

Appendix A: 11-Step Integrated Pest Management (IPM) Process

Integrated Pest Management Program

Overview

National parks are special places which have been set aside to protect and preserve the natural and cultural resources of our nation. Life sustaining ecosystems, treasured cultural landscapes, and unique artifacts are ecologically and historically important. Managing these park resources involves the daily challenge of careful pest detection and prevention. Pests are continually present; forest pests such as gypsy moth and mountain pine beetle devastate critical ecosystems which support countless other organisms. The museum beetle, no bigger than a letter in this sentence, could quietly consume Abe Lincoln's woolen coat or feathers from a Native American head dress for the protein meal they provide. Diligent pest detection and management is critical in protecting our national treasures and human health from pests and their damage.

How do we address pests in our national parks?

Since 1980, we've used an approach called Integrated Pest Management or IPM.

What is IPM and why do we use it?

IPM is a science-based decision-making process that guides park managers when investigating a pest situation. The IPM approach determines the most appropriate and cost effective management solution for the specific pest situation. IPM includes identification of the pest, understanding the use and significance of a site or the importance of protecting a historic item, and education of the people involved. IPM also establishes pest tolerance levels and monitoring protocols. Then, with the help of technical experts and on a case-by-case basis, we develop an effective, site specific and low risk strategy to manage the pest. This includes altering conditions which attracted pests to the site in the first place. IPM often involves changing human behavior as well.

We use IPM because it works! IPM reduces risks to people, park resources, and the environment from pests and from the strategies used to manage them. We also use the IPM approach because we are directed to do so by the Federal Insecticide Fungicide and Rodenticide Act and NPS policy. We focus on finding solutions to pest problems and determine why the pest is there in the first place, rather than simply treating the damage and symptoms caused by the pest.

What would we consider a pest in a national park?

A 'pest', as defined by NPS policy, is any organism that interferes with the purpose of a park or that threatens human health or safety. A pest can be a native or nonnative organism; it can be a weed, an insect, a fungus, a disease, a fish, a bird, or a mammal; to reach "pest status" depends on the situation. An individual mouse, such as the native deer mouse for example, is a pest when inside the Yosemite Museum. Mice may damage museum items by gnawing on them or using them for nesting material. But outside the museum the same individual deer mouse is part of the natural ecosystem and is not considered a pest.

How is IPM implemented in the NPS?

We use an "11 Step Process to Developing and Implementing an Integrated Pest Management Strategy" that you too might find valuable (See "Resources" box on this web page). What is good for national parks can also be good in your home and community (For more information see National IPM Centers <http://www.ipmcenters.org/>).

What are examples of integrated pest management tools?

An example of a mechanical tool is the use of snap traps for indoor mice problems in conjunction with regular structural inspections to determine how mice are entering the structure. Then we exclude the rodents by permanently closing points of entry (for more information on rodent exclusion see “Resources” box on this page or visit:

www.nps.gov/public_health/info/eh/vector/NPS_RP_Manual_v2.pdf). Cultural IPM tools include planting disease resistant wheat to avoid the need for regular pesticide application. We use biological tools, such as Gypchek – a virus specific for gypsy moth – to manage this forest pest without affecting other non-target species, butterflies, and moths. Rather than repeatedly hand-pulling deep-rooted perennial weeds and their resprouts, we may use chemical tools such as systemic herbicides that kill the entire plant, even the roots. Whereas, hand-pulling annual weeds before they go to seed is an equally effective physical tool.

A great example of IPM is the well-established strategy for controlling purple loosestrife. This nonnative invasive, wetland weed destroys wildlife habitat by taking over all available growing space. Through early detection and rapid response efforts, we manage this pest with our park neighbors and others who share the waterways. Depending on the site and location, we can use herbicides to eliminate outlying patches of purple loosestrife. For dense stands of this weed, we may release a tiny biological control agent, a beetle, who eats and eventually destroys the plants. Removing purple loosestrife from wetlands allows native plants and critical wildlife habitat to return. For more information on purple loosestrife visit:

<http://www.nps.gov/plants/alien/fact/lysa1.htm>.

