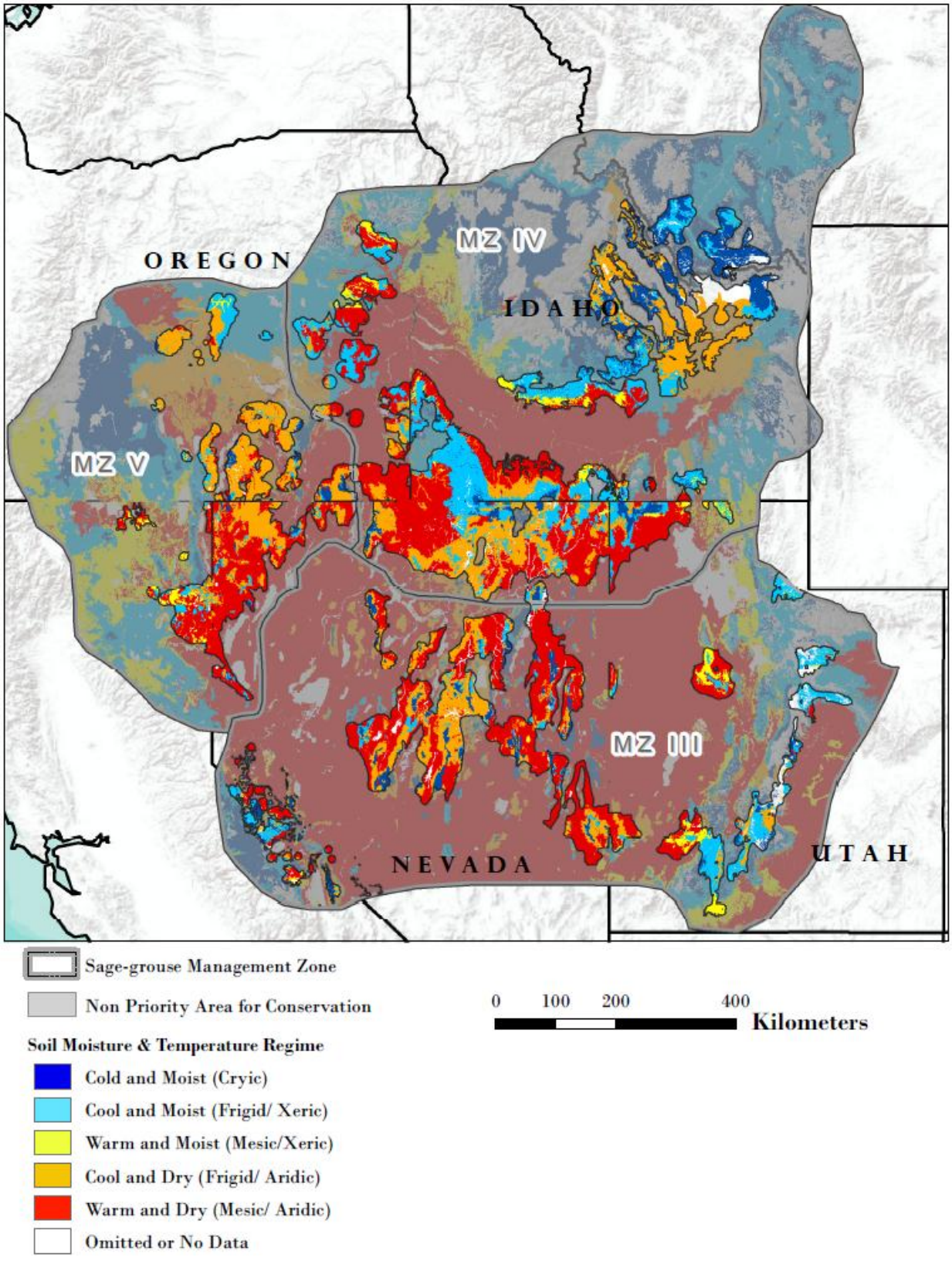


Figure 4, Soil Moisture and Temperature Regimes for Management Zones III, IV, and V

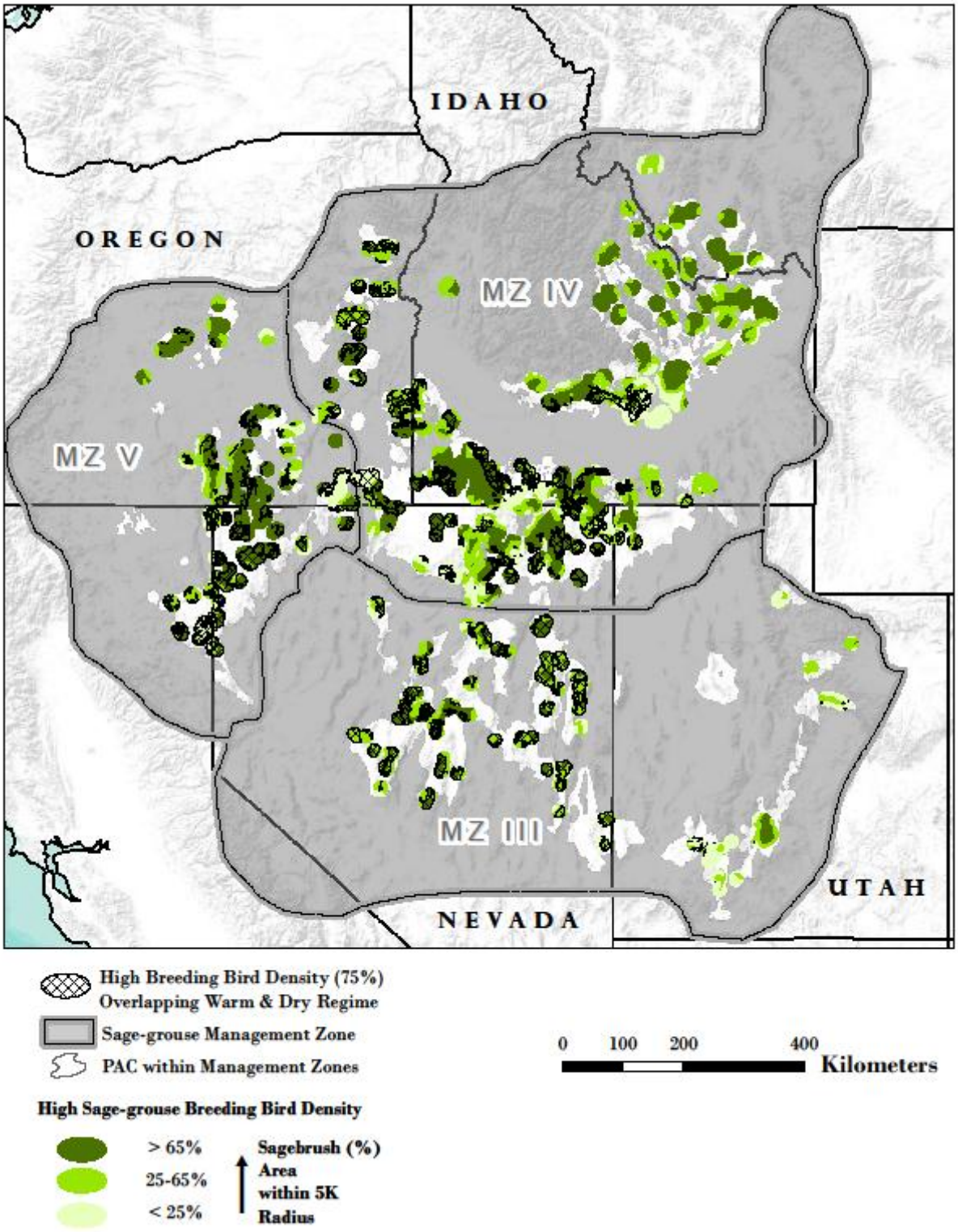


Figure 5, Intersection of High Density (75% BBD) Populations. The warm and dry sites and the proportion of these habitats in the three sagebrush landscape cover classes by management zone, and PACs within the Great Basin.

Sagebrush Landscape Cover

The amount of the landscape in sagebrush cover is closely related to the probability of maintaining active sage-grouse leks, and is used as one of the primary indicators of sage-grouse habitat potential at landscape scales (Aldridge et al. 2008; Wisdom et al. 2011; Knick et al. 2013). For purposes of prioritizing landscapes for sage-grouse habitat management, FIAT used less than or equal to 25 percent sagebrush landscape cover as a level below which there is a low probability of maintaining sage-grouse leks, and greater than or equal to 65 percent as the level above which there is a high probability of sustaining sage-grouse populations with further increases of landscape cover of sagebrush (Aldridge et al. 2008; Wisdom et al. 2011; Knick et al. 2013). Increases in landscape cover of sagebrush have a constant positive relationship with sage-grouse lek probability at between about 25 percent and 65 percent landscape sagebrush cover (Knick et al. 2013). It is important to note that these data and interpretations relate only to persistence (i.e., whether or not a lek remains active), and it is likely that higher proportions of sagebrush cover may be required for population growth.

For the purposes of delineating sagebrush habitat relative to sage-grouse requirements for landscape cover of sagebrush, FIAT calculated the percentage of landscape sagebrush cover (Landfire 2013) within a 3-mile (5-kilometer) radius of each 98-foot by 98-foot (30 meter by 30 meter) pixel in Management Zones III, IV, and V (see Appendix 2 in Chambers et al. (*In prep.*) for how landscape sagebrush cover was calculated). FIAT then grouped the percentage of landscape sagebrush cover into each of the selected categories (0 to 25 percent, 25 to 65 percent, 65 to 100 percent; **Figure 6**, Sagebrush Landscape Cover and Fire Perimeters for the Analysis Area). Landfire data was based on 2000 satellite imagery so wildfire perimeters after that date were incorporated into this layer to better reflect landscape sagebrush cover. Burned areas were assumed to fall into the 0 to 25 percent landscape cover class.

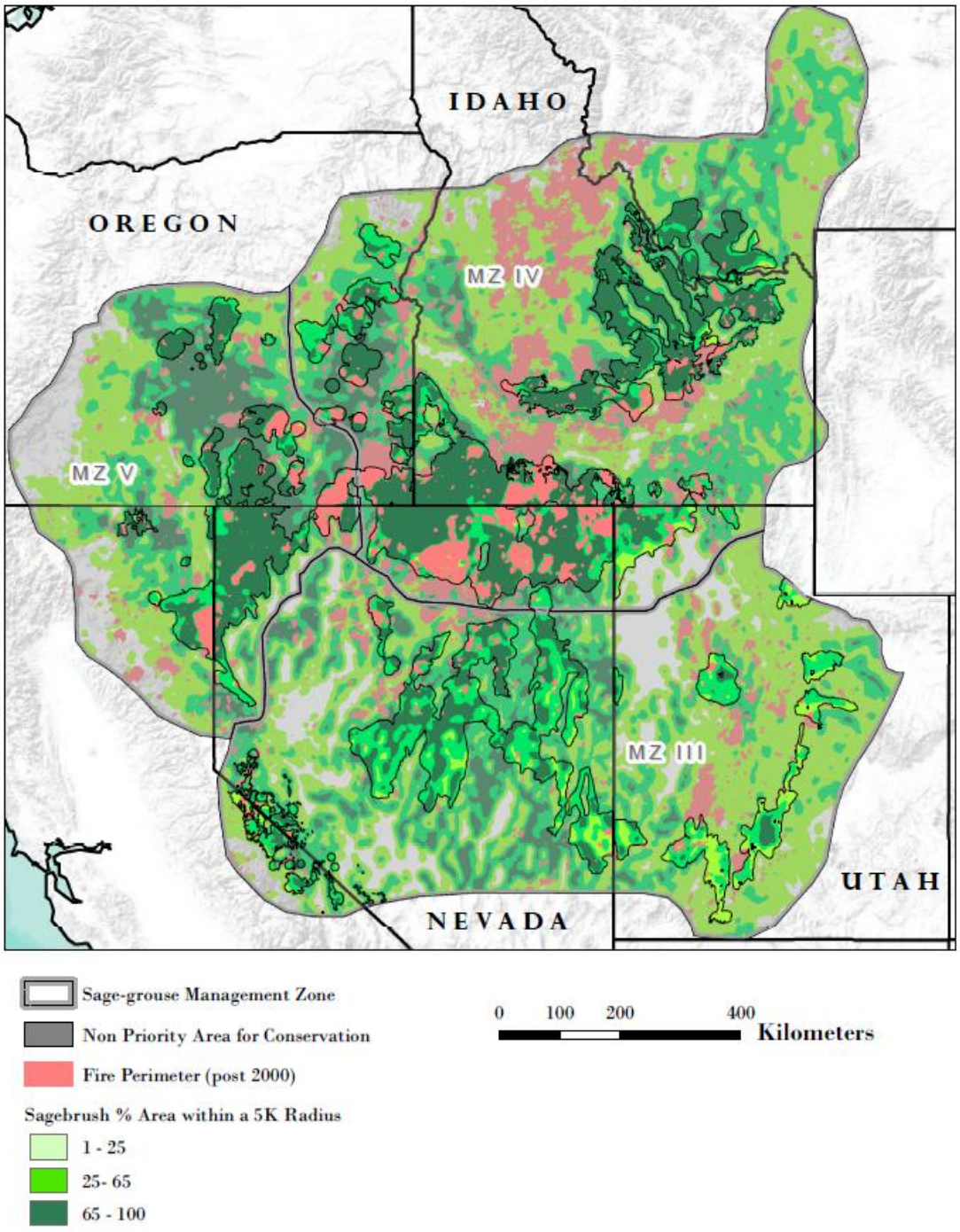


Figure 6, Sagebrush Landscape Cover and Fire Perimeters (post-2000) for the Analysis Area

Conifer Expansion

Conifer expansion into sagebrush landscapes also directly reduces sage-grouse habitat by displacing shrubs and herbaceous understory as well as by providing perches for avian predators. Conifer expansion also leads to larger, more severe fires in sagebrush systems by increasing woody fuel loads (Miller 2013). Sage-grouse populations have been shown to be impacted by even low levels of conifer expansion (Baruch-Mordo et al. 2013). Active sage-grouse leks persist in regions of relatively low conifer woodland and are threatened by conifer expansion (Baruch-Mordo et al. 2013; Knick et al. 2013).

To estimate where sage-grouse breeding habitat faces the largest threat of conifer expansion, FIAT used a risk model developed by Manier et al. (2013) that locates regions where sagebrush landscapes occur within 250 meters of conifer woodland (**Figure 7**, Modeled Conifer Expansion for PACs with Greater Than 25% Sagebrush Landscape Cover In and Around 75% BBD). Although the model is coarse, it is available for the entirety of the three sage-grouse management zones analyzed. FIAT encourages using more accurate conifer expansion data in Step 2.

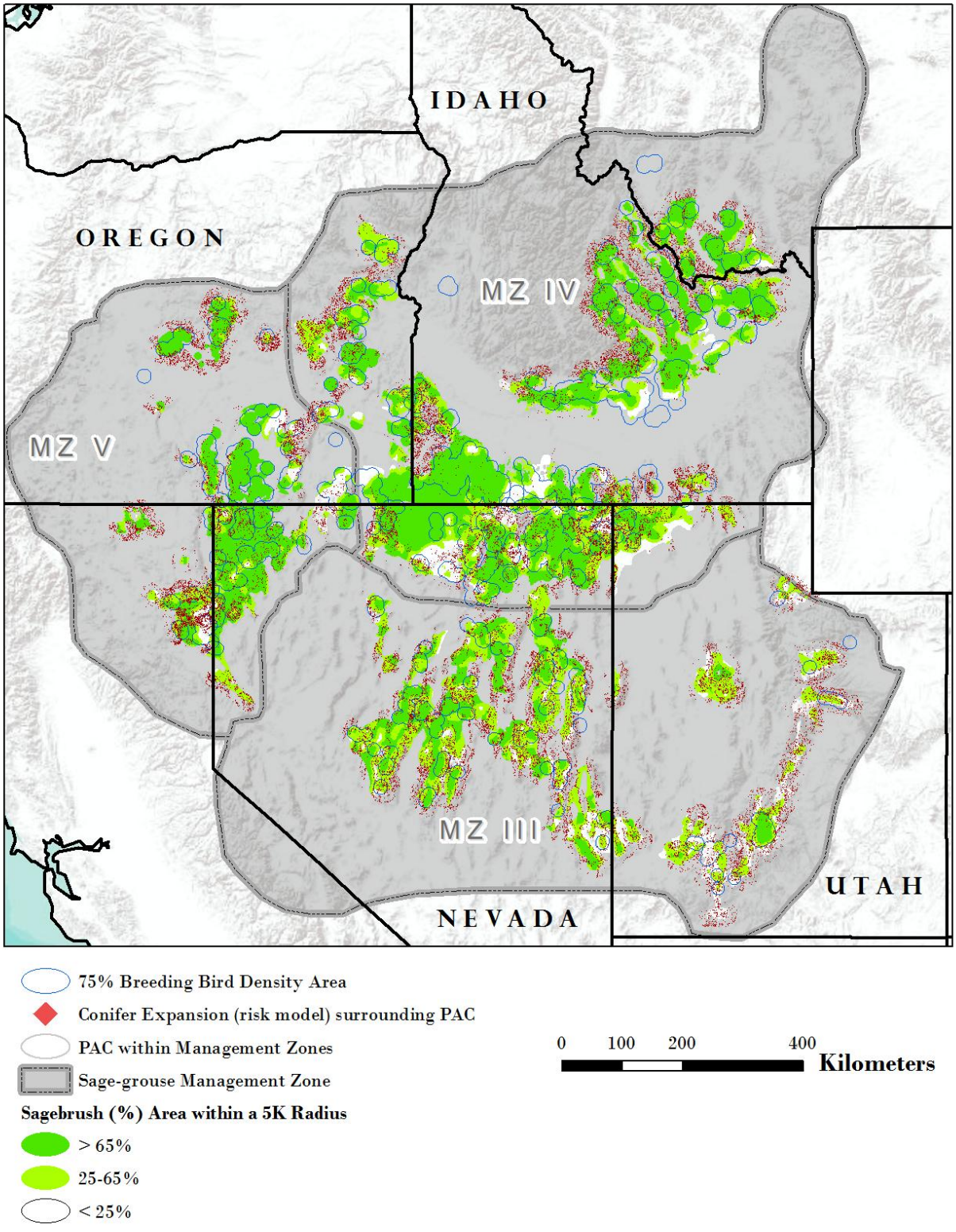


Figure 7, Modeled Conifer Expansion for PACs with Greater Than 25% Sagebrush Landscape Cover In and Around 75% BBD

Step 1a. Identifying PACs and focal habitats

A primary goal for the conservation of sage-grouse populations is the identification of important habitats needed to ensure the persistence and recovery of the species. Loss of habitat, and by inference populations, in these habitats would likely imperil the species in the Great Basin. The first objective is to protect and restore those habitats that provide assurances for retaining large well connected populations.

PACs and the 75 percent BBD maps were used to provide a first-tier stratification (e.g., focal habitats) for prioritizing areas where conservation actions could be especially important for sage-grouse populations. Although these areas are a subset of the larger sage-grouse habitats, they are readily identifiable and include habitats (e.g., breeding and nesting habitats that are considered critical for survival; Connelly et al. 2000; Holloran et al. 2005; Connelly et al. 2011) and necessary for the recovery of the species across its range.

The prioritization of habitats for conservation purposes was based on the several primary threats to remaining sage-grouse populations in the Great Basin including the loss of sagebrush habitats to wildfire and invasive annual grasses, and conifer expansion. The first, and probably the most urgent threat for sage-grouse, is the loss of sagebrush habitat due to wildfire and invasive annual species (e.g., cheatgrass; See Figure 11 in Chambers et al. [*In prep.*]). Areas of highest concern are those with low resistance to cheatgrass and low resilience after disturbance (warm/dry and some cool/dry temperature and moisture regimes sites) that are either **within or in close proximity** to remaining high density populations of sage-grouse (Figure 5). Sagebrush habitats (greater than 25 percent sagebrush landscape cover) prone to conifer expansion, particularly pinyon pine and/or juniper, are also a management concern when within or adjacent to high density sage-grouse populations (Figure 7).

Because these two threats occur primarily at different points along an elevational gradient and are associated with different soil temperature and moisture regimes, separate approaches are used to select PACs and focal habitats for each.

High Density Populations at Highest Risk from <u>Wildfire and Invasive Annual Grasses</u>

PACs in Management Zones III, IV, and V. were evaluated on the basis of high density (75 percent) BBDs, sagebrush landscape cover, and soil temperature and moisture regimes to identify initial PACs that are a priority for assessments and associated focal habitats. **Figure 8**, High Priority PACs with High Density Sage-Grouse Populations (75% BBD), displays the results of the analysis focusing on the intersection of high density (75 percent BBD) populations, the warm and dry sites, and the proportion of these habitats in the three sagebrush landscape cover classes by management zone, and PACs within the Great Basin. **Table 1**, Relative Ranking of PACs Based on High Density (75% BBD) Populations, Warm/ Dry Sites, and Percentage of Habitat in Sagebrush Landscape Cover Classes, displays quantitative outputs of this analysis. The table allows a comparison of these data, and assists in selecting five PACs that provide the greatest contribution to high density sage-grouse populations, and the amounts (acres and proportion) within those PACs of sagebrush cover classes associated with warm and dry soil temperature and moisture regimes.

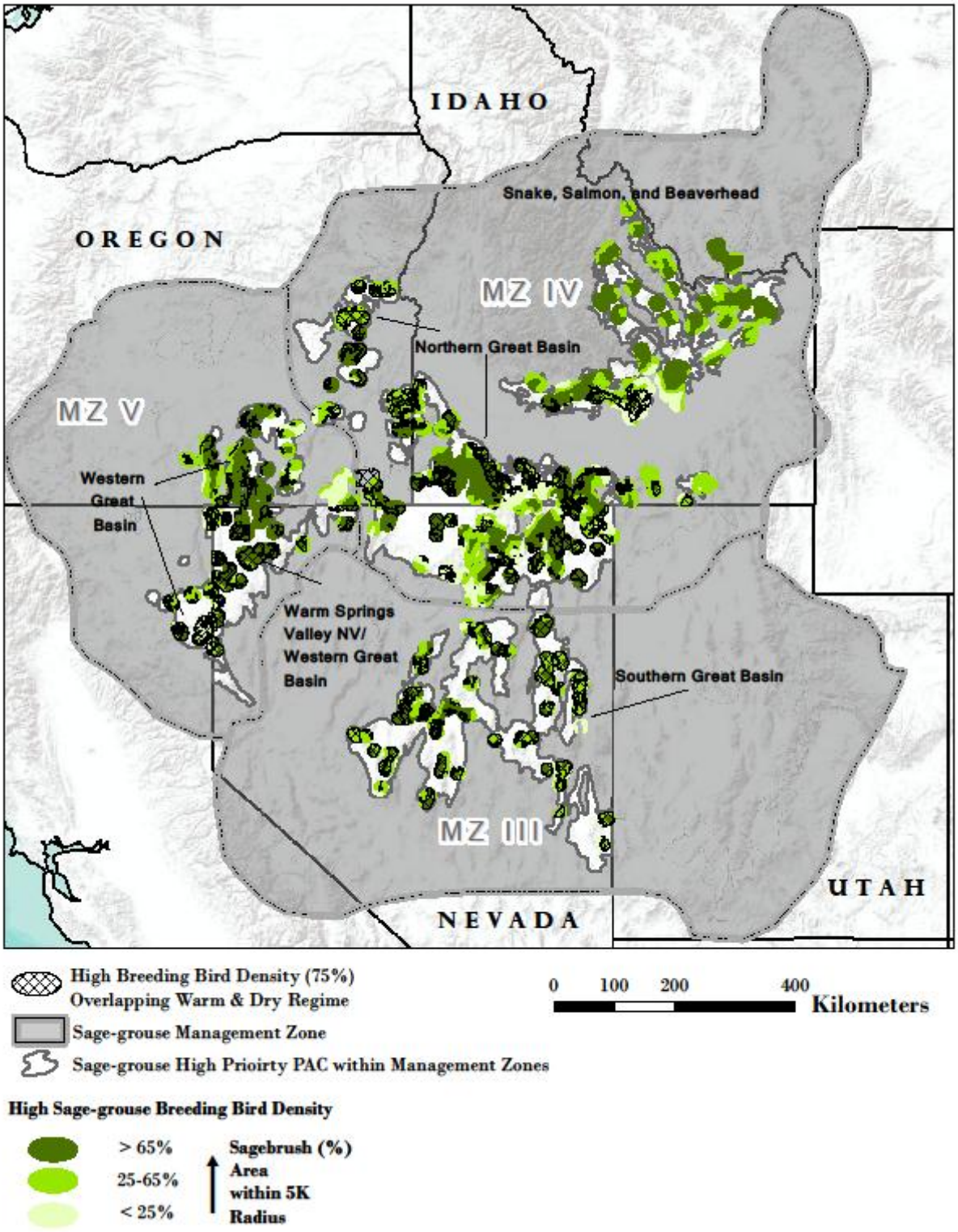


Figure 8, High Priority PACs with High Density Sage-Grouse Populations (75% BBD) sagebrush landscape cover classes, and areas with low resistance and resilience relative to wildfires and invasive annual species.

Table 1, Relative Ranking of PACs Based on High Density (75% BBD) Populations, Warm/ Dry Sites, and Percentage of Habitat in Sagebrush Landscape Cover Classes

Sage-grouse Management Zone	Sage-grouse Priority Area for Conservation (PAC) Name	Total PAC Acres	Breeding Bird Density (75%) Acres	Percent of Breeding Bird Density (75%) Area within PAC	Warm and Dry Soil Moisture & Temperature Regime within Breeding Bird Density (75%) Acres*		
					0-25% Sagebrush Landscape Cover	25%-65% Sagebrush Landscape Cover	65%+ Sagebrush Landscape Cover
4	Northern Great Basin	13045515	7383442	57%	179551 (2%)	674554 (9%)	1745163 (24%)
3	Southern Great Basin	9461355	3146056	33%	42596 (1%)	792780 (25%)	1062091 (34%)
4	Snake, Salmon, and Beaverhead	5477014	2823205	52%	68107 (2%)	89146 (3%)	95970 (3%)
5	Western Great Basin	3177253	2084626	66%	149399 (7%)	140141 (7%)	202767 (10%)
5	Warm Springs Valley NV/Western Great Basin	3520937	1558166	44%	31458 (2%)	207365 (13%)	741353 (48%)
4	SW Montana	1369076	659475	48%	0 (0%)	0 (0%)	0 (0%)
4	Northern Great Basin/Western Great Basin	1065124	624581	59%	114222 (18%)	85258 (14%)	116513 (19%)
5	Central OR	813699	451755	56%	0 (0%)	6211 (1%)	16463 (4%)
3	Panguitch/Bald Hills	1135785	352258	31%	6883 (2%)	5821 (2%)	0 (0%)
3	Parker Mountain-Emery	1122491	308845	28%	0 (0%)	127 (0%)	0 (0%)
4	Box Elder	1519454	292658	19%	22 (0%)	43325 (15%)	23913 (8%)
4	Baker OR	336540	184813	55%	0 (0%)	46459 (25%)	36214 (20%)
3	NW-Interior NV	371557	108256	29%	576 (1%)	17117 (16%)	25173 (23%)
3	Carbon	355723	97734	27%	255 (0%)	180 (0%)	0 (0%)
3	Strawberry	323219	52635	16%	0 (0%)	0 (0%)	0 (0%)
3	Rich-Morgan-Summit	217033	37005	17%	0 (0%)	0 (0%)	0 (0%)
3	Hamlin Valley	341270	3244	1%	0 (0%)	139 (4%)	3105 (96%)
3	Ibapah	98574	0	0%	0 (NA)	0 (NA)	0 (NA)
3	Sheeprock Mountains	611374	0	0%	0 (NA)	0 (NA)	0 (NA)
5	Klamath OR/CA	162667	0	0%	0 (NA)	0 (NA)	0 (NA)

* Numbers in parenthesis indicate the percent of acres relative to total acres of breeding bird density (75%)

These five PACs comprise 90 percent and 95 percent of remaining PAC sagebrush landscape cover in the 25 to 65 percent and greater than or equal to 65 percent sagebrush landscape cover classes, respectively, of the 75 percent BBD associated with low resistance/resilience habitats. The 75 percent BBD habitats in the Northern, Southern Great Basin, and Warm Spring PACs appear particularly important for two reasons. They represent a significant part of the remaining habitats for the Great Basin metapopulation, and they have the greatest amount of low resiliency habitat remaining that still functions as sage-grouse habitat.

An examination of the 5 selected PACs shows that the sum of the 75 percent BBD within these PACs is 16,995,496 acres (**Table 2**, PACs with the Highest Acres and Proportions of 75% BBD acres, and Acres and Proportions of 75% BBD Acres within the Warm/Dry Soil Temperature and Moisture Class). These are the **focal habitats**. These five PACs constitute 84 percent of the 75 percent BBD low resiliency habitats for all Management Zones III, IV, and V PACs. Within and immediately around these focal habitats, 5,751,293 acres are in high BBD areas with landscape sagebrush cover in the 25-65 percent and ≥ 65 percent classes and in the warm and dry soil temperature and moisture regimes. These are the habitats in the most danger to loss due to their low resistance to invasive annual grasses and low resilience following wildfire. Within the focal habitats in the high priority PACs, low resistance and resilience areas (cross-hatched areas in Figure 8) are a high priority (emphasis area) for implementing management strategies. Applying management strategies outside the emphasis areas are appropriate if the application of fire operations and fuels management activities will be more effective in addressing wildfire threats.

Table 2, PACs with the Highest Acres and Proportions of 75% BBD acres, and Acres and Proportions of 75% BBD Acres within the Warm/Dry Soil Temperature and Moisture Class (see Figure 8)

PAC	PAC Acres	Acres of 75% BBD in PAC (**focal habitat**)	Proportion of 75% BBD within PACs	Warm & Dry Soils within 75% BBD by Sagebrush Landscape Cover Classes Greater Than 25%*	
				25-65%	>65%
Northern Great Basin	13,045,515	7,383,442	0.57	674,517(9%)	1,745,163(24%)
Southern Great Basin	9,461,355	3,146,056	0.33	792,780(25%)	1,062,091(34%)
Snake, Salmon, and Beaverhead	5,477,014	2,823,205	0.52	89,146(3%)	95,970(3%)
Warm Springs Valley NV/Western Great Basin	3,520,937	1,558,166	0.44	207,365(13%)	741,353(48%)
Western Great Basin	3,177,253	2,084,626	0.66	140,141(7%)	202,767(10%)
Total for 5 PACS	**34,682,074**	**16,995,496**	**0.49**	**1,903,949**	**3,847,344**

***** This category represents the emphasis areas for applying appropriate management strategies in or near the focal habitats due to the lower probability of recovery after disturbance and higher probability of invasive annual grasses and existing wildfire threats.

High Density Sage-Grouse Habitats at Risk from Conifer Expansion

PACs, sagebrush landscape cover, and the 75 percent BBD data were also used in conjunction with the conifer expansion data (Mainer et al. 2013) to provide an initial stratification to determine PACs where conifer removal would benefit important sagebrush habitats. Conifer expansion threats are primarily western juniper in the northern Great Basin and pinyon pine/Utah juniper in the southern Great Basin.

Figure 7 displays results of the analysis focusing on the intersection of the 75 percent BBD, and modeled conifer expansion areas within two sagebrush landscape cover classes by management zone and PACs within the Great Basin. To identify high density sage-grouse areas affected by conifer expansion, the amount and proportion of acres estimated to be affected were calculated by sagebrush cover class to assist in the identification of the focal habitats (**Table 3)**. **Table 4**, displays quantitative outputs of this analysis using the 25 to 65 percent and greater than 65 percent landscape sagebrush cover classes for the PACs. Thus, **focal habitats** for addressing conifer expansion are the areas within and near conifer expansion in sagebrush landscape cover classes of 25 to 65 percent and greater than 65 percent. Conifer expansion in these two sagebrush landscape cover classes in the 75 percent BBD areas constitutes an emphasis area for treatments to address conifer expansion. Landscapes with less than 25 percent sagebrush cover may require significant additional management actions to restore sagebrush on those landscapes and therefore were considered a lower priority for this analysis. Focal habitats are identified in Table 4 and displayed in **Figure 9**.

Table 3 assists in identifying those PACs that provide the greatest contribution to high density sage-grouse populations, and the amounts (acres and proportion) within those PACs of sagebrush cover classes associated with modelled conifer expansion areas. Although there are uncertainties associated with the model, the results help managers identify specific geographic areas where treatments in conifer (pinyon and/or juniper) could benefit existing important sage-grouse populations.

The results of the screening revealed 5 PACs that contribute substantially to the 75 percent BBD habitats and are currently impacted most by conifer expansion (primarily pinyon pine and/or juniper; Table 4 and Figure 9). Four of the five PACs identified as high priority for conifer expansion treatments were also high priorities for wildfires and invasive annual grass threats. This is likely due to the size of the PACs and the relative importance of these PACs for maintaining the Great Basin sage-grouse meta-populations. As expected, the locations of high density sage-grouse habitats affected by conifer expansion differ spatially from those associated with low resilience habitats within and among the PACs, primarily due to differences in the biophysical settings (e.g., elevation and rainfall) that contribute to threats from invasive annual grasses and wildfires.

Three PACs (Snake/Salmon/Beaverhead, Southwest Montana, and Northern Great Basin/Western Great Basin) ranked high due to their relatively large proportion of high density breeding habitats (Table 3), but were not selected since the threat of conifer expansion was relatively low. One PAC, (Snake/Salmon/Beaverhead, was identified as a potential high priority area but was dismissed because results of the conifer expansion model likely overestimated impacts due to the adjacent conifer forests in this region. The COT Report also identified conifers as a “threat present but localized” in these areas, whereas, the top five PACs prioritized all have conifers identified as a widespread priority threat to address (USFWS 2013).

Table 3, Relative Ranking of PACs Based on High Density (75% BBD) Populations, Modeled Conifer Expansion, and Percentage of Habitats in Sagebrush Landscape Cover Classes

Sage-grouse Management Zone	Sage-grouse Priority Area for Conservation (PAC) Name	PAC acres	Breeding Bird Density (75%) Acres	Relative Proportion of Breeding Bird Density Area within PAC	Conifer Expansion (Modeled) Acres*		
					0-25% Sagebrush Landscape Cover	25%-65% Sagebrush Landscape Cover	65%+ Sagebrush Landscape Cover
4	Northern Great Basin	13045515	7383442	0.57	188502 (1%)	512949 (4%)	442480 (3%)
3	Southern Great Basin	9461355	3146056	0.33	108657 (1%)	738624 (8%)	237828 (3%)
4	Snake, Salmon, and Beaverhead	5477014	2823205	0.52	4209 (0%)	92173 (2%)	216803 (4%)
5	Western Great Basin	3177253	2084626	0.66	87963 (3%)	184618 (6%)	126177 (4%)
5	Warm Springs Valley NV/Western Great I	3520937	1558166	0.44	37148 (1%)	107025 (3%)	217101 (6%)
4	SW Montana	1369076	659475	0.48	1428 (0%)	34765 (3%)	39215 (3%)
4	Northern Great Basin/Western Great Bas	1065124	624581	0.59	12101 (1%)	2247 (0%)	6161 (1%)
5	Central OR	813699	451755	0.56	3191 (0%)	44937 (6%)	59624 (7%)
3	Panguitch/Bald Hills	1135785	352258	0.31	89141 (8%)	75157 (7%)	2563 (0%)
3	Parker Mountain-Emery	1122491	308845	0.28	84719 (8%)	83441 (7%)	7469 (1%)
4	Box Elder	1519454	292658	0.19	8531 (1%)	114376 (8%)	57645 (4%)
4	Baker OR	336540	184813	0.55	945 (0%)	15263 (5%)	195 (0%)
3	NW-Interior NV	371557	108256	0.29	7929 (2%)	29440 (8%)	11813 (3%)
3	Carbon	355723	97734	0.27	15968 (4%)	34446 (10%)	283 (0%)
3	Strawberry	323219	52635	0.16	7916 (2%)	27340 (8%)	1075 (0%)
3	Rich-Morgan-Summit	217033	37005	0.17	11685 (5%)	14280 (7%)	238 (0%)
3	Hamlin Valley	341270	3244	0.01	11321 (3%)	29960 (9%)	6243 (2%)
3	Ibapah	98574	0	0.00	195 (0%)	6770 (7%)	1039 (1%)
5	Klamath OR/CA	162667	0	0.00	1 (0%)	1533 (1%)	15302 (9%)
3	Sheeprock Mountains	611374	0	0.00	16744 (3%)	78580 (13%)	11878 (2%)

* Numbers in parenthesis indicate the proportion of acres relative to total PAC acres

Table 4, PACS with the Highest Acres and Proportions of 75% BBD acres and Estimated Conifer Expansion within Sagebrush Landscape Cover Classes (25-65 percent and ≥65 percent; see Figure 9)

PAC	PAC Acres	Acres 75% BBD in PAC	Prop. 75% BBD within PACs	Conifer Expansion by Landscape Sagebrush Cover Classes 25-65% and ≥65%* Focal Habitat	
				25-65%	≥65%
Northern Great Basin	13,045,515	7,383,442	0.57	512,949 (4%)	442,480 (3%)
Southern Great Basin	9,461,355	3,146,056	0.33	738,624 (8%)	237,828 (3%)
Warm Springs Valley NV/Western Great Basin	3,520,937	1,558,166	0.44	107,025 (3%)	217,101 (6%)
Western Great Basin	3,177,253	2,084,626	0.66	184,618 (6%)	126,177 (4%)
Central Oregon	813,699	451,755	0.56	44,937 (6%)	59,624 (7%)
Total for 5 PACS	**30,018,759**	**14,624,045**	**0.49**	**1,588,153 (5%)**	**1,083,210 (4%)**

*Numbers in parenthesis represent the percent of total PAC acres for each class.

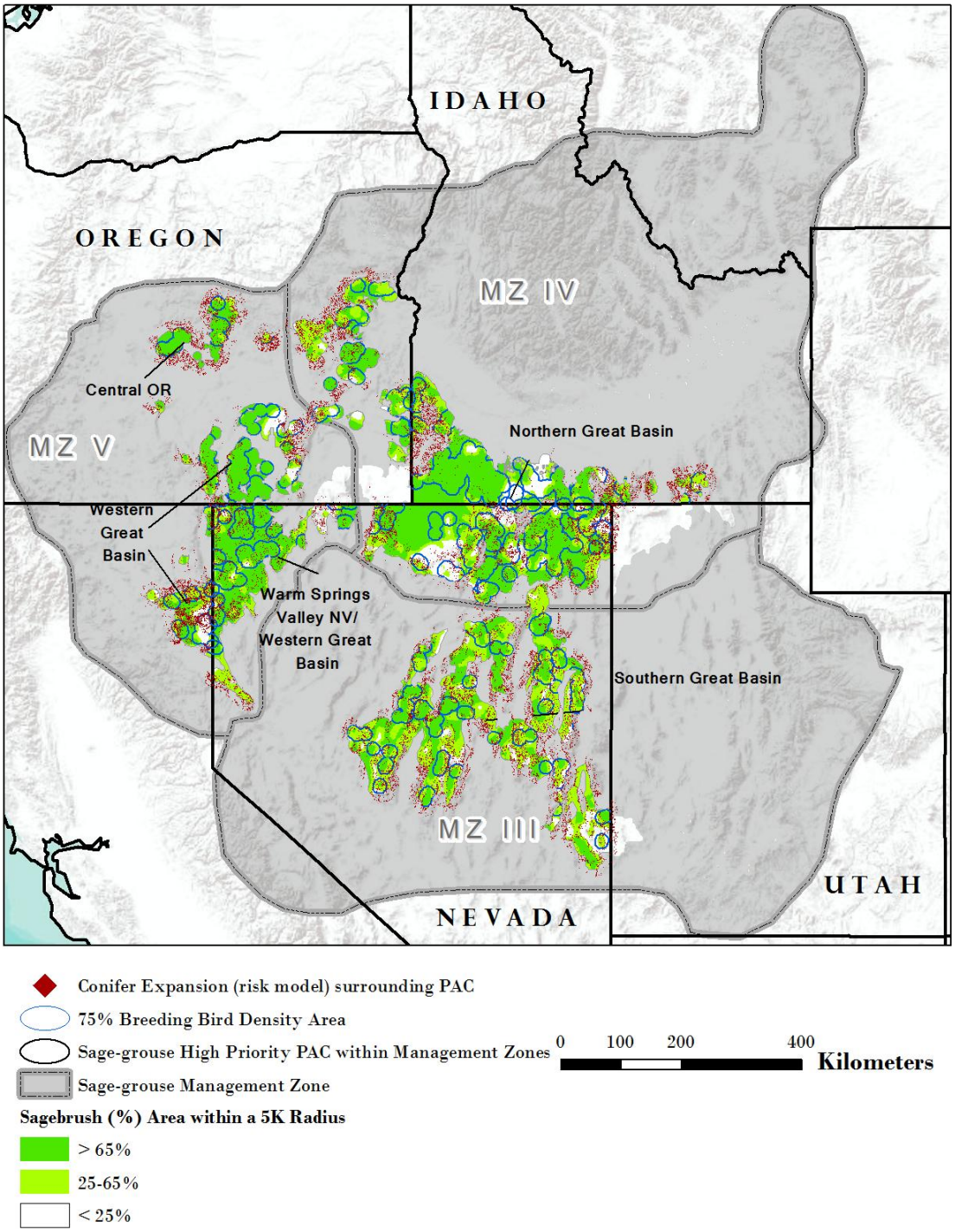


Figure 9, Five PACs Significantly Impacted by Conifer Expansion that contribute substantially to the 75% BBD and that have sagebrush landscape cover greater than 25%.

While the coarse-scale conifer expansion data used in this analysis likely over estimates the extent of the pinyon pine and/or juniper threat, results suggest that far fewer acres are currently affected by conifers than might be at risk from fire and invasive annual grasses impacts. Conifer expansion into sage-grouse habitats occurs at a slower rate, allowing more time for treatment, but early action may be needed to prevent population level impacts on sage-grouse (Baruch-Mordo et al. 2013). Furthermore, conifer expansion is primarily occurring on cooler and moister sites that are more resilient and where restoration is more likely to be effective (Miller et al. 2011), providing managers the opportunity to potentially offset at least some habitat loss expected to continue in less resilient ecosystems. While the available data set used to estimate conifer expansion provides only a coarse assessment of the problem, considerable efforts are currently underway to map conifers across sage-grouse range. These maps are expected to be available in the near future and should be used by land managers to better target project level conifer removal.

FIAT cautions against using the plotted locations of estimated conifer expansion for local management decisions due to the coarse-scale nature of this range-wide data set. Conifer expansion estimates are primarily provided here to aid in judging the relative scope of the threat in each PAC.

Step 1b. Potential Management Strategies

Potential management **strategies** (e.g., fuels management, habitat recovery/restoration, fire operations, post-fire rehabilitation) to conserve or restore Step 1 focal habitats are described below to assist local management units to initiate Step 2. These examples are illustrative and do not contain the full range of management strategies that may be required to address wildfires, invasive annual grasses, and conifer expansion within PACs and associated focal habitats. In general, the priority for applying management strategies is to first maintain or conserve intact habitat and second to strategically restore habitat (after a wildfire or proactively to reconnect habitat). Management strategies will differ when applying the protocol to:

Wildfire and Invasive Annual Grass. (See PACs identified in Table 2 and focal habitats shown in Figure 8). Focal habitats, as they relate to wildfires and invasive annual grasses, are defined as sage-grouse habitat in priority PACs within 75 percent BBD. Within these focal habitats, sagebrush communities with low resilience to disturbance and resistance to invasive annual grasses (warm and dry soil temperature and moisture regimes) are an emphasis area for management actions. Appendix 5 (A) in Chambers et al. (*In prep.*) includes a generalized state and transition model with an invasive annual grass component and warm and dry soil temperature and moisture regime associated with 8 to 12 inches of annual precipitation. This state and transition models is useful in developing management strategies to deal with annual grass issues as it contains useful restoration pathways.

Burn Probability is another tool that can be used to assist managers to identify the relative likelihood of large fire occurrence across the landscape within PACs and focal habitats. Burn probability raster data were generated by the Missoula Fire Lab using the large fire simulator - FSim - developed for use in the national Interagency **Fire Program Analysis (FPA)** project. FSim uses historical weather data and LANDFIRE fuel model data to simulate fires burning. Using these simulated fires, an overall burn probability is returned by FSim for each 270m pixel. The burn probability data was overlaid spatially with PACs, soil data, and shrub cover data. The majority of the high and very high burn probability acres lie within the top 5 PACs and are within areas with >25% sagebrush cover. Several of the other PACs have a greater overall percentage of the warm/dry soil regime with high/very high burn probability (northern great basin, baker, and NW interior NV) but the total acres are relatively few. Areas identified with high and very high burn probability are most likely to experience large fires given fire history, fuels, weather and topography. Results are displayed in the table 5 and Figure 10.

Table 5, Percentages of sage-grouse PAC areas with high and very high burn probability, 75% BBD within PAC, 75% BBD and warm dry/temperature regime, and 75% BBD and warm dry/temperature and warm dry/temperature with high and very high burn probability.

Sage Grouse Mangement Zone	*Sage-grouse Priority Area for Conservation (PAC) Name*	*Total PAC Acres*	*High, very high burn probability (percent of PAC acres)*	*75% BBD within PAC (percent PAC acres)*	*75% BBD and warm and dry soil/temperature regime ~~acres~~ (percent PAC acres)*	*75% BBD and warm and dry soil/temperature regime with high, very high burn probability (percent PAC acres)*
4	*Northern Great basin*	*13,045,415*	*86%*	*57%*	*19%*	*17%*
3	*Southern Great Basin*	*9,461,355*	*48%*	*33%*	*20%*	*9%*
4	*Snake, Salmon, and Beaverhead*	*5,477,014*	*68%*	*52%*	*5%*	*4%*
5	*Western Great Basin*	*3,177,253*	*61%*	*66%*	*15%*	*12%*
5	*Warm Springs Valley /Western Great Basin*	*3,520,937*	*30%*	*44%*	*28%*	*9%*
4	*SW Montana*	*1,369,076*	*1%*	*48%*	*0%*	*0%*
4	*Northern Great Basin/Western Great Basin*	*1,065,124*	*82%*	*59%*	*30%*	*22%*
5	*Central Oregon*	*813,699*	*71%*	*56%*	*3%*	*2%*
3	*Panguitch/Bald Hills*	*1,135,785*	*70%*	*31%*	*1%*	*1%*
3	*Parker Mountain-Emery*	*1,122,491*	*28%*	*28%*	*0%*	*0%*
4	*Box Elder*	*1,519,454*	*61%*	*19%*	*4%*	*2%*
4	*Baker Oregon*	*336,540*	*74%*	*55%*	*25%*	*21%*
3	*NW-Interior NV*	*371,557*	*99%*	*29%*	*12%*	*11%*
3	*Carbon*	*355,723*	*22%*	*27%*	*0%*	*0%*
3	*Strawberry*	*323,219*	*26%*	*16%*	*0%*	*0%*
3	*Rich-Morgan-Summit*	*217,033*	*79%*	*17%*	*0%*	*0%*
3	*Hamlin Valley*	*341,270*	*60%*	*1%*	*1%*	*0%*
3	*Ibapah*	*98,574*	*0%*	*0%*	*0%*	*0%*
3	*Sheeprock Mountains*	*611,374*	*98%*	*0%*	*0%*	*0%*
5	*Klamath OR/CA*	*162,667*	*98%*	*0%*	*0%*	*0%*

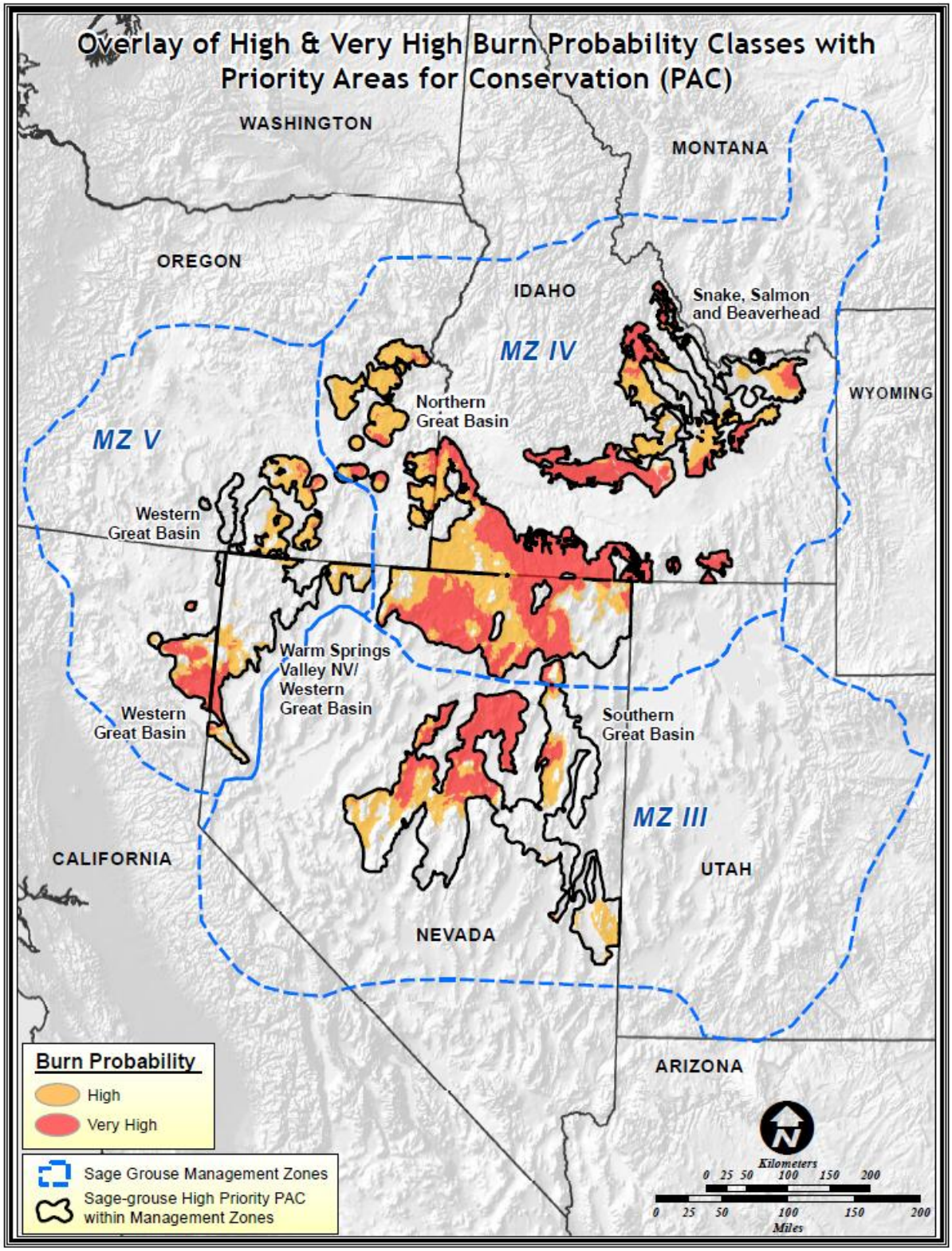


Figure 10, Burn Probability (high and very high) in priority invasive annual grass and wildfire PACs. .