For additional IPM information visit or IPM Manual at

<http://www.nature.nps.gov/biology/ipm/manual/ipmmanual.cfm>)



11 Step Process to Developing and Implementing an Integrated Pest Management Strategy

1. Describe your site management objectives and establish short and long term priorities.	
2. Build consensus with stakeholders-occupants, decision makers and technical experts (ongoing).	<ul style="list-style-type: none"> Is it a pest? (Is it interfering with your management objectives?)
3. Document decisions and maintain records.	
4. Know your resource (site description and ecology).	<ul style="list-style-type: none"> Is it a native or nonnative organism?
5. Know your pest. Identify potential pest species, understand their biology, and conditions conducive to support the pest(s) (air, water, food, shelter, temperature, and light).	
6. Monitor pests, pathways, and human and environmental factors, including population levels and phenological data.	<ul style="list-style-type: none"> What conditions foster the pest?
7. Establish "action thresholds," the point at which no additional damage or pest presence can be tolerated.	
8. Review available tools and best management practices. Develop a management strategy specific to your site and the identified pest(s). Tools can include: 1) no action, 2) physical, 3) mechanical, 4) cultural, 5) biological, and 6) chemical management strategies.	<ul style="list-style-type: none"> What management zone is it in?
9. Define responsibilities and implement the lowest risk, most effective pest management strategy, in accordance with applicable laws, regulations, and policies.	
10. Evaluate results; determine if objectives have been achieved; modify strategy if necessary (adaptive management).	<ul style="list-style-type: none"> What are the chances of successful management?
11. Education and outreach. Continue the learning cycle, return to Step 1.	



**U.S. Fish and Wildlife Service
National Conservation Training Center**



**National Park Service
U.S. Department of the Interior**

**Integrated Pest Management Program
Biological Resource Management Division**

Appendix B: Natural History and Control of Nonnative Invasive Plants Found in 10 Northern Rocky Mountains Parks (detached)

(Available upon request)

Appendix C: Northern Rocky Mountains Exotic Plant Management Team (NRM-EPMT) Treatment of Nonnative Invasive Plants in the 10 Parks

Note: NRM-EPMT project work does not represent complete treatment of nonnative invasive plants at any park during any one year. Some parks, such as Craters of the Moon, Grant-Kohrs Ranch and Little Bighorn have a considerable program of their own.

Table 39 shows the history of NRM-EPMT treatment at City of Rocks.

Table 39: Summary of NRM-EPMT Work at City of Rocks

Acres	2004	2005	2006	2007	2008	2009
Inventoried	34.9	8.8	45.3	163.6	567.8	39.5
Gross Infested	2.0	5.3	25.2	14.4	399.0	24.8
Infested	0.1	2.1	8.5	12.1	8.4	4.1
Treated	0.1	0.9	4.3	12.1	8.3	4.1
Monitored	0	2.4	0	0	7.3	0
Retreated	0	1.0	0	0	0.1	0

Table 40 shows the history of NRM-EPMT treatment at Craters of the Moon.

Table 40: Summary of NRM-EPMT Work at Craters of the Moon

Acres	2004	2005	2006	2007	2008	2009
Inventoried	896.4	792.6	1779.3	4,758.5	2,476.6	1,049
Gross Infested	491.0	492.0	67.1	41.2	397.4	838.6
Infested	32.2	30.3	12.8	27.1	24.7	6.4
Treated	25.2	18.2	9.5	19.1	8.6	6.4
Monitored	0	413.4	0	33.5	0	0
Retreated	0	0	0	0	0	0

Table 41 shows the history of NRM-EPMT treatment at Fossil Butte.

Table 41: Summary of NRM-EPMT Work at Fossil Butte

Acres	2004	2005	2006	2007	2008	2009
Inventoried	68.3	11.4	35.2	123.8	566.8	106.3
Gross Infested	21.8	3.0	30.9	4.4	223.1	207.1
Infested	4.1	0.5	7.8	4.4	2.5	3.9
Treated	3.9	0.5	3.2	4.4	2.5	3.9
Monitored	0	0	0	0	0	60
Retreated	0	0	0	0	0	0

Table 42 shows the history of NRM-EPMT treatment at Golden Spike.