Conifer Expansion. (See priority PACs for assessment identified in Table 4 and focal habitats shown in Figure 9). Focal habitats, as they relate to conifer expansion, are defined as sage-grouse habitat in a priority PAC with sagebrush landscape cover between 25 and 100 percent that is either near or in a conifer expansion area. The relationship between conifer expansion and resilience to disturbance and resistance to expansion is not documented to the same degree as with invasive annual grasses. However, Appendix 5 (D. and E.) in Chambers et al. (*In prep.*) includes two generalized state and transition models for conifer expansion with warm to cool and soil temperature regimes associated with precipitation ranges from 12 to 14 or more inches of annual precipitation. These state and transition models are useful in developing management strategies to deal with conifer expansion as they contain useful restoration pathways.

Chambers et al. (*In prep.*) is recommended for review at this point for information on applying resistance and resilience concepts along with sage-grouse habitat characteristics to develop management strategies to address wildfires, invasive annual grasses, and conifer expansion. The following tables are recommended for use in developing management strategies in or near focal habitats:

Table 1. Soil temperature and moisture regimes relationship to vegetation types and resistance and resilience.
Table 2. Sage-grouse habitat matrix showing the relationship between landscape sagebrush cover and resistance and resilience.
Table 3. Potential management strategies based on sage-grouse habitat requirements and resistance and resilience.
Table 4. Management strategies (fire suppression, fuels management, post-fire rehabilitation, and habitat restoration) associated with each cell in the sage-grouse habitat matrix (Table 2).

The "Putting it all together" section of the Chambers et al. (*In prep.*) also contains a case study from Northeast Nevada illustrating applications of management strategies to address the conservation, protection, and restoration of sage-grouse habitat.

To further assist in understanding Step 1b, examples of general priorities for management strategies are provided below and illustrated in Appendix 3 and 4:

1. Fuels Management: Projects that are designed to change vegetation composition and/or structure to modify potential fire behavior for the purpose of improving fire suppression effectiveness and limiting fire spread and intensity.
    a. Identify priorities and potential measures to reduce the threats to sage-grouse habitat resulting from changes in invasive annual grasses (primary focus on exotic annual grasses and conifer encroachment) and wildland fires. Place high priority on areas dominated by invasive annual grasses that are near or adjacent to low resistance and resilience habitats that are still intact.

b. Areas on or near perimeter of successful post-fire rehabilitation and habitat restoration projects where threats of subsequent fire are present are important for consideration.
c. Fuels management can be a high priority in large tracts of intact sagebrush if impacts on sage-grouse populations are minimal and outweighed by the potential benefits of reduced wildfire impacts in area being protected.

2. Habitat Recovery/Restoration Recovery (passive restoration) is a high priority in intact sagebrush stands to improve resistance and resilience before a disturbance. For example, where understory perennial herbaceous species are limited, improved livestock grazing practices can increase the abundance of these species and promote increased resistance to annual grasses.
    a. Habitat restoration is important where habitat connectivity issues are present within focal habitats.
    b. Pinyon pine and/or juniper removal in Phase I and II stands adjacent to large, contiguous areas of sagebrush (greater than 25 percent sagebrush landscape cover) is a priority.

3. Fire Operations (includes preparedness, prevention and suppression activities).
    a. Higher priority should be placed on areas with greater than 65 percent cover than on areas with 25 to 65 percent cover, followed by 0 to 25 percent cover (these categories are continuums not discrete thresholds).
    b. Higher priority should be placed on lower resistance/resilience habitats compared with higher resistance/resilience habitats.
    c. Fire operations in areas restored or post-fire rehabilitation treatment where subsequent wildfires can have detrimental effect on investment and recovery of habitat are important for consideration.
    d. Fire operations (suppression) are especially important in low elevation winter sagebrush habitat with low resistance and resiliency.
4. Post-Fire Rehabilitation
    a. High priority should be placed on supporting short-term natural recovery and long-term persistence in higher resistance and resiliency habitats (with appropriate management applied).
    b. High priority should be placed on reseeding in moderate to low resistance and resiliency habitats, but only if competition from invasive annual grasses, if present, can be controlled prior to seeding.

Step 2

Step 2 is carried out by local management units using the Step 1 geospatial data, focal habitats, and the associated management strategies. Step 2 includes evaluating the availability and accuracy of local information and geospatial data used to develop local management strategies in or near focal habitats (Step 2a).

It also involves developing focal habitat activity/implementation plans that include prioritized management tactics and treatments to implement effective fuels management, habitat recovery/restoration, fire operations, and post-fire rehabilitation (Step 2b). These activity/implementation plans will serve as the basis for NEPA analysis of site-specific projects.

Step 2a- Review of Step 1 Data and Incorporation of Local Information

Evaluate the accuracy and utility of Step 1 geospatial layers for focal habitats by incorporating more accurate or locally relevant:

- Vegetation maps (especially sagebrush cover)
- Updated or higher resolution conifer expansion layers (if applicable)
- Soil survey and ecological site descriptions
- Weather station, including Remote Automatic Weather Stations, data
- PACs, focal habitats, winter habitats, sage-grouse population distributions (i.e., more recent BBD surveys)
- Maps of cheatgrass and other invasive annual grasses that degrade sage-grouse habitat
- Wildfire polygons including perimeters and unburned islands within burn polygons
- Treatment locations and success (consult US Geological Survey Land Treatment Digital Library at http://ltdl.wr.usgs.gov/). The Land Treatment Digital Library allows the user to search on treatment results on an ecological site basis.
- Models and tools to help inform management strategies. For example, data which characterizes wildfire potential can help identify risk to focal habitats and help plan fire suppression and fuels management strategies to address these risks.
- Rapid Ecoregional Assessments
- Land Use Plans
- Appropriate monitoring or inventory information
- Any other geospatial data or models that could improve the accuracy of the assessment process

It is essential that subregional or local information and geospatial data be subjected to a quality control assessment to ensure that it is appropriate to use in developing Step 2b activity and implementation plans. Since PACs and focal habitats usually transcend multiple administrative boundaries, a collaborative approach is highly recommended for Step 2a.

A series of questions tied to the management strategies described in the Introduction section follows to assist managers in developing the framework to complete Step 2b (development of activity/implementation plans). The questions that follow apply to the focal habitats (and buffer areas around focal areas where management strategies may be more effectively applied) and will help in developing coordinated implementation/activity plans. These questions should not limit the scope of the assessment and additional questions relative to local situations are encouraged. These questions portray the minimum degree of specificity for focal habitats in order for offices to complete Step 2a.

Fuels Management

1. Where are the priority fuels management areas (spatially defined treatment opportunity areas that consider fire risk, fuels conditions, and focal habitats [including areas adjacent to focal habitats])?
2. Based on fire risk to focal habitats, what types of fuels treatments should be implemented to reduce this threat (for example, linear features that can be used as anchors during suppression operations)?
3. Considering resistance/resilience concepts and the landscape context from Step 1, where should treatments be applied in and around focal habitats to:
    a. Constrain fire spread?
    b. Reduce the extent of conifer expansion?
    c. Augment future suppression efforts by creating fuel breaks or anchors for suppression?
4. Based on opportunities for fire to improve/restore focal habitats, what types of fuels treatments should be implemented to compliment managed wildfire by modifying fire behavior and effects?
5. Are there opportunities to utilize a coordinated fuels management approach across jurisdictional boundaries?
6. What fuel reduction techniques will be most effective that are within acceptable impact ranges of local sage-grouse populations, including but not limited to grazing, prescribed fire, chemical, and biological and mechanical treatments? Will combinations of these techniques improve effectiveness (e.g., using livestock to graze fine fuels in a mowed fuel break in sagebrush)?

Habitat Recovery/Restoration

1. Are there opportunities for habitat restoration treatments to protect, enhance or maintain sage-grouse focal habitat especially to restore connectivity of focal area habitat?
2. Considering the resistance and resilience GIS data layer (Figure 4) and the Sage-Grouse Habitat Matrix (Chambers et al. *In prep.*; Table 2), where and why would passive or active restoration treatments be used?
3. What are the risks and opportunities of restoring habitat with low resistance and resilience including the warm/dry and cool/dry soil moisture/temperature regime areas?
4. Are there opportunities to utilize a coordinated approach across jurisdictional boundaries to effectively complete habitat restoration in focal habitats?

Fire Operations

1. Where are priority fire management areas (spatially defined polygons having the highest need for preparedness and suppression action)?

2. Where are the greatest wildfire risks to focal habitats considering trends in fire occurrence and fuel conditions (see Figure 10)?
3. Where do opportunities exist that could enhance or improve suppression capability in and around focal habitats?
    a) For example, increased water availability through installation of helicopter refill wells or water storage tanks.
    b) Decreased response time through pre-positioned resources or staffing remote stations.
4. Should wildfire be managed (per land use plan objectives) for improving focal habitat (e.g., reducing conifer expansion), and if so where, and under what conditions?
5. How can fire management be coordinated across jurisdictional boundaries to reduce risk or to improve focal habitats?

Post-fire Rehabilitation

1. Where are areas that are a high priority for post-fire rehabilitation to improve habitat connectivity if a wildfire occurs?
2. Which areas are more conducive (higher resistance and/or resilience) to recovery and may not need reseeding after a wildfire?
3. What opportunities to build in fire resistant fuel breaks to reduce the likelihood of future wildfires impacts on seeded or recovering areas?
4. Are there opportunities to utilize a coordinated approach across jurisdictional boundaries to implement rehabilitation practices?

The outcome of Step 2a is the assembly of the pertinent information and GIS layers to assist managers in developing implementation or activity plans to address wildfires, invasive annual grasses, and conifer expansion in focal habitats. Activity plans generally refer to plans where management of a resource is changed (livestock grazing plans) whereas implementation plans are generally associated with treatments.

Step 2b- Preparation of Activity/Implementation Plans

Activity/implementation plans are prepared to implement the appropriate management strategies within and adjacent to focal habitats. Since focal habitats cross jurisdictional boundaries, it is especially important that a collaborative approach be used to develop implementation/activity plans. The process of identifying partners and creating collaborative teams to develop these plans is a function of state, regional, and local managers and is not addressed as part of this step.

Implementation/activity plans are required to:

1. Address issues in and around focal habitats related to wildfires, invasive annual grasses, and conifer expansion

2. Use resistance to invasive annual grasses and resilience after disturbance (where appropriate) as part of the selection process for implementing management strategies
3. Emphasize application of management strategies within or near focal habitats with low resistance and resilience (warm/dry and cool/dry soil moisture/temperature regimes) invasive annual grasses and wildfires
4. Use the best available local information to inform the assessment process
5. Encourage collaboration and coordination with focal habitats across jurisdictional boundaries
6. Be adaptive to changing conditions, disturbances, and modifications of PAC boundaries

FIAT recommends considering other factors, such as adaptive management for climate change, local sagebrush mortality due to aroga moth or other pests, and cheatgrass die-off areas in developing activity/implementation plans. The latter two factors could influence where and what kind of management strategies may be needed to address the loss of habitat or changes in fuel characteristics (e.g., load and flammability) associated with these mortality events.

The following recommendations are provided to assist in the preparation of activity/implementation plans:

Fuels Management

1. Spatially delineate priority areas for fuel management treatments per Step 2a information considering:
    a. Linear fuel breaks along roads
    b. Other linear fuel breaks to create anchor points
    c. Prescribed burning which would meet objectives identified in the Fish and Wildlife Service's Conservation Objectives Team (COT) report
    d. Mechanical (e.g., treatment of conifer expansion into sagebrush communities)
    e. Other mechanical, biological, or chemical treatments
    f. If they exist, spatially delineated areas where fuel treatments would increase the ability to use fire to improve/enhance focal habitats.
2. Identify coordination needed between renewable resource, fire management, and fuels management staff to facilitate planning and implementation of fuels treatments.
3. Quantify a projected level of treatment within or near focal habitats.
    a. Identify treatments (projects) to be planned within or near focal habitats.
    b. Include a priority and proposed work plan for proposed treatments.

Habitat Recovery/Restoration

1. Spatially delineate priority areas for restoration, using criteria established in Step 2a. Priority areas for restoration should be delineated by treatment methods:
    a. Seeding priority areas
    b. Invasive annual grasses priority treatment areas (herbicide, mechanical, biological, combination)

c. Priority areas requiring combinations of treatments (e.g., herbicide followed by seeding).
d. Include tables, maps or appropriate info.

2. Identify coordination needed between renewable resource, fire management, and fuels management staff to facilitate planning and implementation of restoration treatments.
3. Include a priority or implementation schedule for proposed restoration treatment

Fire Operations

1. Spatially delineate priority areas for fire suppression, based upon criteria established in Step 2a. Priority areas for fire operations should be delineated by type, such as:
    a. Initial attack priority areas
    b. Resource pre-positioning and staging priority areas
2. Spatially delineate areas where opportunities exist to enhance or improve suppression capability.
3. Spatially delineate areas where wildfire can be managed to achieve land use plan and COT objectives.

Post-Fire Rehabilitation

1. Spatially delineate priority areas for post-fire rehabilitation using criteria in Step 2a.
2. Priority areas for post-fire rehabilitation should be based on resistance and resiliency and pre-fire landscape sagebrush cover and include consideration of:
    a. Seeding priority areas
    b. Invasive annual grasses priority treatment areas (herbicide, mechanical, biological (herbivory or seeding),
    c. Priority areas requiring combinations of treatments (e.g., herbicide followed by seeding)
3. Identify coordination needed between renewable resource, fire management, and fuels management staff to facilitate planning and implementation of post-fire rehabilitation treatments.

This completes the assessment process and sets the stage for more detailed project planning and NEPA associated with implementing on-the-ground treatments and management changes.

Members of the FIAT Development and Review teams are listed in Appendix 5.

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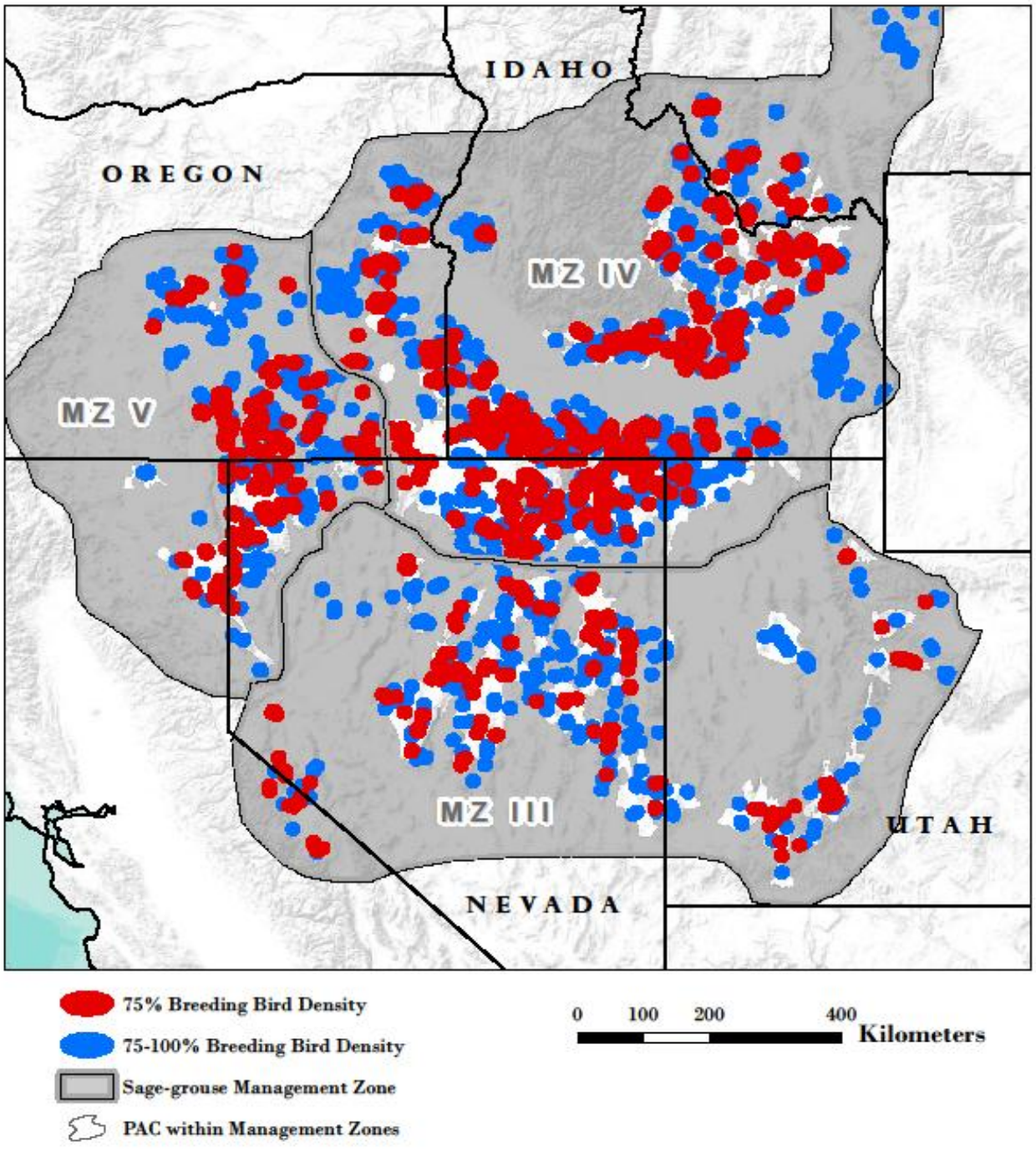
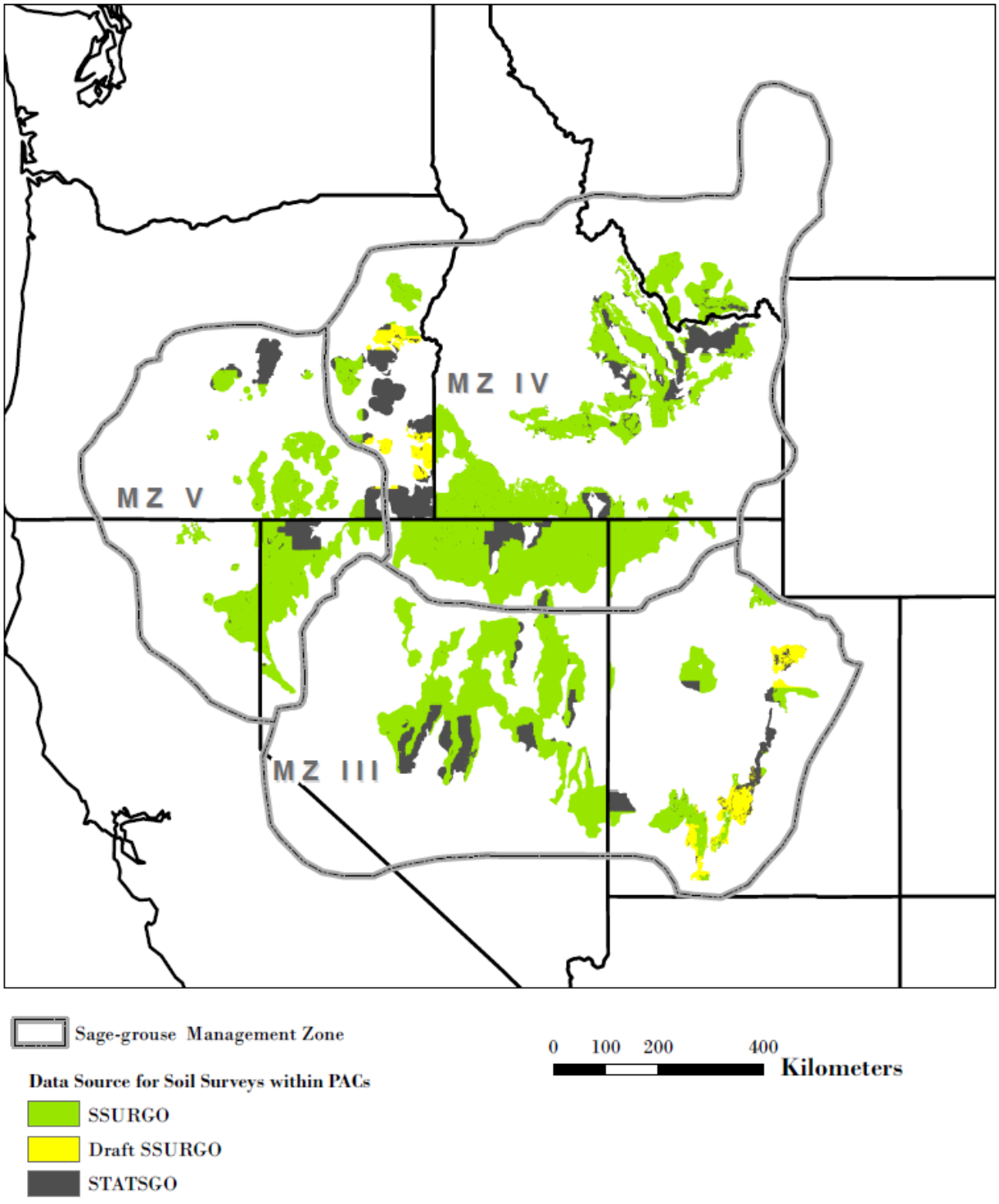
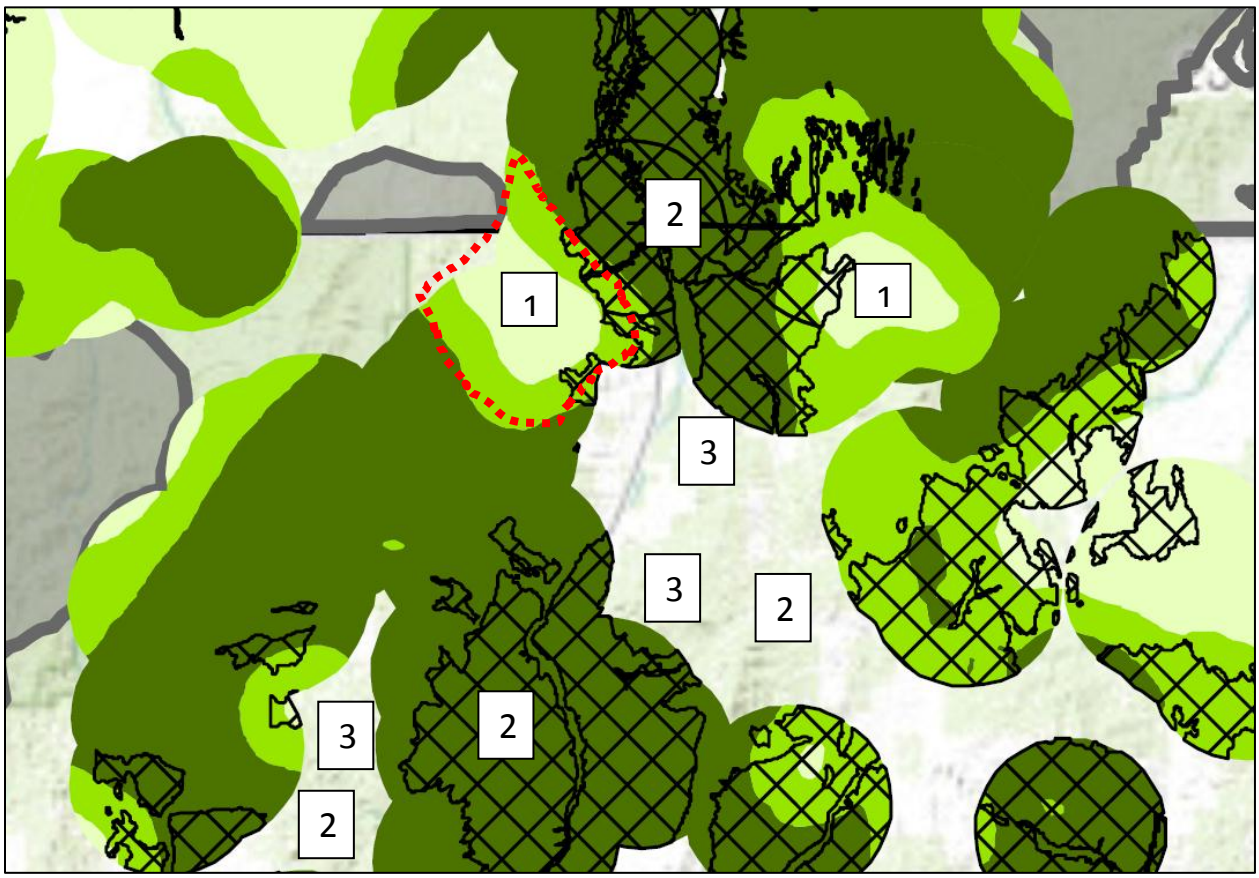
Appendix 1. Sage-grouse breeding bird density thresholds for 75% and 100% of the breeding birds, Management Zones, and PACs. Breeding bird density of 75 to 100% is included in this figure to provide context for local management units when making decisions concerning connectivity between populations and PACs.

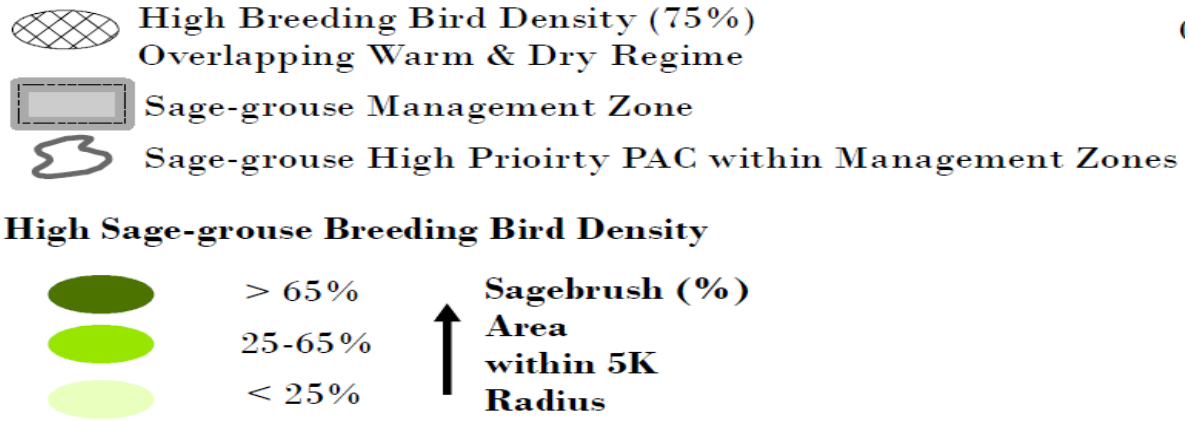


Appendix 2. Gaps in SSURGO soil survey data in Management Zones III, IV, and V. STATSGO2 soil survey data used to fill these gaps.



Appendix 3. Example of potential management strategies applied to Wildfire/Invasive Annual Grass Scenario.



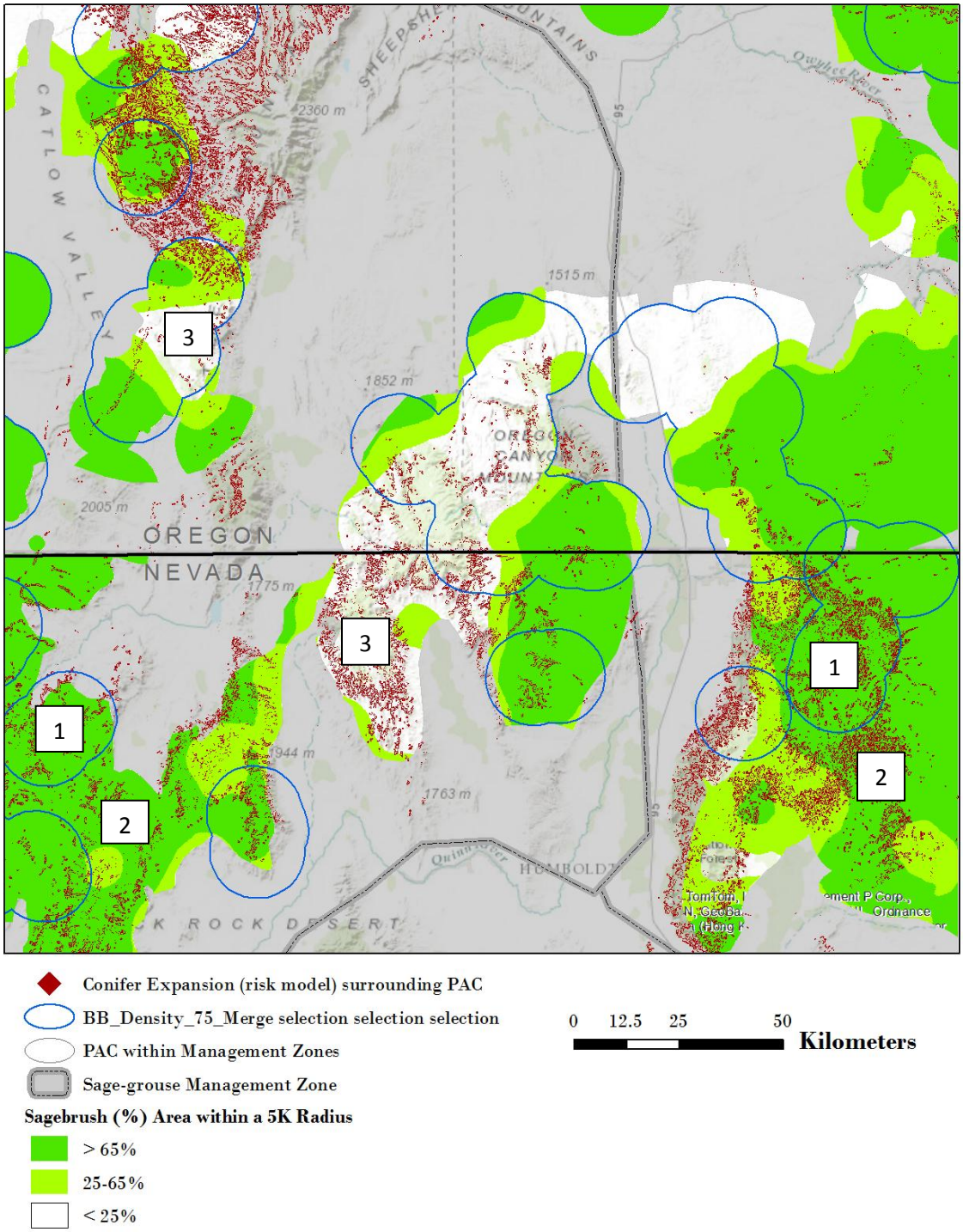


1 High priority for habitat restoration and post-fire rehabilitation to restore connectivity.

2 High priority for fire suppression within and around area given >65% sagebrush landscape cover and low resistance/resilience.

3 High priority for fuels management to reduce likelihood of wildfires in low resistance/resilience habitat with >65% landscape cover.

Appendix 4. Management strategy example for Western Juniper expansion.



1 High priority (emphasis area) for juniper control (>25% landscape sagebrush cover & 75% BBD)

2 Moderate priority (emphasis area) for juniper control (>25% landscape sagebrush cover)

3 Very low priority (<25% landscape sagebrush cover)

Appendix 5. Members of FIAT Development and Review Team

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Chuck Mark	Forest Service Supervisor, Salmon-Challis Forest
Dave Repass	BLM, ES&R Coordinator, Washington Office
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Greater Sage-Grouse Wildfire, Invasive Annual Grasses & Conifer Expansion Assessment

June 2014

Introduction and Background

The purpose of this assessment is to identify priority habitat areas and management strategies to reduce the threats to Greater Sage-Grouse resulting from impacts of invasive annual grasses, wildfires, and conifer expansion. The Conservation Objectives Team (COT) report (USFWS 2013) and other scientific publications identify wildfire and conversion of sagebrush habitat to invasive annual grass dominated vegetative communities as two of the primary threats to the sustainability of Greater Sage-Grouse (*Centrocercus urophasianus*, hereafter sage-grouse) in the western portion of the species range. For the purposes of this assessment protocol, invasive species are limited to, and hereafter referred to, as **invasive annual grasses** (e.g., primarily cheatgrass [*Bromus tectorum*]). Conifer expansion (also called encroachment) is also addressed in this assessment.

The United States Fish and Wildlife Service (USFWS) will consider the amelioration of impacts, location and extent of treatments, degree of fire risk reduction, locations for suppression priorities, and other proactive measures to conserve sage-grouse in their 2015 listing decision. This determination will be made based in part upon information contained in the United States (US) Department of the Interior, Bureau of Land Management (BLM) resource management plan (RMP) amendments and Forest Service land resource management plan (LRMP) amendments, including this assessment.

This assessment is based in part on National Resources Conservation Service (NRCS) soil surveys that include geospatial information on soil temperature and moisture regimes associated with resistance and resiliency properties (see following section on *Soil Temperature and Moisture Regimes)*. While this assessment is applicable across the range of sage-grouse, the analysis is limited to Western Association of Fish and Wildlife Management Agencies' (WAFWA) Management Zones III, IV, and V (roughly the Great Basin region) because of the significant issues associated with invasive annual grasses and the high level of wildfires in this region. The utility of this assessment process is dependent on incorporating improved information and geospatial data as it becomes available. Although the resistance and resilience concepts have broad applications (e.g., infrastructure development), this assessment is limited to developing strategies to reduce threats to sage-grouse habitat (e.g., invasive annual grasses and wildfires).

Draft Greater Sage-Grouse Environmental Impact Statements (EISs) contain a suggested framework in the appendices ("Draft Greater Sage-Grouse Wildland Fire and Invasive Species Assessment") that provided a consistent approach to conduct these assessments. The current protocol was developed by the Fire and Invasive Species Team (FIAT), a team of wildland fire specialists and other resource specialists and managers, to specifically incorporate resistance to invasive annual grasses and resilience after disturbance principles into the assessment protocol. In October 2013, the BLM, Forest Service, and USFWS agreed to incorporate this approach into the final EISs.

The cornerstone of the FIAT protocol is recent scientific research on resistance and resilience of Great Basin ecosystems (Chambers et al. *In press*) and the USFWS-sponsored project with the Western Association of Fish and Wildlife Agencies (WAFWA) to assemble an interdisciplinary team to provide additional information on wildland fire and invasive plants and to develop strategies for addressing

these issues. This interagency collaboration between rangeland scientists, fire specialists, and sage-grouse biologists resulted in the development of a strategic, multi-scale approach for employing ecosystem resilience and resistance concepts to manage threats to sage-grouse habitats from wildfire and invasive annual grasses (Chambers et al. *In prep.*). This paper is being published as a Forest Service Rocky Mountain Research Station General Technical Report and is available at www._____. It serves as the reference and basis for the protocol described in this assessment.

The assessment process sets the stage for:

- Identifying important sage-grouse occupied habitats and baseline data layers important in defining and prioritizing sage-grouse habitats
- Assessing the resistance to invasive annual grasses and resilience after disturbance and prioritizing focal habitats for conservation and restoration
- Identifying geospatially explicit management strategies to conserve sage-grouse habitats

Management strategies are types of actions or treatments that managers typically implement to resolve resource issues. They can be divided into proactive approaches (e.g., fuels management and habitat recovery/restoration) and reactive approaches (e.g., fire operations and post-fire rehabilitation). Proactive management strategies can favorably modify wildfire behavior and restore or improve desirable habitat with greater resistance to invasive annual grasses and/or resilience after disturbances such as wildfires. Reactive management strategies are employed to reduce the loss of sage-grouse habitat from wildfires or stabilize soils and reduce impacts of invasive annual grasses in sage-grouse habitat after wildfires. Proactive management strategies will result in long-term sage-grouse habitat improvement and stability, while reactive management strategies are essential to reducing current impacts of wildfires on sage-grouse habitat, thus maintaining long-term habitat stability. Management strategies include:

Proactive Strategies-

1. **Fuels Management** includes projects that are designed to change vegetation composition and/or structure to modify fire behavior characteristics for the purpose of aiding in fire suppression and reducing fire extent.

2. **Habitat Restoration/Recovery**
    a. Recovery, referred to as passive restoration (Pyke 2011), is focused on changes in land use (e.g., improved livestock grazing practices) to achieve a desired outcome where the plant community has not crossed a biotic or physical threshold.
    b. Restoration is equivalent to active restoration (Pyke 2011) and is needed when desired species or structural groups are poorly represented in the community and reseeding, often preceded by removal of undesirable species, is required. Note: The Fuels Management program supports recovery/restoration projects through its objective to restore and maintain resilient landscapes.

Reactive Strategies-

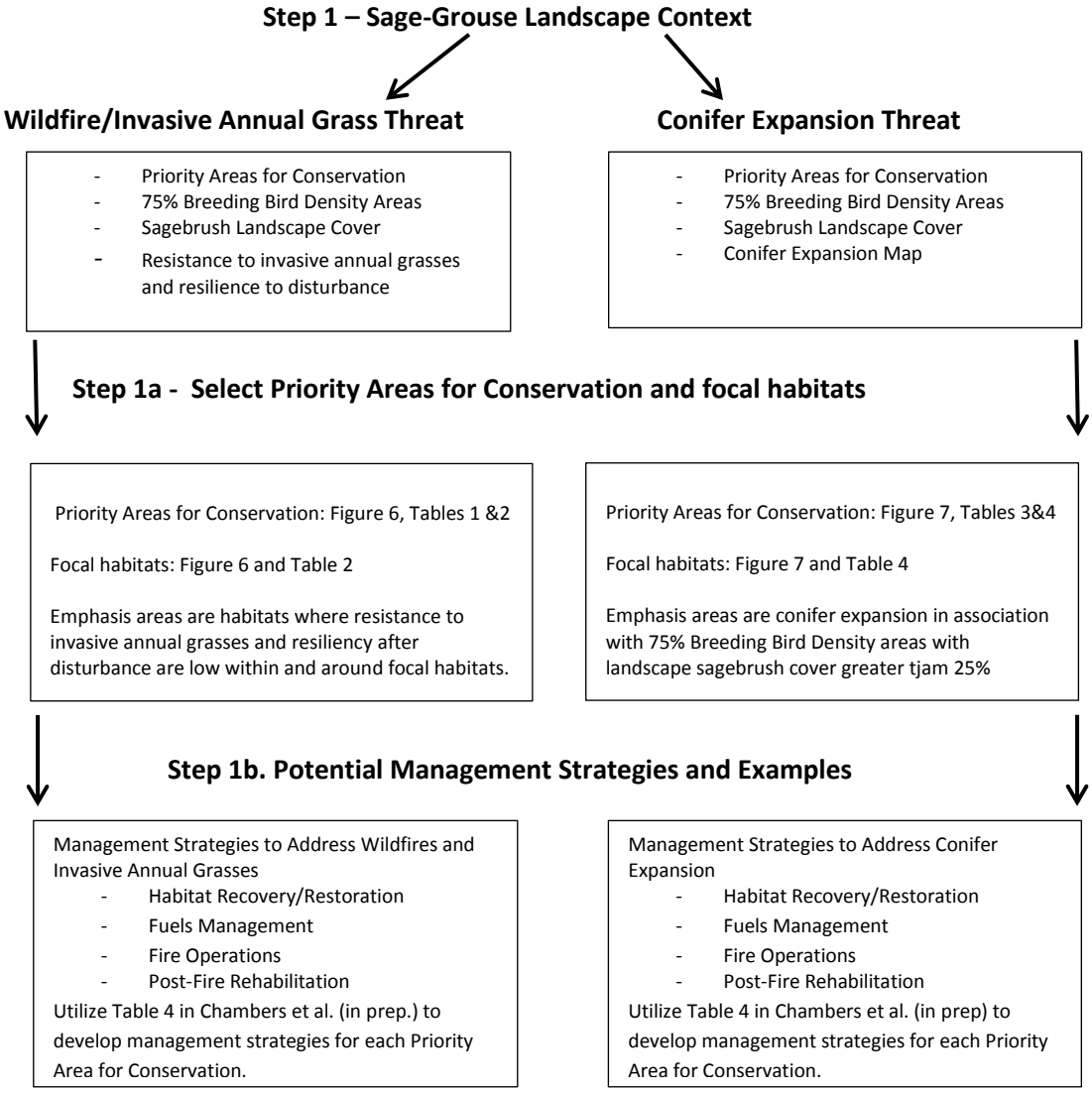
3. **Fire Operations** includes preparedness, prevention, and suppression activities. When discussing specific components of fire operations, the terms fire preparedness, fire prevention and fire suppression are used.

4. **Post-Fire Rehabilitation** includes the BLM's Emergency Stabilization and Rehabilitation (ES&R) Program and the Forest Service's Burned Area Emergency Response (BAER) Program. Policy limits application of funds from 1 to 3 years, thus treatments to restore or enhance habitat after this period of time are considered habitat recovery/restoration.

The assessment process included two steps with sub-elements. First, important Priority Areas for Conservation (PACs) and focal habitats are identified (**Step 1a**). Second, potential management **strategies** (described above) are identified to conserve or restore focal habitats threatened by wildfires, invasive annual grasses, and conifer expansion (primarily pinyon pine and/or juniper species; **Step 1b**). Focal habitats are the portions of a PAC with important habitat characteristics, bird populations, and threats (e.g., wildfires, invasive annual grasses, and conifer expansion) where this assessment will be applied. Areas adjacent to or near the focal habitats can be considered for management treatments such as fire control and fuels management if these locations can reduce wildfire impacts to focal habitats. Soil temperature and moisture regimes are used to characterize capacity for resistance to invasive annual grasses and resilience after disturbance (primarily wildfires) within focal habitats to assist in identifying appropriate management strategies, especially in areas with good habitat characteristics that have low recovery potential following disturbance. Soil moisture and temperature regime relationships have not been quantified to the same degree as for conifer expansion; however, Chambers et al. (*In prep.*) discuss preliminary correlations between these two variables.

The results of Steps 1a and 1b, along with associated geospatial data files, are available to local management units to complete Step 2 of the assessment process. Step 2 is conducted by local management units to address wildfire, invasive annual grasses, and conifer expansion in or near focal habitat areas. First, local information and geospatial data are collected and evaluated to apply and improve on Step 1 focal habitat area geospatial data (**Step 2a**). Second, focal habitat activity and implementation plans are developed and include prioritized management **tactics and treatments** to implement effective, fuels management, habitat recovery/restoration, fire operations, and post-fire rehabilitation strategies (**Step 2b**). This assessment will work best if Step 2b is done across management units (internal and externally across BLM and Forest Service administrative units and with other entities). **Figure 1**, Assessment Flow Chart, contains an illustration of the steps in the assessment process.

This analysis does not necessarily address the full suite of actions needed to maintain the current distribution and connectivity of sage-grouse habitats across the Great Basin because resources available to the federal agencies are limited at this time. Future efforts designed to maintain and connect habitats across the range will be needed as current focal areas are addressed and additional resources become available.



Step 2 – Management Unit Applications for Invasive Annual Grasses and Conifer Expansion

Step 2a

1) Evaluate the accuracy and utility of Step 1 geospatial layers and incorporate relevant local information.
2) Develop framework for incorporating management strategies to initiate implementation/activity plans.

Step 2b

Develop collaborative implementation/activity plans to address threats to focal habitats in Priority Areas for Conservation.

Figure 1, Assessment Flow Chart

Step 1

The first component of the Wildfire and Invasive Annual Grasses Assessment describes the factors that collectively provide the sage-grouse landscape context. Step 1a provides this context by discussing PACs, breeding bird density (BBD), soil temperature and moisture regimes (indicators of resistance to annual grasses and resilience after disturbance), landscape sagebrush cover, and conifer expansion. See Chambers et al. (2014 in prep.) for a detailed description of Invasive Annual Grass and Wildfire threats to sage-grouse habitat. Priority PACs and focal habitats are derived from the information provided in this sage-grouse landscape context section.

Step 1a- Sage-grouse landscape context

This component of the assessment identifies important PACs and associated focal habitats where wildfire, invasive annual grasses, and conifer expansion pose the most significant threats to sage-grouse.

The primary focus of this assessment is on sage-grouse populations across the WAFWA Management Zones III, IV, and V (**Figure 2**, Current PACs for WAFWA Management Zones III, IV, and V). Sage-grouse are considered a landscape species that require very large areas to meet their annual life history needs. Sage-grouse are highly clumped in their distribution (Doherty et al. 2010), and the amount of landscape cover in sagebrush is an important predictor of sage-grouse persistence in these population centers (Knick et al. 2013). States have used this information combined with local knowledge to identify PACs to help guide long-term conservation efforts. FIAT used data sets that were available across the three management zones as an initial step for prioritizing selected PACs and identifying focal habitats for fire and invasive annual grasses and conifer expansion assessments. These data sets (also described in Chambers et al. *In prep.*) include:

Priority Areas for Conservation (PACs)

PACs have been identified by states as key areas that are necessary to maintain redundant, representative, and resilient sage-grouse populations (USFWS 2013; see Figure 2). A primary objective is to minimize threats within PACs (e.g., wildfire and invasive annual grasses impacts) to ensure the long-term viability of sage-grouse and its habitats. A secondary priority is to conserve sage-grouse habitats outside of PACs since they may also be important for habitat connectivity between PACs (genetic and habitat linkages), habitat restoration and population expansion opportunities, and flexibility for managing habitat changes that may result from climate change. PACs have also been identified by the USFWS as one of the reporting geographic areas that will be considered during listing determinations for sage-grouse.

The combination of PACs with BBD data (described below) assists us in identifying connectivity between populations. PAC boundaries may be modified in the future requiring adjustments in focal habitat areas and management strategy priorities.

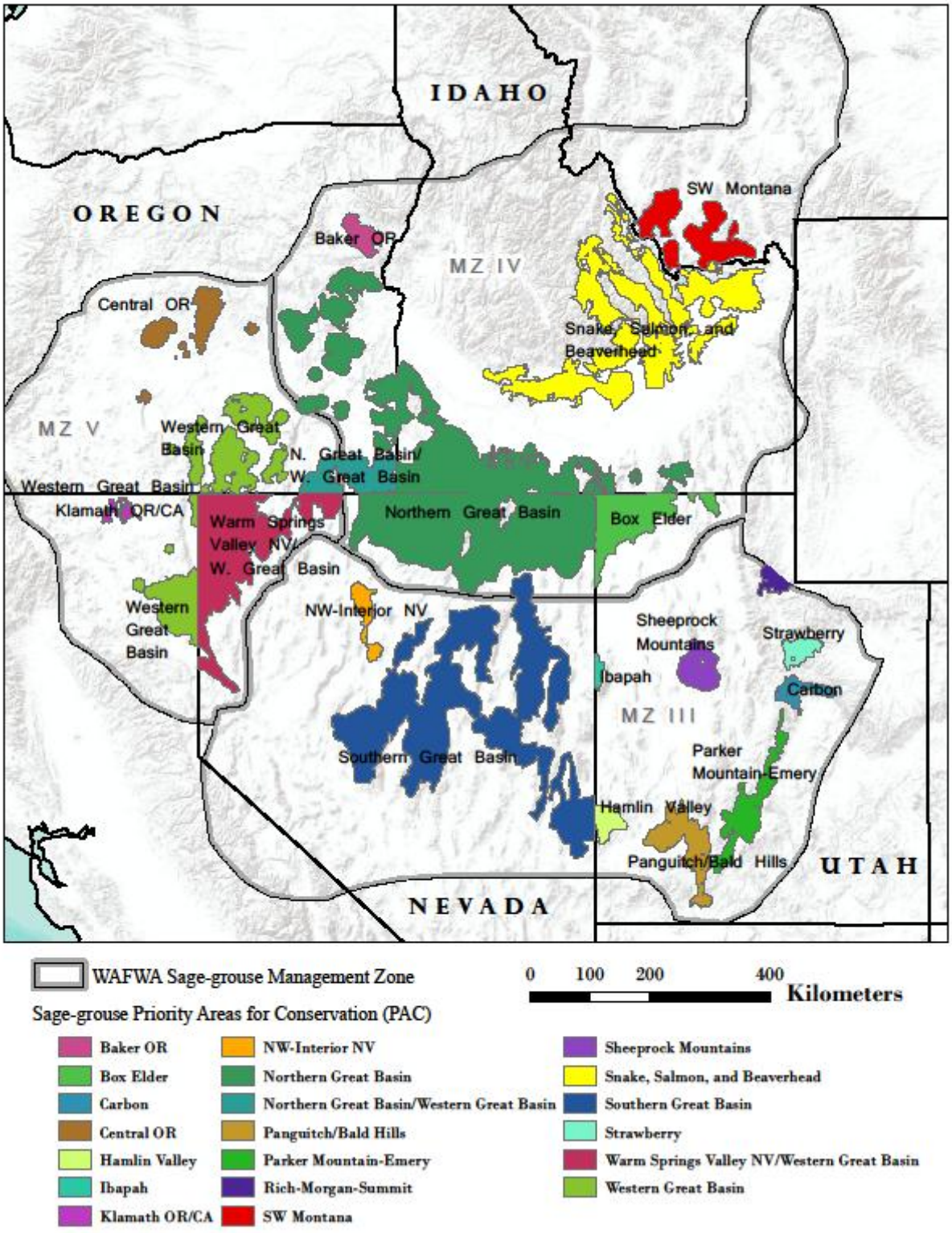


Figure 2, Current PACs for WAFWA Management Zones III, IV, and V. Bi-State sage-grouse populations were not included for this analysis and are being addressed in separate planning efforts.