Table 42: Summary of NRM-EPMT Work at Golden Spike

Acres	2004	2005	2006	2007	2008	2009
Inventoried	68.5	688.2	101.9	591.6	534.4	0
Gross Infested	20.4	48.2	22.0	9.4	6.8	7.5
Infested	2.6	2.2	6.8	2.4	1.0	3.6
Treated	1.4	2.2	1.5	1.4	1.0	3.6
Monitored	0	0	0	16.7	0	64.5
Retreated	0	0	0	0	0	0

Table 43 shows the history of NRM-EPMT treatment at Grant-Kohrs.

Table 43: Summary of NRM-EPMT Work at Grant-Kohrs

Acres	2004	2005	2006	2007	2008	2009
Inventoried	505.4	242.2	857.9	244.2	559.5	1.8
Gross Infested	491.3	275.5	1,029.1	1,742.4	2427.5	803.8
Infested	18.5	68.6	243.5	195.7	137.2	21.4
Treated	17.7	45.0	212.8	170.7	124.4	21.4
Monitored	0	104.1	262.1	1,639.9	2042.5	802.3
Retreated	0	0	0	20	6.7	0

Table 44 shows the history of NRM-EPMT treatment at Hagerman Fossil Beds.

Table 44: Summary of NRM-EPMT Work at Hagerman Fossil Beds

Acres	2004	2005	2006	2007	2008	2009
Inventoried	318.8	16.6	545.5	140.4	742.5	119.5
Gross Infested	26.1	3.7	87.1	2.1	40.5	82.83
Infested	11.9	1.0	50.1	1.1	8.8	6.5
Treated	4.8	1.0	23	1.1	8.4	6.5
Monitored	0	39.1	0	123.5	55.0	25.0
Retreated	0	0	0	0	0	0

Table 45 shows the history of NRM-EPMT treatment at Little Bighorn.

Table 45: Summary of NRM-EPMT Work at Little Bighorn

Acres	2004	2005	2006	2007	2008	2009
Inventoried	38.4	38.8	0	5.5	78.0	55.1
Gross Infested	29.2	40.7	27.0	42.0	62.0	30.1
Infested	9.8	28	13.4	10.0	2.0	0.5
Treated	8.6	14.8	13.4	10.0	2.0	0.5
Monitored	0	15.0	26.7	37.0	0	0
Retreated	0	0	0	0	0	0

Table 46 shows the history of NRM-EPMT treatment at Minidoka.

Table 46: Summary of NRM-EPMT Work at Minidoka

Acres	2004	2005	2006	2007	2008	2009
Inventoried	40.2	1.0	12.8	14.2	478.1	60.0

Gross Infested	4.8	1.0	3.1	8.9	46.0	30.0
Infested	1.8	0.6	0.8	3.4	0.5	0.3
Treated	0.2	0.5	0.2	3.3	0.5	0.3
Monitored	0	0	0	0.1	12.4	0
Retreated	0	0	0	0.1	0	0

The NRM-EPMT first visited Bear Paw in August 2010 to treat Canada thistle.

Table 47 shows the history of NRM-EPMT treatment at Big Hole.

Table 47: Summary of NRM-EPMT Work at Big Hole

Acres	2004	2005	2006	2007	2008	2009
Inventoried	60.7	16.1	8.5	0	0	0
Gross Infested	55.3	84.0	122.9	87	123.3	71.6
Infested	1.4	1.9	4.4	0.7	0.4	0.3
Treated	0.02	1.9	4.4	0.7	0.2	0.2
Monitored	0	76.2	110	87	123.3	71.6
Retreated	0	0.4	0.4	0	0.3	0.1

Appendix D: Laws, Regulations, Executive Orders, Policies and Park Planning Documents

LAWS

National Park Service Organic Act (1916) (16 USC 1)

The key provision of the legislation establishing the National Park Service, referred to as the 1916 Organic Act is: The National Park Service shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified . . . by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations (16 USC 1).