Breeding Bird Density

Doherty et al. (2010) provided a useful framework for identifying population concentration centers in their range-wide BBD mapping. FIAT used maximum counts of males on leks (4,885 males) to delineate breeding bird density areas that contain 25, 50, 75, and 100 percent of the known breeding population. Leks were then mapped according to abundance values and buffered by 4 to 5.2 miles (6.4 to 8.5 kilometers) to delineate nesting areas. Findings showed that while sage-grouse occupy extremely large landscapes, their breeding distribution is highly aggregated in comparably smaller identifiable population centers; 25 percent of the known population occurs within 3.9 percent (7.2 million acres [2.92 million hectares]) of the species range, and 75 percent of birds are within 27 percent of the species range (50.5 million acres [20.4 million hectares]; Doherty et al. 2010). See **Figures 3**, Sage-Grouse Breeding Bird Density Thresholds.

This analysis places emphasis on breeding habitats because little broad/mid-scale data exists for associated brood-rearing (summer) and winter habitat use areas. Finer scale seasonal habitat use data should be incorporated (or, if not available studies, should be conducted) at local levels to ensure management actions encompass all seasonal habitat requirements. Federal administrative units should consult with state wildlife agencies for additional seasonal habitat information.

For this assessment, FIAT chose to use the 75 percent BBD as an indicator of high bird density areas that informed the approach used by state wildlife agencies to initially identify PACs. Range-wide BBD areas provide a means to further prioritize actions within relatively large PACs to maintain bird distribution and abundance. FIAT used state level BBD data from Doherty et al. (2010) instead of range-wide model results to ensure important breeding areas in Management Zones III, IV, and V were not underweighted due to relatively higher bird densities in the eastern portion of the range. BBD areas of 75 to 100 percent are included in Appendix 1 to provide context for local management units when making decisions concerning connectivity between populations and PACs.

Note that breeding density areas were identified using best available information in 2009, so this range-wide data does not reflect the most current lek count information and changes in conditions since the original analysis. Subsequent analysis should use the most current information available. Also, BBD areas should not be viewed as rigid boundaries but rather as a means to regionally prioritize landscapes where step down assessments and actions should be implemented quickly to conserve the most birds.

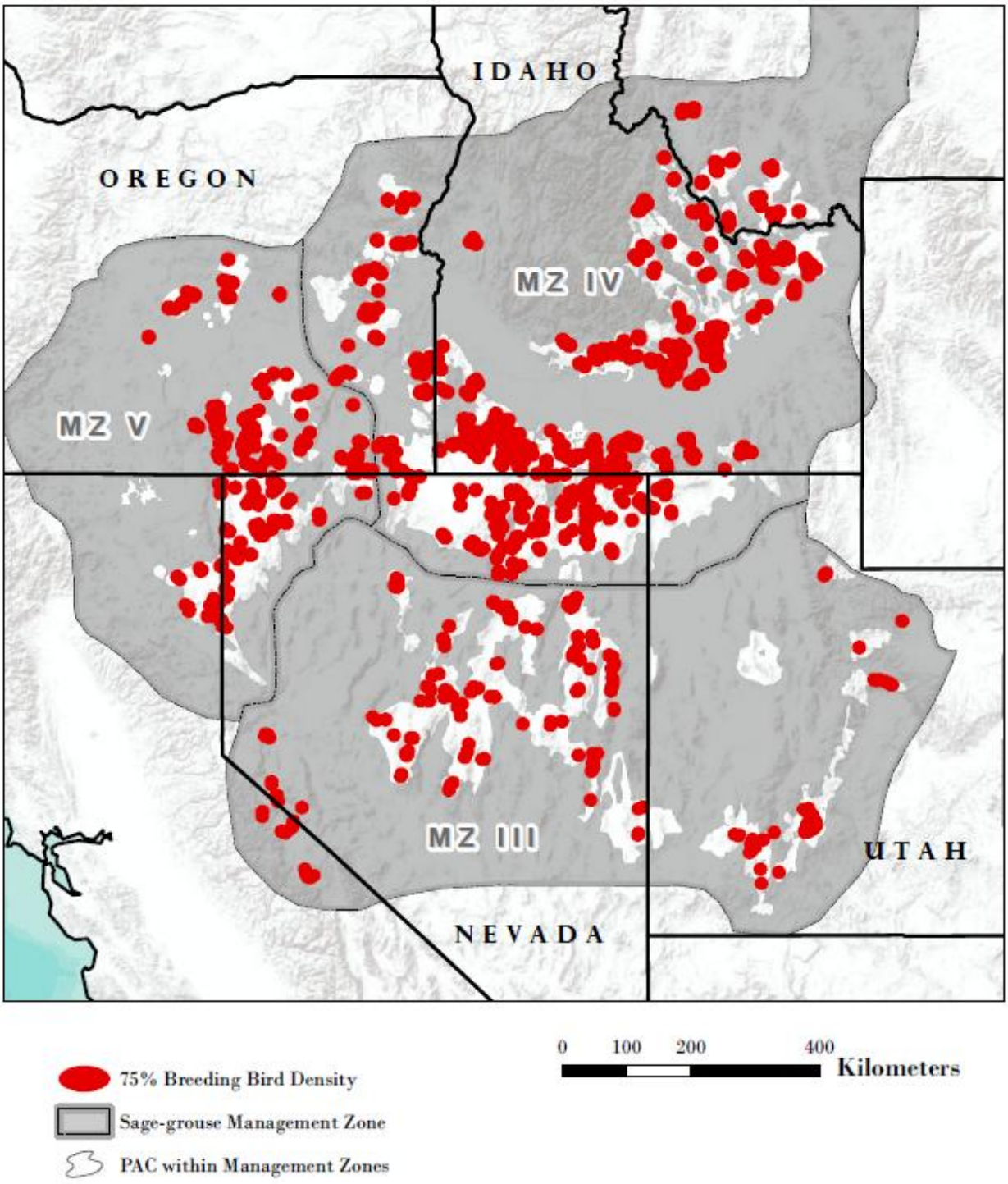


Figure 3, Sage-Grouse Breeding Bird Density Thresholds for 75% of the breeding birds, Management Zones, and PACs. Breeding bird density of 75 to 100% is shown in Appendix 1 to provide context for local management units when making decisions concerning connectivity between populations and PACs.

Soil Temperature and Moisture Regimes

Invasive annual grasses and wildfires can be tied to management strategies through an understanding of resistance and resilience concepts. Invasive annual grasses has significantly reduced sage-grouse habitat throughout large portions of its range (Miller et al. 2011). While abandoned leks were linked to increased nonnative annual grass presence, active leks were associated with less annual grassland cover than in the surrounding landscape (Knick et al. 2013). Invasive annual grasses also increases fire frequency, which directly threatens sage-grouse habitat and further promotes the establishment of invasive annual grasses (Balch et al. 2013). This nonnative annual grass and fire feedback loop can result in conversion from sagebrush shrublands to annual grasslands (Davies 2011).

In cold desert shrublands, vegetation community resistance to invasive annual grasses, especially cheatgrass, and resilience following disturbance is strongly influenced by soil temperature and moisture regimes (Chambers et al. 2007; Meyer et al. 2001). Generally, cooler and moister soil temperature/moisture regimes are associated with more resilient vegetation communities as indicated by increases in vegetation productivity and ability to compete and recover from disturbance along elevation gradients (Chambers et al. 2007; Chambers et al. *in press*). Also, colder soil temperatures are associated with more resistant communities due to limitations on invasive annual grass growth and reproduction. Thus, communities with warm and dry soil temperature and moisture regimes tend to have relatively low resilience and resistance. Communities with cool and dry soil temperature and moisture regimes also can have relatively low resilience and resistance with the degree of resistance to cheatgrass depending on soil temperature (see Figure 9 in Chambers et al. *In prep.*). A continuum in resistance and resilience exists across soil temperature and moisture regimes that will need to be considered when developing implementation or activity plans in Step 2. These relationships can be used to help prioritize management actions within sage-grouse habitat using broadly available data.

To capture relative resistance and resilience to disturbance and invasive annual grasses across the landscape, soil temperature and moisture regime information (described in greater detail in Chambers et al. *In prep.*) were obtained from the Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) data. Where gaps in this coverage existed, the NRCS US General Soil Map (STATSGO2) data was used (Soil Survey Staff 2014; see Appendix 1). The STATSGO2 database includes soils mapped at a 1:250,000-scale; the SSURGO database includes soils mapped at the 1:20,000 scale. Interpretations made from soil temperature and moisture regimes from the STATSGO2 database will not have the same level of accuracy as those made from the SSURGO database.

Areas characterized by warm and dry soil temperature and moisture regimes (low relative resistance and resilience) were intersected with sage-grouse breeding habitat and sagebrush landscape cover to identify candidate areas (emphasis areas) for potential management actions that mitigate threats from invasive annual grasses and wildfire (**Figure 4**, Soil Moisture and Temperature Regimes for Management Zones III, IV, and V, and **Figure 5**, Intersection of High Density (75% BBD) Populations). These data layers provide the baseline information considered important in prioritizing areas where conservation and management actions could be developed to address invasive annual grasses in a scientifically defensible manner (see Table 4 in Chambers et al. *In prep.*).

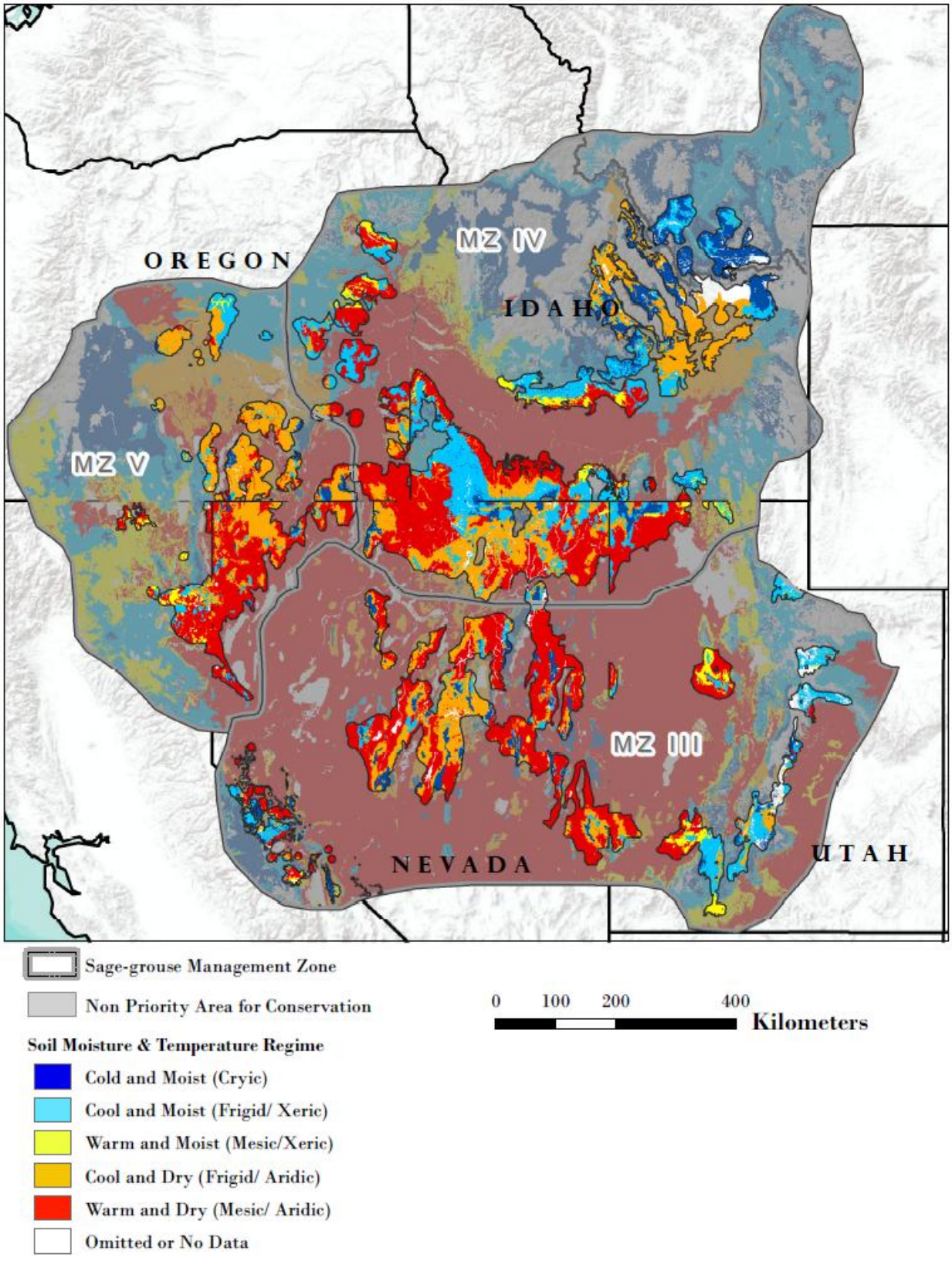


Figure 4, Soil Moisture and Temperature Regimes for Management Zones III, IV, and V

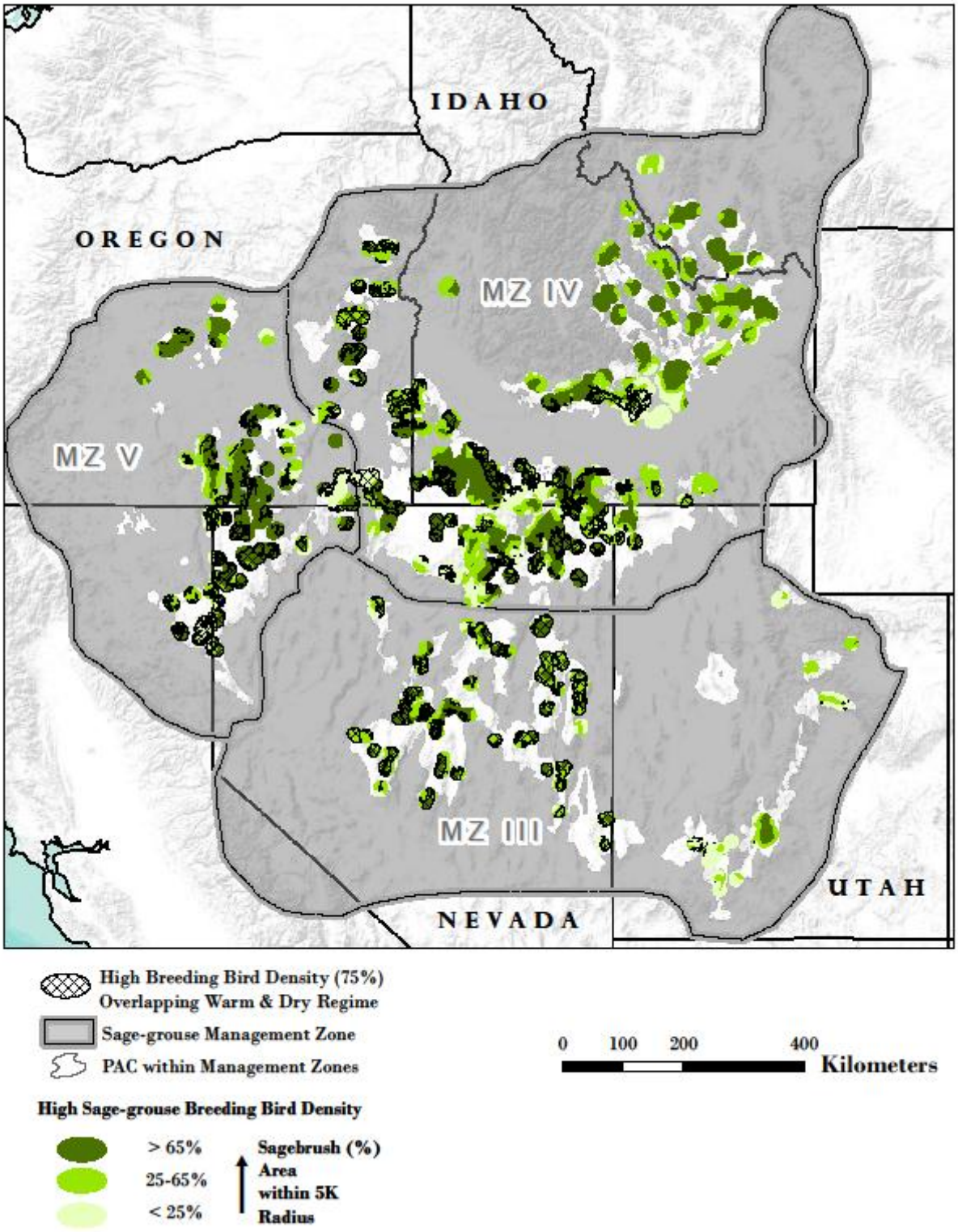


Figure 5, Intersection of High Density (75% BBD) Populations. The warm and dry sites and the proportion of these habitats in the three sagebrush landscape cover classes by management zone, and PACs within the Great Basin.

Sagebrush Landscape Cover

The amount of the landscape in sagebrush cover is closely related to the probability of maintaining active sage-grouse leks, and is used as one of the primary indicators of sage-grouse habitat potential at landscape scales (Aldridge et al. 2008; Wisdom et al. 2011; Knick et al. 2013). For purposes of prioritizing landscapes for sage-grouse habitat management, FIAT used less than or equal to 25 percent sagebrush landscape cover as a level below which there is a low probability of maintaining sage-grouse leks, and greater than or equal to 65 percent as the level above which there is a high probability of sustaining sage-grouse populations with further increases of landscape cover of sagebrush (Aldridge et al. 2008; Wisdom et al. 2011; Knick et al. 2013). Increases in landscape cover of sagebrush have a constant positive relationship with sage-grouse lek probability at between about 25 percent and 65 percent landscape sagebrush cover (Knick et al. 2013). It is important to note that these data and interpretations relate only to persistence (i.e., whether or not a lek remains active), and it is likely that higher proportions of sagebrush cover may be required for population growth.

For the purposes of delineating sagebrush habitat relative to sage-grouse requirements for landscape cover of sagebrush, FIAT calculated the percentage of landscape sagebrush cover (Landfire 2013) within a 3-mile (5-kilometer) radius of each 98-foot by 98-foot (30 meter by 30 meter) pixel in Management Zones III, IV, and V (see Appendix 2 in Chambers et al. (*In prep.*) for how landscape sagebrush cover was calculated). FIAT then grouped the percentage of landscape sagebrush cover into each of the selected categories (0 to 25 percent, 25 to 65 percent, 65 to 100 percent; **Figure 6**, Sagebrush Landscape Cover and Fire Perimeters for the Analysis Area). Landfire data was based on 2000 satellite imagery so wildfire perimeters after that date were incorporated into this layer to better reflect landscape sagebrush cover. Burned areas were assumed to fall into the 0 to 25 percent landscape cover class.

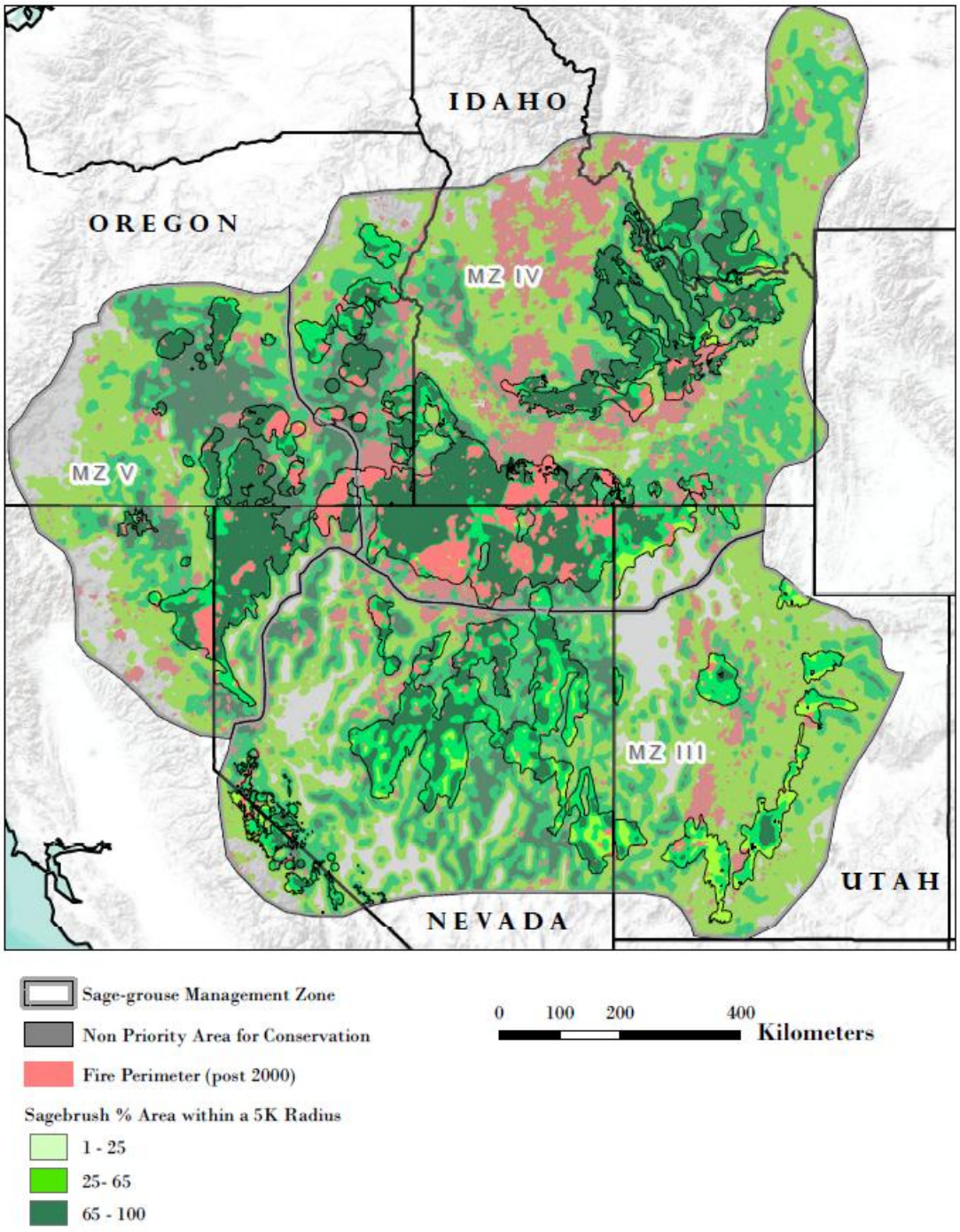


Figure 6, Sagebrush Landscape Cover and Fire Perimeters (post-2000) for the Analysis Area

Conifer Expansion

Conifer expansion into sagebrush landscapes also directly reduces sage-grouse habitat by displacing shrubs and herbaceous understory as well as by providing perches for avian predators. Conifer expansion also leads to larger, more severe fires in sagebrush systems by increasing woody fuel loads (Miller 2013). Sage-grouse populations have been shown to be impacted by even low levels of conifer expansion (Baruch-Mordo et al. 2013). Active sage-grouse leks persist in regions of relatively low conifer woodland and are threatened by conifer expansion (Baruch-Mordo et al. 2013; Knick et al. 2013).

To estimate where sage-grouse breeding habitat faces the largest threat of conifer expansion, FIAT used a risk model developed by Manier et al. (2013) that locates regions where sagebrush landscapes occur within 250 meters of conifer woodland (**Figure 7**, Modeled Conifer Expansion for PACs with Greater Than 25% Sagebrush Landscape Cover In and Around 75% BBD). Although the model is coarse, it is available for the entirety of the three sage-grouse management zones analyzed. FIAT encourages using more accurate conifer expansion data in Step 2.

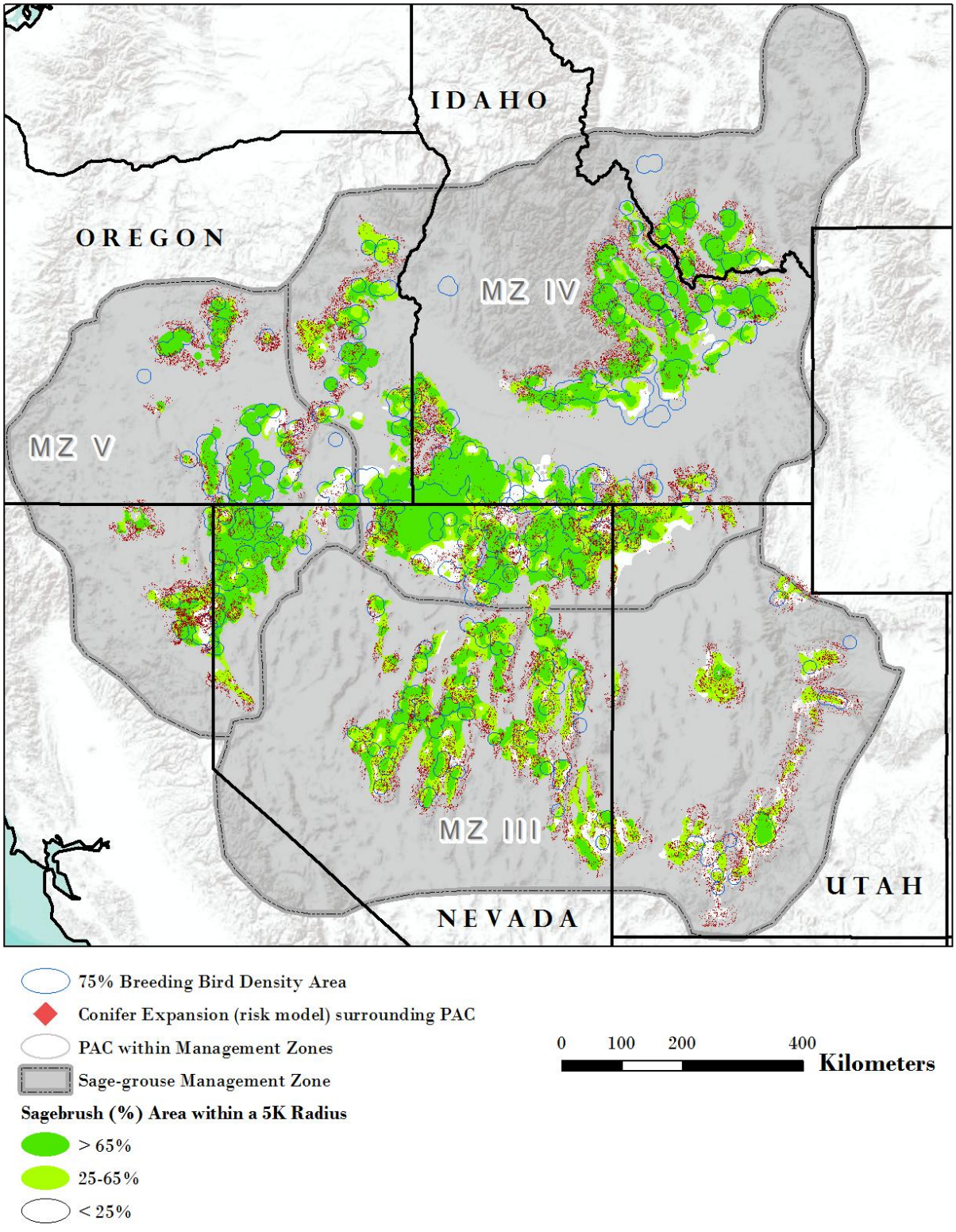


Figure 7, Modeled Conifer Expansion for PACs with Greater Than 25% Sagebrush Landscape Cover In and Around 75% BBD

Step 1a. Identifying PACs and focal habitats

A primary goal for the conservation of sage-grouse populations is the identification of important habitats needed to ensure the persistence and recovery of the species. Loss of habitat, and by inference populations, in these habitats would likely imperil the species in the Great Basin. The first objective is to protect and restore those habitats that provide assurances for retaining large well connected populations.

PACs and the 75 percent BBD maps were used to provide a first-tier stratification (e.g., focal habitats) for prioritizing areas where conservation actions could be especially important for sage-grouse populations. Although these areas are a subset of the larger sage-grouse habitats, they are readily identifiable and include habitats (e.g., breeding and nesting habitats that are considered critical for survival; Connelly et al. 2000; Holloran et al. 2005; Connelly et al. 2011) and necessary for the recovery of the species across its range.

The prioritization of habitats for conservation purposes was based on the several primary threats to remaining sage-grouse populations in the Great Basin including the loss of sagebrush habitats to wildfire and invasive annual grasses, and conifer expansion. The first, and probably the most urgent threat for sage-grouse, is the loss of sagebrush habitat due to wildfire and invasive annual species (e.g., cheatgrass; See Figure 11 in Chambers et al. [*In prep.*]). Areas of highest concern are those with low resistance to cheatgrass and low resilience after disturbance (warm/dry and some cool/dry temperature and moisture regimes sites) that are either **within or in close proximity** to remaining high density populations of sage-grouse (Figure 5). Sagebrush habitats (greater than 25 percent sagebrush landscape cover) prone to conifer expansion, particularly pinyon pine and/or juniper, are also a management concern when within or adjacent to high density sage-grouse populations (Figure 7).

Because these two threats occur primarily at different points along an elevational gradient and are associated with different soil temperature and moisture regimes, separate approaches are used to select PACs and focal habitats for each.

High Density Populations at Highest Risk from <u>Wildfire and Invasive Annual Grasses</u>

PACs in Management Zones III, IV, and V. were evaluated on the basis of high density (75 percent) BBDs, sagebrush landscape cover, and soil temperature and moisture regimes to identify initial PACs that are a priority for assessments and associated focal habitats. **Figure 8**, High Priority PACs with High Density Sage-Grouse Populations (75% BBD), displays the results of the analysis focusing on the intersection of high density (75 percent BBD) populations, the warm and dry sites, and the proportion of these habitats in the three sagebrush landscape cover classes by management zone, and PACs within the Great Basin. **Table 1**, Relative Ranking of PACs Based on High Density (75% BBD) Populations, Warm/ Dry Sites, and Percentage of Habitat in Sagebrush Landscape Cover Classes, displays quantitative outputs of this analysis. The table allows a comparison of these data, and assists in selecting five PACs that provide the greatest contribution to high density sage-grouse populations, and the amounts (acres and proportion) within those PACs of sagebrush cover classes associated with warm and dry soil temperature and moisture regimes.

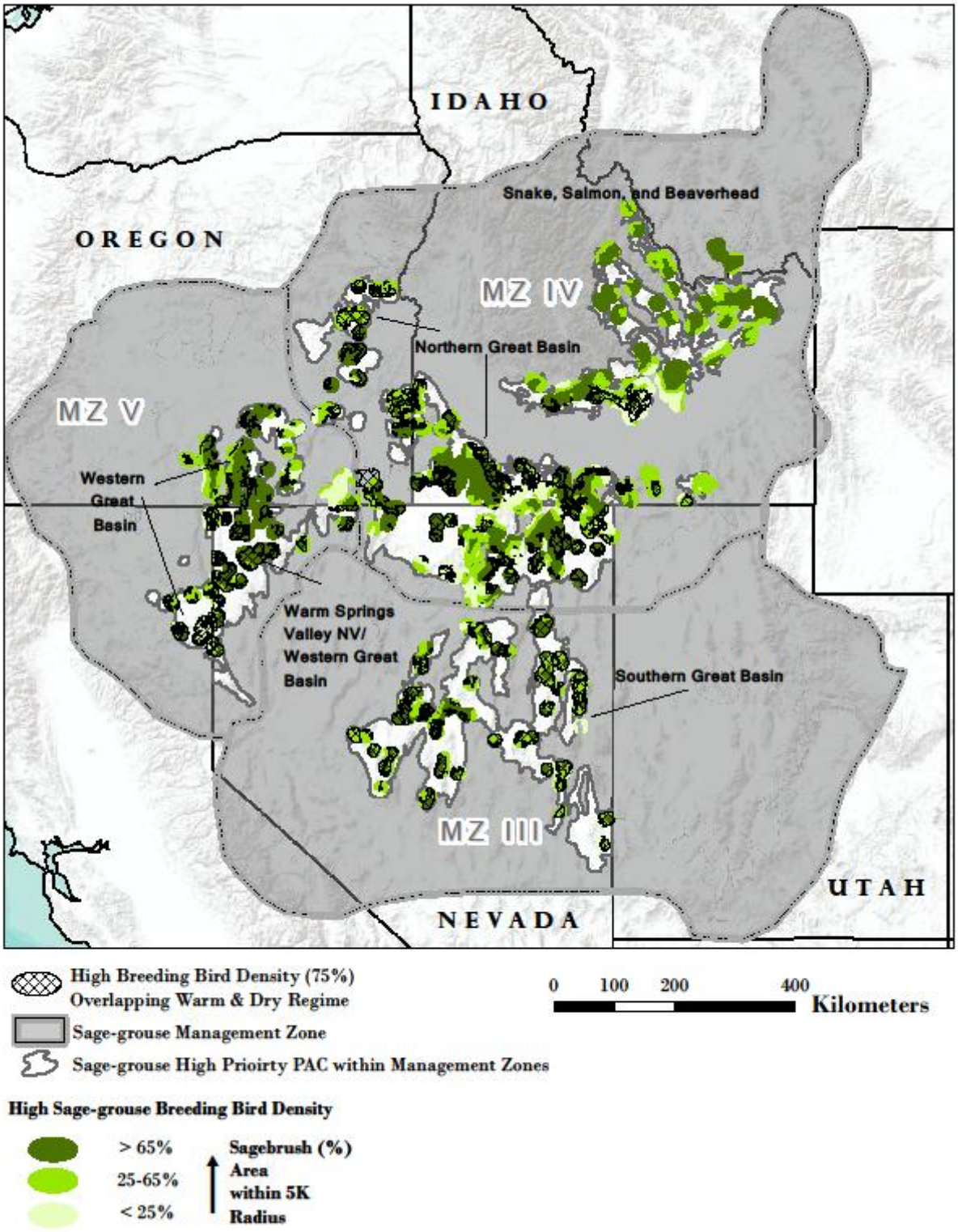


Figure 8, High Priority PACs with High Density Sage-Grouse Populations (75% BBD) sagebrush landscape cover classes, and areas with low resistance and resilience relative to wildfires and invasive annual species.

Table 1, Relative Ranking of PACs Based on High Density (75% BBD) Populations, Warm/ Dry Sites, and Percentage of Habitat in Sagebrush Landscape Cover Classes

Sage-grouse Management Zone	Sage-grouse Priority Area for Conservation (PAC) Name	Total PAC Acres	Breeding Bird Density (75%) Acres	Percent of Breeding Bird Density (75%) Area within PAC	Warm and Dry Soil Moisture & Temperature Regime within Breeding Bird Density (75%) Acres*		
					0-25% Sagebrush Landscape Cover	25%-65% Sagebrush Landscape Cover	65%+ Sagebrush Landscape Cover
4	Northern Great Basin	13045515	7383442	57%	179551 (2%)	674554 (9%)	1745163 (24%)
3	Southern Great Basin	9461355	3146056	33%	42596 (1%)	792780 (25%)	1062091 (34%)
4	Snake, Salmon, and Beaverhead	5477014	2823205	52%	68107 (2%)	89146 (3%)	95970 (3%)
5	Western Great Basin	3177253	2084626	66%	149399 (7%)	140141 (7%)	202767 (10%)
5	Warm Springs Valley NV/Western Great Basin	3520937	1558166	44%	31458 (2%)	207365 (13%)	741353 (48%)
4	SW Montana	1369076	659475	48%	0 (0%)	0 (0%)	0 (0%)
4	Northern Great Basin/Western Great Basin	1065124	624581	59%	114222 (18%)	85258 (14%)	116513 (19%)
5	Central OR	813699	451755	56%	0 (0%)	6211 (1%)	16463 (4%)
3	Panguitch/Bald Hills	1135785	352258	31%	6883 (2%)	5821 (2%)	0 (0%)
3	Parker Mountain-Emery	1122491	308845	28%	0 (0%)	127 (0%)	0 (0%)
4	Box Elder	1519454	292658	19%	22 (0%)	43325 (15%)	23913 (8%)
4	Baker OR	336540	184813	55%	0 (0%)	46459 (25%)	36214 (20%)
3	NW-Interior NV	371557	108256	29%	576 (1%)	17117 (16%)	25173 (23%)
3	Carbon	355723	97734	27%	255 (0%)	180 (0%)	0 (0%)
3	Strawberry	323219	52635	16%	0 (0%)	0 (0%)	0 (0%)
3	Rich-Morgan-Summit	217033	37005	17%	0 (0%)	0 (0%)	0 (0%)
3	Hamlin Valley	341270	3244	1%	0 (0%)	139 (4%)	3105 (96%)
3	Ibapah	98574	0	0%	0 (NA)	0 (NA)	0 (NA)
3	Sheeprock Mountains	611374	0	0%	0 (NA)	0 (NA)	0 (NA)
5	Klamath OR/CA	162667	0	0%	0 (NA)	0 (NA)	0 (NA)

* Numbers in parenthesis indicate the percent of acres relative to total acres of breeding bird density (75%)

These five PACs comprise 90 percent and 95 percent of remaining PAC sagebrush landscape cover in the 25 to 65 percent and greater than or equal to 65 percent sagebrush landscape cover classes, respectively, of the 75 percent BBD associated with low resistance/resilience habitats. The 75 percent BBD habitats in the Northern, Southern Great Basin, and Warm Spring PACs appear particularly important for two reasons. They represent a significant part of the remaining habitats for the Great Basin metapopulation, and they have the greatest amount of low resiliency habitat remaining that still functions as sage-grouse habitat.

An examination of the 5 selected PACs shows that the sum of the 75 percent BBD within these PACs is 16,995,496 acres (**Table 2**, PACs with the Highest Acres and Proportions of 75% BBD acres, and Acres and Proportions of 75% BBD Acres within the Warm/Dry Soil Temperature and Moisture Class). These are the **focal habitats**. These five PACs constitute 84 percent of the 75 percent BBD low resiliency habitats for all Management Zones III, IV, and V PACs. Within and immediately around these focal habitats, 5,751,293 acres are in high BBD areas with landscape sagebrush cover in the 25-65 percent and ≥ 65 percent classes and in the warm and dry soil temperature and moisture regimes. These are the habitats in the most danger to loss due to their low resistance to invasive annual grasses and low resilience following wildfire. Within the focal habitats in the high priority PACs, low resistance and resilience areas (cross-hatched areas in Figure 8) are a high priority (emphasis area) for implementing management strategies. Applying management strategies outside the emphasis areas are appropriate if the application of fire operations and fuels management activities will be more effective in addressing wildfire threats.

Table 2, PACs with the Highest Acres and Proportions of 75% BBD acres, and Acres and Proportions of 75% BBD Acres within the Warm/Dry Soil Temperature and Moisture Class (see Figure 8)

PAC	PAC Acres	Acres of 75% BBD in PAC (**focal habitat**)	Proportion of 75% BBD within PACs	Warm & Dry Soils within 75% BBD by Sagebrush Landscape Cover Classes Greater Than 25%*	
				25-65%	>65%
Northern Great Basin	13,045,515	7,383,442	0.57	674,517(9%)	1,745,163(24%)
Southern Great Basin	9,461,355	3,146,056	0.33	792,780(25%)	1,062,091(34%)
Snake, Salmon, and Beaverhead	5,477,014	2,823,205	0.52	89,146(3%)	95,970(3%)
Warm Springs Valley NV/Western Great Basin	3,520,937	1,558,166	0.44	207,365(13%)	741,353(48%)
Western Great Basin	3,177,253	2,084,626	0.66	140,141(7%)	202,767(10%)
Total for 5 PACS	**34,682,074**	**16,995,496**	**0.49**	**1,903,949**	**3,847,344**

***** This category represents the emphasis areas for applying appropriate management strategies in or near the focal habitats due to the lower probability of recovery after disturbance and higher probability of invasive annual grasses and existing wildfire threats.

High Density Sage-Grouse Habitats at Risk from Conifer Expansion

PACs, sagebrush landscape cover, and the 75 percent BBD data were also used in conjunction with the conifer expansion data (Mainer et al. 2013) to provide an initial stratification to determine PACs where conifer removal would benefit important sagebrush habitats. Conifer expansion threats are primarily western juniper in the northern Great Basin and pinyon pine/Utah juniper in the southern Great Basin.

Figure 7 displays results of the analysis focusing on the intersection of the 75 percent BBD, and modeled conifer expansion areas within two sagebrush landscape cover classes by management zone and PACs within the Great Basin. To identify high density sage-grouse areas affected by conifer expansion, the amount and proportion of acres estimated to be affected were calculated by sagebrush cover class to assist in the identification of the focal habitats (**Table 3)**. **Table 4**, displays quantitative outputs of this analysis using the 25 to 65 percent and greater than 65 percent landscape sagebrush cover classes for the PACs. Thus, **focal habitats** for addressing conifer expansion are the areas within and near conifer expansion in sagebrush landscape cover classes of 25 to 65 percent and greater than 65 percent. Conifer expansion in these two sagebrush landscape cover classes in the 75 percent BBD areas constitutes an emphasis area for treatments to address conifer expansion. Landscapes with less than 25 percent sagebrush cover may require significant additional management actions to restore sagebrush on those landscapes and therefore were considered a lower priority for this analysis. Focal habitats are identified in Table 4 and displayed in **Figure 9**.

Table 3 assists in identifying those PACs that provide the greatest contribution to high density sage-grouse populations, and the amounts (acres and proportion) within those PACs of sagebrush cover classes associated with modelled conifer expansion areas. Although there are uncertainties associated with the model, the results help managers identify specific geographic areas where treatments in conifer (pinyon and/or juniper) could benefit existing important sage-grouse populations.

The results of the screening revealed 5 PACs that contribute substantially to the 75 percent BBD habitats and are currently impacted most by conifer expansion (primarily pinyon pine and/or juniper; Table 4 and Figure 9). Four of the five PACs identified as high priority for conifer expansion treatments were also high priorities for wildfires and invasive annual grass threats. This is likely due to the size of the PACs and the relative importance of these PACs for maintaining the Great Basin sage-grouse meta-populations. As expected, the locations of high density sage-grouse habitats affected by conifer expansion differ spatially from those associated with low resilience habitats within and among the PACs, primarily due to differences in the biophysical settings (e.g., elevation and rainfall) that contribute to threats from invasive annual grasses and wildfires.

Three PACs (Snake/Salmon/Beaverhead, Southwest Montana, and Northern Great Basin/Western Great Basin) ranked high due to their relatively large proportion of high density breeding habitats (Table 3), but were not selected since the threat of conifer expansion was relatively low. One PAC, (Snake/Salmon/Beaverhead, was identified as a potential high priority area but was dismissed because results of the conifer expansion model likely overestimated impacts due to the adjacent conifer forests in this region. The COT Report also identified conifers as a “threat present but localized” in these areas, whereas, the top five PACs prioritized all have conifers identified as a widespread priority threat to address (USFWS 2013).

Table 3, Relative Ranking of PACs Based on High Density (75% BBD) Populations, Modeled Conifer Expansion, and Percentage of Habitats in Sagebrush Landscape Cover Classes

Sage-grouse Management Zone	Sage-grouse Priority Area for Conservation (PAC) Name	PAC acres	Breeding Bird Density (75%) Acres	Relative Proportion of Breeding Bird Density Area within PAC	Conifer Expansion (Modeled) Acres*		
					0-25% Sagebrush Landscape Cover	25%-65% Sagebrush Landscape Cover	65%+ Sagebrush Landscape Cover
4	Northern Great Basin	13045515	7383442	0.57	188502 (1%)	512949 (4%)	442480 (3%)
3	Southern Great Basin	9461355	3146056	0.33	108657 (1%)	738624 (8%)	237828 (3%)
4	Snake, Salmon, and Beaverhead	5477014	2823205	0.52	4209 (0%)	92173 (2%)	216803 (4%)
5	Western Great Basin	3177253	2084626	0.66	87963 (3%)	184618 (6%)	126177 (4%)
5	Warm Springs Valley NV/Western Great I	3520937	1558166	0.44	37148 (1%)	107025 (3%)	217101 (6%)
4	SW Montana	1369076	659475	0.48	1428 (0%)	34765 (3%)	39215 (3%)
4	Northern Great Basin/Western Great Bas	1065124	624581	0.59	12101 (1%)	2247 (0%)	6161 (1%)
5	Central OR	813699	451755	0.56	3191 (0%)	44937 (6%)	59624 (7%)
3	Panguitch/Bald Hills	1135785	352258	0.31	89141 (8%)	75157 (7%)	2563 (0%)
3	Parker Mountain-Emery	1122491	308845	0.28	84719 (8%)	83441 (7%)	7469 (1%)
4	Box Elder	1519454	292658	0.19	8531 (1%)	114376 (8%)	57645 (4%)
4	Baker OR	336540	184813	0.55	945 (0%)	15263 (5%)	195 (0%)
3	NW-Interior NV	371557	108256	0.29	7929 (2%)	29440 (8%)	11813 (3%)
3	Carbon	355723	97734	0.27	15968 (4%)	34446 (10%)	283 (0%)
3	Strawberry	323219	52635	0.16	7916 (2%)	27340 (8%)	1075 (0%)
3	Rich-Morgan-Summit	217033	37005	0.17	11685 (5%)	14280 (7%)	238 (0%)
3	Hamlin Valley	341270	3244	0.01	11321 (3%)	29960 (9%)	6243 (2%)
3	Ibapah	98574	0	0.00	195 (0%)	6770 (7%)	1039 (1%)
5	Klamath OR/CA	162667	0	0.00	1 (0%)	1533 (1%)	15302 (9%)
3	Sheeprock Mountains	611374	0	0.00	16744 (3%)	78580 (13%)	11878 (2%)

* Numbers in parenthesis indicate the proportion of acres relative to total PAC acres

Table 4, PACS with the Highest Acres and Proportions of 75% BBD acres and Estimated Conifer Expansion within Sagebrush Landscape Cover Classes (25-65 percent and ≥65 percent; see Figure 9)

PAC	PAC Acres	Acres 75% BBD in PAC	Prop. 75% BBD within PACs	Conifer Expansion by Landscape Sagebrush Cover Classes 25-65% and ≥65%* Focal Habitat	
				25-65%	≥65%
Northern Great Basin	13,045,515	7,383,442	0.57	512,949 (4%)	442,480 (3%)
Southern Great Basin	9,461,355	3,146,056	0.33	738,624 (8%)	237,828 (3%)
Warm Springs Valley NV/Western Great Basin	3,520,937	1,558,166	0.44	107,025 (3%)	217,101 (6%)
Western Great Basin	3,177,253	2,084,626	0.66	184,618 (6%)	126,177 (4%)
Central Oregon	813,699	451,755	0.56	44,937 (6%)	59,624 (7%)
Total for 5 PACS	**30,018,759**	**14,624,045**	**0.49**	**1,588,153 (5%)**	**1,083,210 (4%)**

*Numbers in parenthesis represent the percent of total PAC acres for each class.

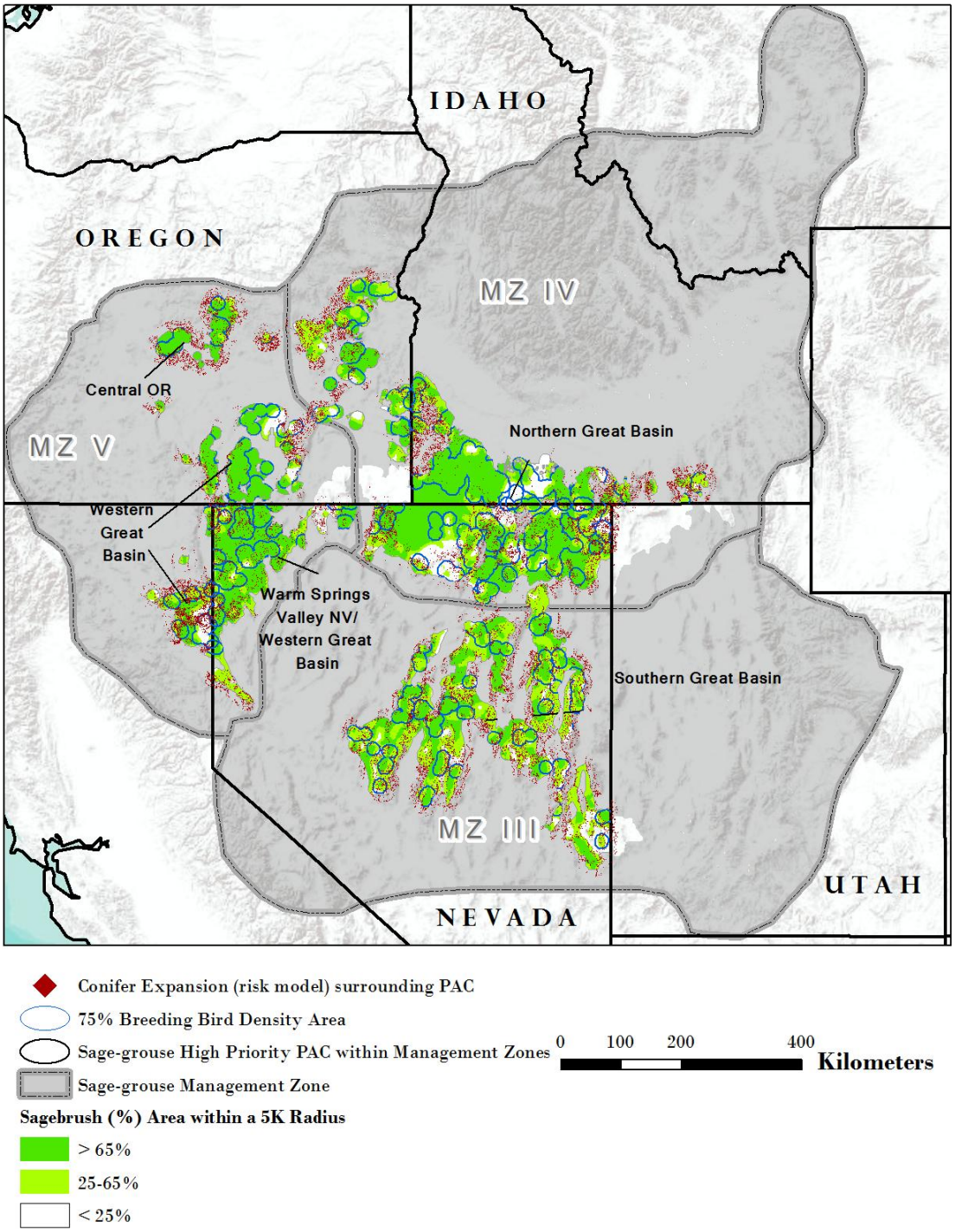


Figure 9, Five PACs Significantly Impacted by Conifer Expansion that contribute substantially to the 75% BBD and that have sagebrush landscape cover greater than 25%.

While the coarse-scale conifer expansion data used in this analysis likely over estimates the extent of the pinyon pine and/or juniper threat, results suggest that far fewer acres are currently affected by conifers than might be at risk from fire and invasive annual grasses impacts. Conifer expansion into sage-grouse habitats occurs at a slower rate, allowing more time for treatment, but early action may be needed to prevent population level impacts on sage-grouse (Baruch-Mordo et al. 2013). Furthermore, conifer expansion is primarily occurring on cooler and moister sites that are more resilient and where restoration is more likely to be effective (Miller et al. 2011), providing managers the opportunity to potentially offset at least some habitat loss expected to continue in less resilient ecosystems. While the available data set used to estimate conifer expansion provides only a coarse assessment of the problem, considerable efforts are currently underway to map conifers across sage-grouse range. These maps are expected to be available in the near future and should be used by land managers to better target project level conifer removal.

FIAT cautions against using the plotted locations of estimated conifer expansion for local management decisions due to the coarse-scale nature of this range-wide data set. Conifer expansion estimates are primarily provided here to aid in judging the relative scope of the threat in each PAC.

Step 1b. Potential Management Strategies

Potential management **strategies** (e.g., fuels management, habitat recovery/restoration, fire operations, post-fire rehabilitation) to conserve or restore Step 1 focal habitats are described below to assist local management units to initiate Step 2. These examples are illustrative and do not contain the full range of management strategies that may be required to address wildfires, invasive annual grasses, and conifer expansion within PACs and associated focal habitats. In general, the priority for applying management strategies is to first maintain or conserve intact habitat and second to strategically restore habitat (after a wildfire or proactively to reconnect habitat). Management strategies will differ when applying the protocol to:

Wildfire and Invasive Annual Grass. (See PACs identified in Table 2 and focal habitats shown in Figure 8). Focal habitats, as they relate to wildfires and invasive annual grasses, are defined as sage-grouse habitat in priority PACs within 75 percent BBD. Within these focal habitats, sagebrush communities with low resilience to disturbance and resistance to invasive annual grasses (warm and dry soil temperature and moisture regimes) are an emphasis area for management actions. Appendix 5 (A) in Chambers et al. (*In prep.*) includes a generalized state and transition model with an invasive annual grass component and warm and dry soil temperature and moisture regime associated with 8 to 12 inches of annual precipitation. This state and transition models is useful in developing management strategies to deal with annual grass issues as it contains useful restoration pathways.

Burn Probability is another tool that can be used to assist managers to identify the relative likelihood of large fire occurrence across the landscape within PACs and focal habitats. Burn probability raster data were generated by the Missoula Fire Lab using the large fire simulator - FSim - developed for use in the national Interagency **Fire Program Analysis (FPA)** project. FSim uses historical weather data and LANDFIRE fuel model data to simulate fires burning. Using these simulated fires, an overall burn probability is returned by FSim for each 270m pixel. The burn probability data was overlaid spatially with PACs, soil data, and shrub cover data. The majority of the high and very high burn probability acres lie within the top 5 PACs and are within areas with >25% sagebrush cover. Several of the other PACs have a greater overall percentage of the warm/dry soil regime with high/very high burn probability (northern great basin, baker, and NW interior NV) but the total acres are relatively few. Areas identified with high and very high burn probability are most likely to experience large fires given fire history, fuels, weather and topography. Results are displayed in the table 5 and Figure 10.

Table 5, Percentages of sage-grouse PAC areas with high and very high burn probability, 75% BBD within PAC, 75% BBD and warm dry/temperature regime, and 75% BBD and warm dry/temperature and warm dry/temperature with high and very high burn probability.

Sage Grouse Mangement Zone	*Sage-grouse Priority Area for Conservation (PAC) Name*	*Total PAC Acres*	*High, very high burn probability (percent of PAC acres)*	*75% BBD within PAC (percent PAC acres)*	*75% BBD and warm and dry soil/temperature regime ~~acres~~ (percent PAC acres)*	*75% BBD and warm and dry soil/temperature regime with high, very high burn probability (percent PAC acres)*
4	*Northern Great basin*	*13,045,415*	*86%*	*57%*	*19%*	*17%*
3	*Southern Great Basin*	*9,461,355*	*48%*	*33%*	*20%*	*9%*
4	*Snake, Salmon, and Beaverhead*	*5,477,014*	*68%*	*52%*	*5%*	*4%*
5	*Western Great Basin*	*3,177,253*	*61%*	*66%*	*15%*	*12%*
5	*Warm Springs Valley /Western Great Basin*	*3,520,937*	*30%*	*44%*	*28%*	*9%*
4	*SW Montana*	*1,369,076*	*1%*	*48%*	*0%*	*0%*
4	*Northern Great Basin/Western Great Basin*	*1,065,124*	*82%*	*59%*	*30%*	*22%*
5	*Central Oregon*	*813,699*	*71%*	*56%*	*3%*	*2%*
3	*Panguitch/Bald Hills*	*1,135,785*	*70%*	*31%*	*1%*	*1%*
3	*Parker Mountain-Emery*	*1,122,491*	*28%*	*28%*	*0%*	*0%*
4	*Box Elder*	*1,519,454*	*61%*	*19%*	*4%*	*2%*
4	*Baker Oregon*	*336,540*	*74%*	*55%*	*25%*	*21%*
3	*NW-Interior NV*	*371,557*	*99%*	*29%*	*12%*	*11%*
3	*Carbon*	*355,723*	*22%*	*27%*	*0%*	*0%*
3	*Strawberry*	*323,219*	*26%*	*16%*	*0%*	*0%*
3	*Rich-Morgan-Summit*	*217,033*	*79%*	*17%*	*0%*	*0%*
3	*Hamlin Valley*	*341,270*	*60%*	*1%*	*1%*	*0%*
3	*Ibapah*	*98,574*	*0%*	*0%*	*0%*	*0%*
3	*Sheeprock Mountains*	*611,374*	*98%*	*0%*	*0%*	*0%*
5	*Klamath OR/CA*	*162,667*	*98%*	*0%*	*0%*	*0%*

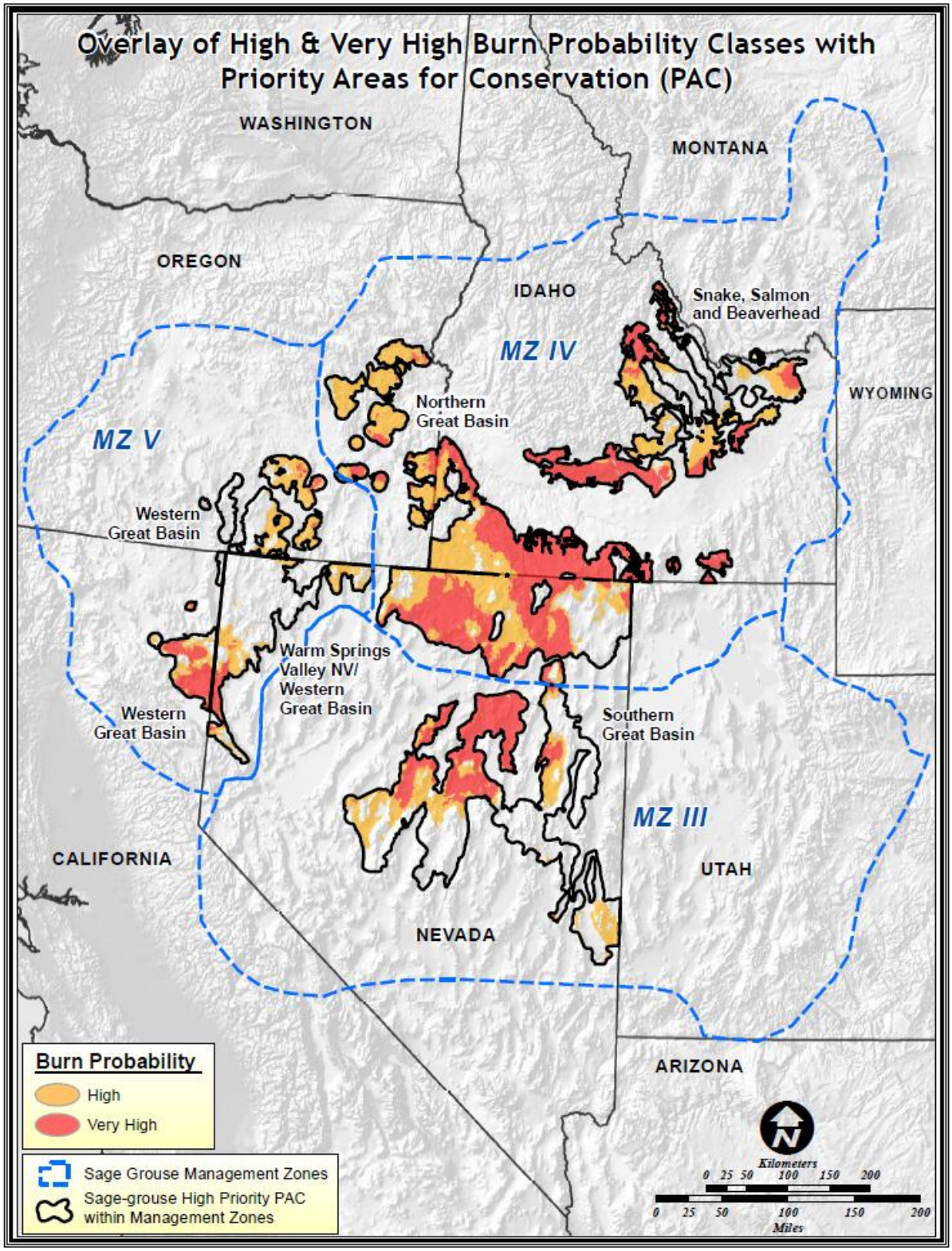


Figure 10, Burn Probability (high and very high) in priority invasive annual grass and wildfire PACs. .

Conifer Expansion. (See priority PACs for assessment identified in Table 4 and focal habitats shown in Figure 9). Focal habitats, as they relate to conifer expansion, are defined as sage-grouse habitat in a priority PAC with sagebrush landscape cover between 25 and 100 percent that is either near or in a conifer expansion area. The relationship between conifer expansion and resilience to disturbance and resistance to expansion is not documented to the same degree as with invasive annual grasses. However, Appendix 5 (D. and E.) in Chambers et al. (*In prep.*) includes two generalized state and transition models for conifer expansion with warm to cool and soil temperature regimes associated with precipitation ranges from 12 to 14 or more inches of annual precipitation. These state and transition models are useful in developing management strategies to deal with conifer expansion as they contain useful restoration pathways.

Chambers et al. (*In prep.*) is recommended for review at this point for information on applying resistance and resilience concepts along with sage-grouse habitat characteristics to develop management strategies to address wildfires, invasive annual grasses, and conifer expansion. The following tables are recommended for use in developing management strategies in or near focal habitats:

Table 1. Soil temperature and moisture regimes relationship to vegetation types and resistance and resilience.
Table 2. Sage-grouse habitat matrix showing the relationship between landscape sagebrush cover and resistance and resilience.
Table 3. Potential management strategies based on sage-grouse habitat requirements and resistance and resilience.
Table 4. Management strategies (fire suppression, fuels management, post-fire rehabilitation, and habitat restoration) associated with each cell in the sage-grouse habitat matrix (Table 2).

The "Putting it all together" section of the Chambers et al. (*In prep.*) also contains a case study from Northeast Nevada illustrating applications of management strategies to address the conservation, protection, and restoration of sage-grouse habitat.

To further assist in understanding Step 1b, examples of general priorities for management strategies are provided below and illustrated in Appendix 3 and 4:

1. Fuels Management: Projects that are designed to change vegetation composition and/or structure to modify potential fire behavior for the purpose of improving fire suppression effectiveness and limiting fire spread and intensity.
    a. Identify priorities and potential measures to reduce the threats to sage-grouse habitat resulting from changes in invasive annual grasses (primary focus on exotic annual grasses and conifer encroachment) and wildland fires. Place high priority on areas dominated by invasive annual grasses that are near or adjacent to low resistance and resilience habitats that are still intact.

b. Areas on or near perimeter of successful post-fire rehabilitation and habitat restoration projects where threats of subsequent fire are present are important for consideration.
c. Fuels management can be a high priority in large tracts of intact sagebrush if impacts on sage-grouse populations are minimal and outweighed by the potential benefits of reduced wildfire impacts in area being protected.

2. Habitat Recovery/Restoration Recovery (passive restoration) is a high priority in intact sagebrush stands to improve resistance and resilience before a disturbance. For example, where understory perennial herbaceous species are limited, improved livestock grazing practices can increase the abundance of these species and promote increased resistance to annual grasses.
    a. Habitat restoration is important where habitat connectivity issues are present within focal habitats.
    b. Pinyon pine and/or juniper removal in Phase I and II stands adjacent to large, contiguous areas of sagebrush (greater than 25 percent sagebrush landscape cover) is a priority.

3. Fire Operations (includes preparedness, prevention and suppression activities).
    a. Higher priority should be placed on areas with greater than 65 percent cover than on areas with 25 to 65 percent cover, followed by 0 to 25 percent cover (these categories are continuums not discrete thresholds).
    b. Higher priority should be placed on lower resistance/resilience habitats compared with higher resistance/resilience habitats.
    c. Fire operations in areas restored or post-fire rehabilitation treatment where subsequent wildfires can have detrimental effect on investment and recovery of habitat are important for consideration.
    d. Fire operations (suppression) are especially important in low elevation winter sagebrush habitat with low resistance and resiliency.
4. Post-Fire Rehabilitation
    a. High priority should be placed on supporting short-term natural recovery and long-term persistence in higher resistance and resiliency habitats (with appropriate management applied).
    b. High priority should be placed on reseeding in moderate to low resistance and resiliency habitats, but only if competition from invasive annual grasses, if present, can be controlled prior to seeding.

Step 2

Step 2 is carried out by local management units using the Step 1 geospatial data, focal habitats, and the associated management strategies. Step 2 includes evaluating the availability and accuracy of local information and geospatial data used to develop local management strategies in or near focal habitats (Step 2a).

It also involves developing focal habitat activity/implementation plans that include prioritized management tactics and treatments to implement effective fuels management, habitat recovery/restoration, fire operations, and post-fire rehabilitation (Step 2b). These activity/implementation plans will serve as the basis for NEPA analysis of site-specific projects.

Step 2a- Review of Step 1 Data and Incorporation of Local Information

Evaluate the accuracy and utility of Step 1 geospatial layers for focal habitats by incorporating more accurate or locally relevant:

- Vegetation maps (especially sagebrush cover)
- Updated or higher resolution conifer expansion layers (if applicable)
- Soil survey and ecological site descriptions
- Weather station, including Remote Automatic Weather Stations, data
- PACs, focal habitats, winter habitats, sage-grouse population distributions (i.e., more recent BBD surveys)
- Maps of cheatgrass and other invasive annual grasses that degrade sage-grouse habitat
- Wildfire polygons including perimeters and unburned islands within burn polygons
- Treatment locations and success (consult US Geological Survey Land Treatment Digital Library at http://ltdl.wr.usgs.gov/). The Land Treatment Digital Library allows the user to search on treatment results on an ecological site basis.
- Models and tools to help inform management strategies. For example, data which characterizes wildfire potential can help identify risk to focal habitats and help plan fire suppression and fuels management strategies to address these risks.
- Rapid Ecoregional Assessments
- Land Use Plans
- Appropriate monitoring or inventory information
- Any other geospatial data or models that could improve the accuracy of the assessment process

It is essential that subregional or local information and geospatial data be subjected to a quality control assessment to ensure that it is appropriate to use in developing Step 2b activity and implementation plans. Since PACs and focal habitats usually transcend multiple administrative boundaries, a collaborative approach is highly recommended for Step 2a.

A series of questions tied to the management strategies described in the Introduction section follows to assist managers in developing the framework to complete Step 2b (development of activity/implementation plans). The questions that follow apply to the focal habitats (and buffer areas around focal areas where management strategies may be more effectively applied) and will help in developing coordinated implementation/activity plans. These questions should not limit the scope of the assessment and additional questions relative to local situations are encouraged. These questions portray the minimum degree of specificity for focal habitats in order for offices to complete Step 2a.

Fuels Management

1. Where are the priority fuels management areas (spatially defined treatment opportunity areas that consider fire risk, fuels conditions, and focal habitats [including areas adjacent to focal habitats])?
2. Based on fire risk to focal habitats, what types of fuels treatments should be implemented to reduce this threat (for example, linear features that can be used as anchors during suppression operations)?
3. Considering resistance/resilience concepts and the landscape context from Step 1, where should treatments be applied in and around focal habitats to:
    a. Constrain fire spread?
    b. Reduce the extent of conifer expansion?
    c. Augment future suppression efforts by creating fuel breaks or anchors for suppression?
4. Based on opportunities for fire to improve/restore focal habitats, what types of fuels treatments should be implemented to compliment managed wildfire by modifying fire behavior and effects?
5. Are there opportunities to utilize a coordinated fuels management approach across jurisdictional boundaries?
6. What fuel reduction techniques will be most effective that are within acceptable impact ranges of local sage-grouse populations, including but not limited to grazing, prescribed fire, chemical, and biological and mechanical treatments? Will combinations of these techniques improve effectiveness (e.g., using livestock to graze fine fuels in a mowed fuel break in sagebrush)?

Habitat Recovery/Restoration

1. Are there opportunities for habitat restoration treatments to protect, enhance or maintain sage-grouse focal habitat especially to restore connectivity of focal area habitat?
2. Considering the resistance and resilience GIS data layer (Figure 4) and the Sage-Grouse Habitat Matrix (Chambers et al. *In prep.*; Table 2), where and why would passive or active restoration treatments be used?
3. What are the risks and opportunities of restoring habitat with low resistance and resilience including the warm/dry and cool/dry soil moisture/temperature regime areas?
4. Are there opportunities to utilize a coordinated approach across jurisdictional boundaries to effectively complete habitat restoration in focal habitats?

Fire Operations

1. Where are priority fire management areas (spatially defined polygons having the highest need for preparedness and suppression action)?

2. Where are the greatest wildfire risks to focal habitats considering trends in fire occurrence and fuel conditions (see Figure 10)?
3. Where do opportunities exist that could enhance or improve suppression capability in and around focal habitats?
    a) For example, increased water availability through installation of helicopter refill wells or water storage tanks.
    b) Decreased response time through pre-positioned resources or staffing remote stations.
4. Should wildfire be managed (per land use plan objectives) for improving focal habitat (e.g., reducing conifer expansion), and if so where, and under what conditions?
5. How can fire management be coordinated across jurisdictional boundaries to reduce risk or to improve focal habitats?

Post-fire Rehabilitation

1. Where are areas that are a high priority for post-fire rehabilitation to improve habitat connectivity if a wildfire occurs?
2. Which areas are more conducive (higher resistance and/or resilience) to recovery and may not need reseeding after a wildfire?
3. What opportunities to build in fire resistant fuel breaks to reduce the likelihood of future wildfires impacts on seeded or recovering areas?
4. Are there opportunities to utilize a coordinated approach across jurisdictional boundaries to implement rehabilitation practices?

The outcome of Step 2a is the assembly of the pertinent information and GIS layers to assist managers in developing implementation or activity plans to address wildfires, invasive annual grasses, and conifer expansion in focal habitats. Activity plans generally refer to plans where management of a resource is changed (livestock grazing plans) whereas implementation plans are generally associated with treatments.

Step 2b- Preparation of Activity/Implementation Plans

Activity/implementation plans are prepared to implement the appropriate management strategies within and adjacent to focal habitats. Since focal habitats cross jurisdictional boundaries, it is especially important that a collaborative approach be used to develop implementation/activity plans. The process of identifying partners and creating collaborative teams to develop these plans is a function of state, regional, and local managers and is not addressed as part of this step.

Implementation/activity plans are required to:

1. Address issues in and around focal habitats related to wildfires, invasive annual grasses, and conifer expansion

2. Use resistance to invasive annual grasses and resilience after disturbance (where appropriate) as part of the selection process for implementing management strategies
3. Emphasize application of management strategies within or near focal habitats with low resistance and resilience (warm/dry and cool/dry soil moisture/temperature regimes) invasive annual grasses and wildfires
4. Use the best available local information to inform the assessment process
5. Encourage collaboration and coordination with focal habitats across jurisdictional boundaries
6. Be adaptive to changing conditions, disturbances, and modifications of PAC boundaries

FIAT recommends considering other factors, such as adaptive management for climate change, local sagebrush mortality due to aroga moth or other pests, and cheatgrass die-off areas in developing activity/implementation plans. The latter two factors could influence where and what kind of management strategies may be needed to address the loss of habitat or changes in fuel characteristics (e.g., load and flammability) associated with these mortality events.

The following recommendations are provided to assist in the preparation of activity/implementation plans:

Fuels Management

1. Spatially delineate priority areas for fuel management treatments per Step 2a information considering:
    a. Linear fuel breaks along roads
    b. Other linear fuel breaks to create anchor points
    c. Prescribed burning which would meet objectives identified in the Fish and Wildlife Service's Conservation Objectives Team (COT) report
    d. Mechanical (e.g., treatment of conifer expansion into sagebrush communities)
    e. Other mechanical, biological, or chemical treatments
    f. If they exist, spatially delineated areas where fuel treatments would increase the ability to use fire to improve/enhance focal habitats.
2. Identify coordination needed between renewable resource, fire management, and fuels management staff to facilitate planning and implementation of fuels treatments.
3. Quantify a projected level of treatment within or near focal habitats.
    a. Identify treatments (projects) to be planned within or near focal habitats.
    b. Include a priority and proposed work plan for proposed treatments.

Habitat Recovery/Restoration

1. Spatially delineate priority areas for restoration, using criteria established in Step 2a. Priority areas for restoration should be delineated by treatment methods:
    a. Seeding priority areas
    b. Invasive annual grasses priority treatment areas (herbicide, mechanical, biological, combination)

c. Priority areas requiring combinations of treatments (e.g., herbicide followed by seeding).
d. Include tables, maps or appropriate info.

2. Identify coordination needed between renewable resource, fire management, and fuels management staff to facilitate planning and implementation of restoration treatments.
3. Include a priority or implementation schedule for proposed restoration treatment

Fire Operations

1. Spatially delineate priority areas for fire suppression, based upon criteria established in Step 2a. Priority areas for fire operations should be delineated by type, such as:
    a. Initial attack priority areas
    b. Resource pre-positioning and staging priority areas
2. Spatially delineate areas where opportunities exist to enhance or improve suppression capability.
3. Spatially delineate areas where wildfire can be managed to achieve land use plan and COT objectives.

Post-Fire Rehabilitation

1. Spatially delineate priority areas for post-fire rehabilitation using criteria in Step 2a.
2. Priority areas for post-fire rehabilitation should be based on resistance and resiliency and pre-fire landscape sagebrush cover and include consideration of:
    a. Seeding priority areas
    b. Invasive annual grasses priority treatment areas (herbicide, mechanical, biological (herbivory or seeding),
    c. Priority areas requiring combinations of treatments (e.g., herbicide followed by seeding)
3. Identify coordination needed between renewable resource, fire management, and fuels management staff to facilitate planning and implementation of post-fire rehabilitation treatments.

This completes the assessment process and sets the stage for more detailed project planning and NEPA associated with implementing on-the-ground treatments and management changes.

Members of the FIAT Development and Review teams are listed in Appendix 5.

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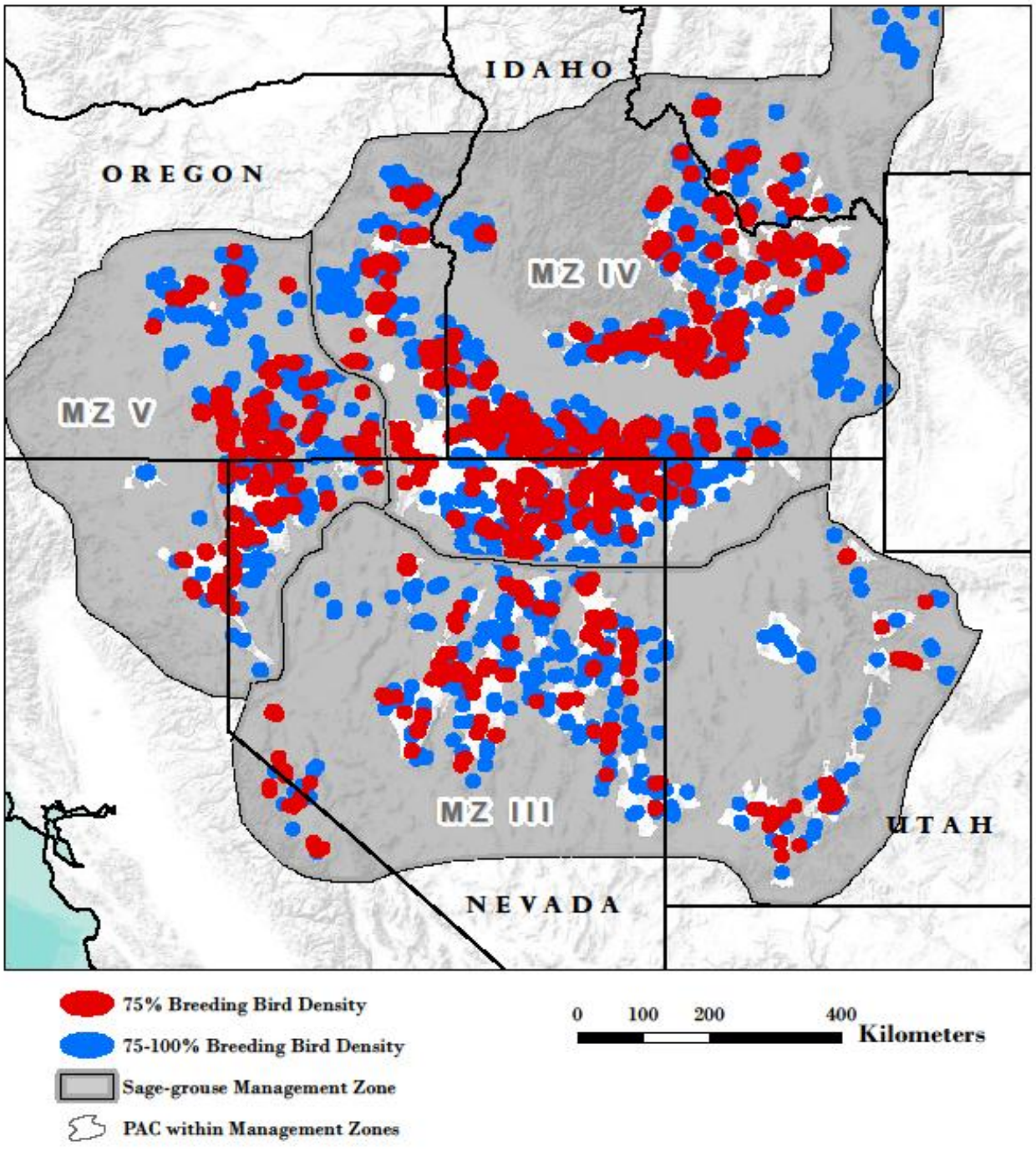
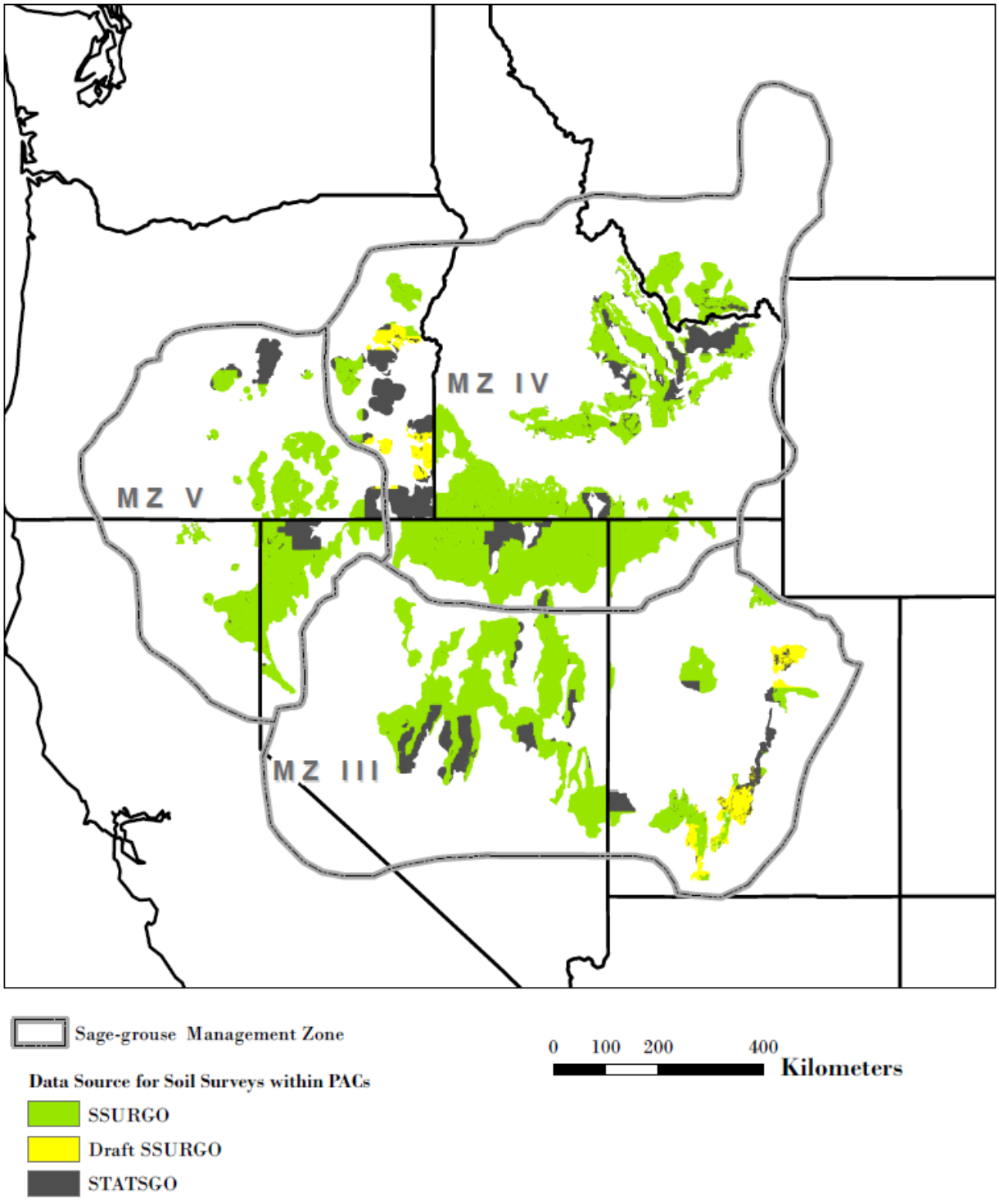
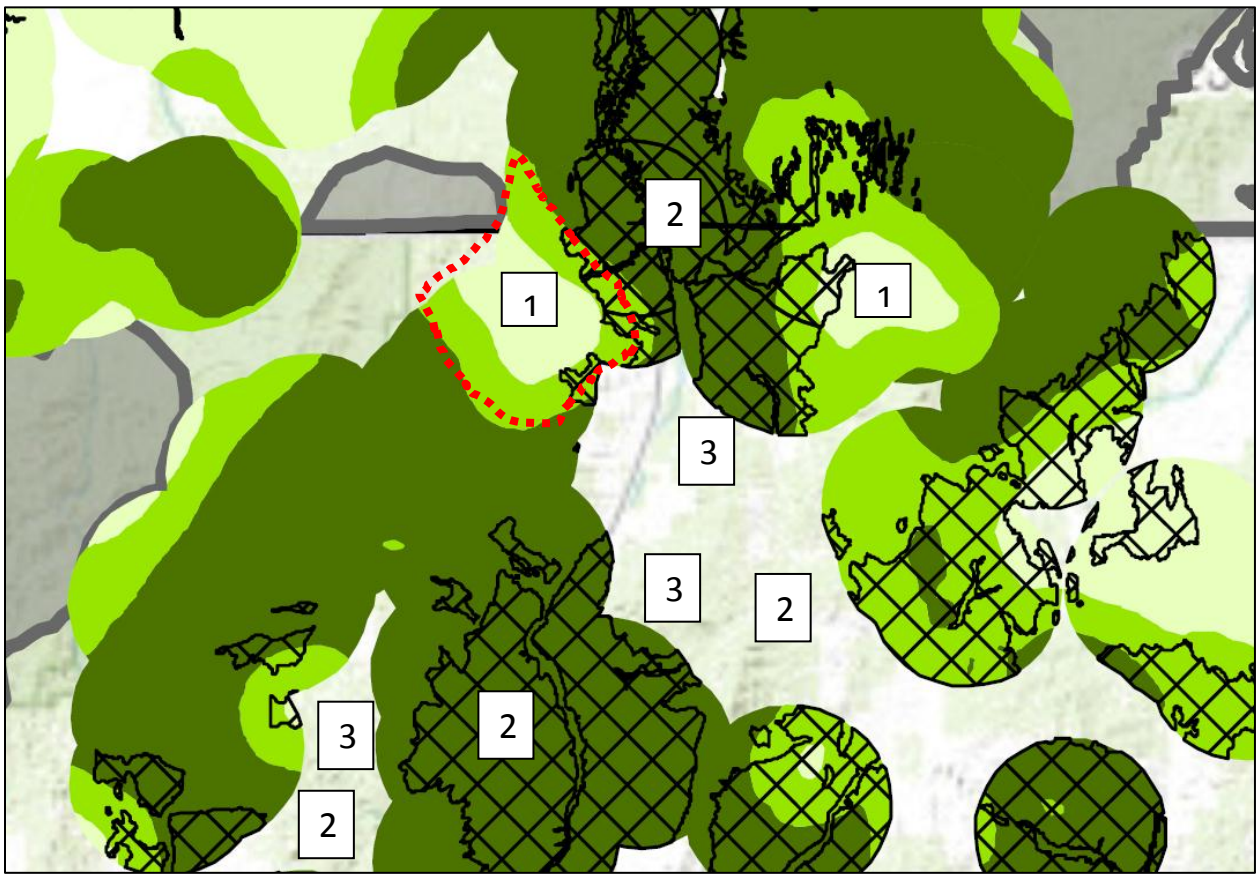
Appendix 1. Sage-grouse breeding bird density thresholds for 75% and 100% of the breeding birds, Management Zones, and PACs. Breeding bird density of 75 to 100% is included in this figure to provide context for local management units when making decisions concerning connectivity between populations and PACs.

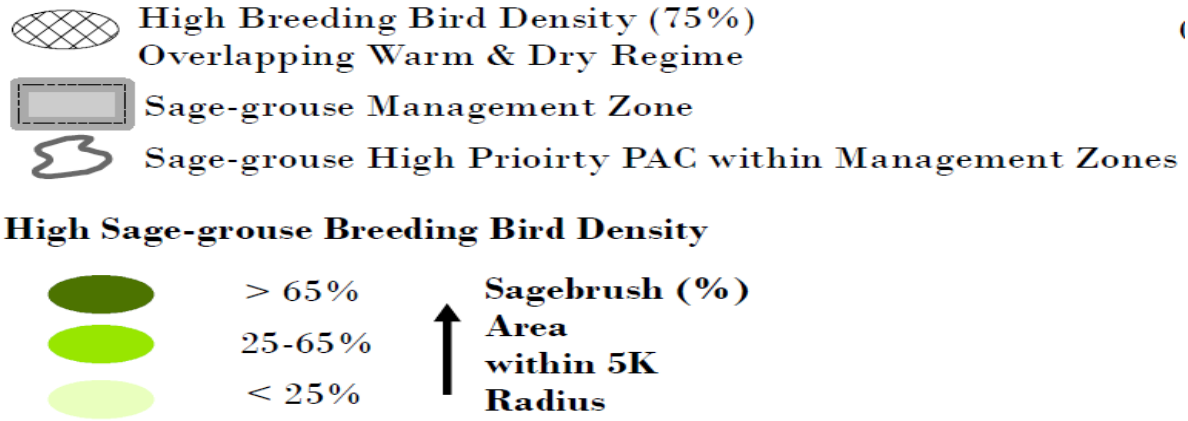


Appendix 2. Gaps in SSURGO soil survey data in Management Zones III, IV, and V. STATSGO2 soil survey data used to fill these gaps.



Appendix 3. Example of potential management strategies applied to Wildfire/Invasive Annual Grass Scenario.



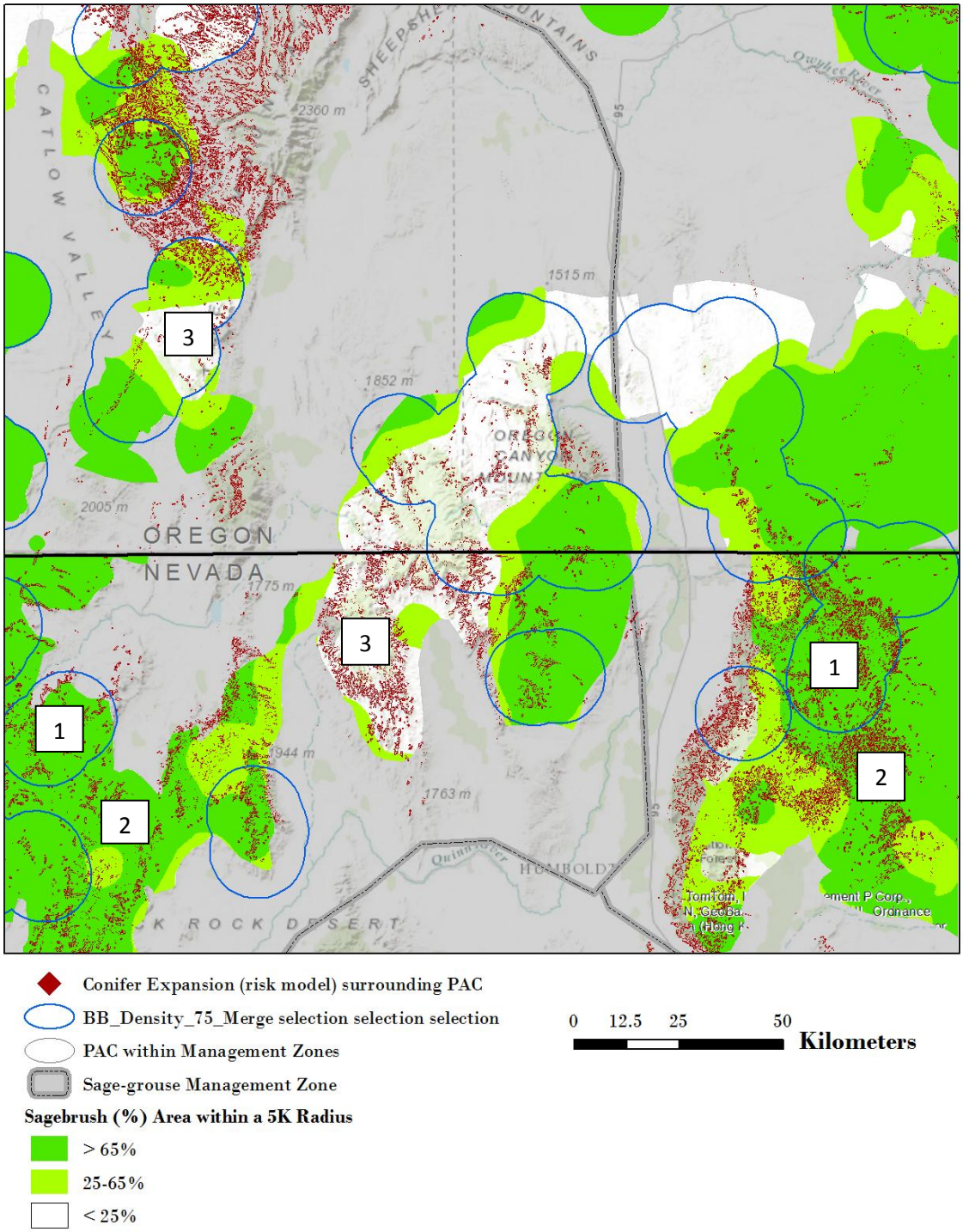


1 High priority for habitat restoration and post-fire rehabilitation to restore connectivity.

2 High priority for fire suppression within and around area given >65% sagebrush landscape cover and low resistance/resilience.

3 High priority for fuels management to reduce likelihood of wildfires in low resistance/resilience habitat with >65% landscape cover.

Appendix 4. Management strategy example for Western Juniper expansion.



1 High priority (emphasis area) for juniper control (>25% landscape sagebrush cover & 75% BBD)

2 Moderate priority (emphasis area) for juniper control (>25% landscape sagebrush cover)

3 Very low priority (<25% landscape sagebrush cover)

Appendix 5. Members of FIAT Development and Review Team

Development Team

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Emergency Stabilization and Burned Area Rehabilitation Meeting- March 2015

This paper is an overview of the Department of the Interior Burned Area Rehabilitation and Emergency Stabilization funding allocation and transfer process.

Burned Area Rehabilitation (BAR)

The BAR program objective is to evaluate actual and potential long-term post-wildfire impacts to critical cultural and natural resources. Identify those areas unlikely to recover naturally from severe wildfire damage and take actions to initiate the recovery for resilient landscapes and to repair or replace minor assets damaged or destroyed by the wildfire event.

The funds are for post-fire efforts (up to three years) to repair or improve lands unlikely to recover to a management approved condition from wildland fire damage, including the monitoring and evaluating of treatments used in rehabilitation, or to repair or replace minor facilities damaged by fire. Post-wildland fire rehabilitation projects must meet resource management objectives, as outlined in land management planning documents.

The Interior Burned Area Emergency Response Coordinators (IBAER) function as an intradepartmental group to coordinate program issues, establish funding priorities. All burned area rehabilitation projects or treatments are funded on a priority basis as administered by the IBAER Coordinators using a rigorous and competitive scoring process based on priorities set by the Department.

Funding for this activity is competitive among bureaus and is based on proposed projects submitted through National Fire Plan Operations and Reporting System (NFPORS). Treatments are developed with the involvement of Federal, state, local, and Tribal stakeholders at the local office. The projects are recommended for funding by Burned Area Rehabilitation coordinators at the National Interagency Fire Center on a priority basis using common criteria. The Interior Fire Directors review and forward the recommendations to the Director of the OWF for funding.

Projects are funded in one-year increments and activities or treatments are reviewed at the end of each fiscal year and funded with the next fiscal year funds, as appropriate. Should requests exceed available funding, plans are prioritized based on values at risk and priorities to meet resource objectives.

Funding for a subsequent year requires submission of accomplishment report(s), monitoring report(s) and must meet established funding selection priority.

BAR funding may not be used for prescribed fires that have not been declared a wildfire.

FY 2015 Allocated (Dollars in Thousands)	BIA	BLM	FWS	NPS	Parent
Burned Area Rehabilitation - $18,035	$1,868	$13,204	$523	$883	$1,557
Total Approved with Carryover - $22,642	$4,002	$16,768	$635	$1,237	-

Emergency Stabilization (ES)

Suppression Operations funding allocations at the beginning of each fiscal year represent approximately 40 percent of the available funding. Bureaus may identify and request additional allocations once execution activity begins and reports are available.

Emergency Stabilization program costs are funded through the Suppression Operations account. ES is an authority level allocation which is capped at ten percent of the ten-year rolling suppression expenditure average for the Department of the Interior.

The distribution of the Department of the Interior ES authority is based on the rolling ten-year average percentage of acres burned by bureau nationally, excluding Alaska.

FY 2015 Authority (Dollars in Thousands)	BIA	BLM	FWS	NPS
Emergency Stabilization CAP $38,366	$6,310	$27,655	$2,676	$1,725

In the event one or more bureaus will exceed their ES authority, the Office of Wildland Fire (OWF), in collaboration with the Interior Fire Directors, will coordinate and approve the redistribution of ES authority between bureaus as warranted. Any recommended cap increases to the Departmental ES cap is subject to approval by the Director, OWF in collaboration with the Interior Fire Directors.

Emergency Stabilization – Impact on 10-year Average of Suppression Obligations

Beginning with the FY 2015 Budget Justification the Wildland Fire Management Account was required to fund 70% of the 10-year average of suppression obligations within the discretionary budget level. Previously the requirement was 100% of the 10-year suppression average.

The FY 2015 Budget Justification proposed to amend the Balance Budget and Emergency Deficit Control Act (BBEDCA) to establish a new framework which would fund an additional amount estimated for suppression obligations. This would be outside the WFM account. The proposal was not enacted in FY 2015 but is included in the FY 2016 Budget Justification.

When the 10-year average increases, as is generally the situation, the amount of funding required for Suppression goes up and the amount of funding available for the other programs goes down. Since ES is a part of the Suppression Operations funding, increases in ES obligations will increase the 10-year average of Suppression Operations. This increase will increase the 70% funding requirement which will decrease the amount available to other programs such as Preparedness, Fuels Management, Resilient Landscapes and the other smaller programs.

One criticism of the BBEDCA proposal is that the Suppression funding will be seen as an open checkbook and the costs will escalate. The OWF Director and other Department leadership have been clear that is not the case.

Transfer Process (Five to Seven Days)

The OWF is responsible to process non-expenditure transfers to the DOI wildland fire bureau's from the Wildland Fire parent account. This generally occurs more than once a year depending on legislation process and other activities between bureaus.

The process is:

Step 1: When BAR amounts are determined, currently on a quarterly basis, a spreadsheet documenting the amounts by program and bureau is created. Since ES is an authority cap a specific transfer for ES is not made. ES funding is included within the Suppression transfer.

Step 2: Two additional spreadsheets are maintained by OWF to track the total summary of funding, and the balance in each program and the allocations by bureau. These spreadsheets are a check and balance of funding allocations and total available in the parent account. These spreadsheets are also used to compare/validate data entered into the FBMS system.

Step 3: The transfers to each bureau are entered into the Treasury Central Accounting Reporting System by authorized budget personnel in the OWF. Generally this occurs in one day of notification of required transfer.

Step 4: The transfers are authorized by the OWF Budget Officer and the DOI Budget Office and then certified by two different levels of review at Treasury. This process can take several days at a minimum generally it is three to five days.

Step 5: Once the transfers are certified or STAR posted in the Treasury system, a copy is printed provided to the bureaus for their record.

Step 6: After the STAR posting occurs, entries are made in the FBMS system to match the Treasury transactions. This occurs at the parent and the bureau levels. The timeframes to load budget at the bureau level is controlled by each bureau.

Section 102 Process (Three or more weeks)

The Wildland Fire Management account has authority under Section 102 of the Public Law (P.L.) 105-277 October 21, 1998 which states:

> "*Provided further*, That for emergency rehabilitation and wildfire suppression activities, no funds shall be made available under this authority until funds appropriated to "Wildland Fire Management" shall have been exhausted: *Provided further*, That all funds used pursuant to this section are hereby designated by Congress to be "emergency requirements" pursuant to section 251(b)(2)(A) of the Balanced Budget and Emergency Deficit Control Act of 1985, and must be replenished by a supplemental appropriation which must be requested as promptly as possible: *Provided further*, That such replenishment funds shall be used to reimburse, on a pro rata basis, accounts from which emergency funds were transferred.

In any fiscal year when it is necessary to use this authority the following process is used:

1. Suppression Projections prepared by bureau and OWF budget personnel are used as an indicator that Section 102 transfers will be necessary. These projections begin in August each year and are aimed at identifying a shortage of funding for Suppression operations.
2. If it appears there will be a shortage, the first review for possible surplus funding, is completed within the Wildland Fire Management programs. Bureaus identify any anticipated excess funds within WFM programs.
3. Bureaus process transfers of these WFM program funds from the bureau to the WFM parent account through the Treasury system as described in transfer process above. This can take a week or more depending on the bureau.
4. The Department's Budget Office works with the bureaus to identify other non-fire funding available for transfer. These funds historically have been Land Acquisition and Construction unobligated balances from the National Park Service, Bureau of Land Management and the Fish and Wildlife Service.
5. Once all required non-fire funding is identified the bureaus involved transfer the identified non-fire funding through the Treasury system to the WFM parent account. This can take a week or more.
6. Once the transfers are available a re-apportionment is prepared and submitted to the OMB for approval. Re-apportionments are prepared by OWF, approved by POB and then have two reviews with approval by OMB. This process can take a week or more.
7. After approval of the re-apportionment the OWF will transfer funding to bureaus needing the Suppression funding based on the current activity and obligations. See transfer process above, again this can take a week.

During the next years appropriation process if a repayment of funds are available the funds are transferred back to the non-fire accounts. Any funds used from within the fire account are not repaid.