1970 National Park Service General Authorities Act (as amended in 1978 – Redwood amendment)

This act prohibits the NPS from allowing any activities that would cause derogation of the values and purposes for which the parks have been established (except as directly and specifically provided by Congress in the enabling legislation for the parks). Therefore, all units are to be managed as national parks, based on their enabling legislation and without regard for their individual titles. Parks also adhere to other applicable federal laws and regulations, such as the Endangered Species Act, the National Historic Preservation Act, the Wilderness Act, and the Wild and Scenic Rivers Act. To articulate its responsibilities under these laws and regulations, the NPS has established *Management Policies* (NPS 2006) for all units under its stewardship.

National Parks Omnibus Management Act (1998) (PL 105-392, 112 Statute 3497)

The National Park Service Omnibus Management Act addresses resources inventory and management in Title II. Section 201 defines the purposes of this title to enhance and encourage scientific study in National Park System (NPS) units. Section 202 authorizes and directs the Secretary of the Interior to ensure management is enhanced in NPS units by a broad program of high quality science and information. Section 205 states the Secretary may solicit, receive, and consider requests from federal and non-federal public or private entities for the use of NPS units for scientific study. Such proposals must be: 1) consistent with applicable laws and the *Management Policies* (NPS 2006), and 2) the study would be conducted in a manner as to pose no threat to park resources or public enjoyment of those resources.

National Environmental Policy Act (NEPA) (1969) (42 USC 4341 et seq.)

NEPA requires the identification and documentation of the environmental consequences of federal actions. Regulations implementing NEPA are set for by the President's Council on Environmental Quality (CEQ) (40 CFR Parts 1500-1508). CEQ regulations establish the requirements and process for agencies to fulfill their obligations under the act.

Clean Water Act (CWA) (1972, 1977 as amended) (33 USC 1241 et seq.)

Under the CWA, it is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters, to enhance the quality of water resources, and to prevent, and control, and abate water pollution. *Management Policies* (NPS 2006) provide direction for the preservation, use, and quality of water in national parks.

Clean Air Act (CAA) (1977 as amended) (42 USC 7401 et seq.)

The CAA states that park managers have an affirmative responsibility to protect park air quality related values (including visibility, plants, animals, soils, water quality, cultural resources and visitor health) from adverse air pollution impacts. Special visibility protection provisions of the CAA also apply to class I areas, including new national rules to prevent and remedy regional haze

affecting these areas. Under existing visibility protection regulations, the NPS identified “integral vistas” that are important to the visitor’s visual experience in NPS class I areas, and it is NPS policy to protect these scenic views. A class II designation defines the maximum allowable increase in concentrations of pollutants over baseline concentrations of sulfur dioxide and particulate matter, as specified in the CAA.

Endangered Species Act (ESA) (1972) (16 USC 1531 *et seq.*)

The ESA requires federal agencies, in consultation with the Secretary of the Interior, to use their authorities in the furtherance of the purposes of the act and to carry out programs for the conservation of listed endangered and threatened species (16 USC 1535 Section 7(a)(1)). The ESA also directs federal agencies, in consultation with the Secretary of the Interior, to ensure that any action authorized, funded, or carried out by an agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat (16 USC 1535 Section 7(a)(2)). Consultation with the United States Fish and Wildlife Service (USFWS) is required if there is likely to be an effect.

Antiquities Act (1906) (16 USC 431-433) (P.L. 59-209, 34 Stat. 225)

This act provides for protection of historic, prehistoric, and scientific features on federal lands, with penalties for unauthorized destruction or appropriation of antiquities. It also authorized scientific investigation of antiquities on federal lands subject to permitting and regulations.

Historic Sites Act (1935) (P.L. 74-292, 49 Stat. 666)

The Historic Sites Act declared “a national policy to preserve for public use historic sites, buildings, and objects . . .” and

- Authorized the programs known as the American Buildings Survey (HABS), the Historic American Engineering Record (HAER), and National Historic Landmarks (NHL) program
- Authorized the NPS to “restore, reconstruct, rehabilitate, preserve, and maintain historic or prehistoric sites, buildings, objects, and properties of national historical or archeological significance and. . . establish and maintain museums in connection therewith;” and Authorized cooperative agreements with other parties to preserve and manage historic properties.

The Historic Sites Act also directed the NPS to: “Develop an educational program and service for the purpose of making available to the public facts and information pertaining to American historic and archeologic sites, buildings, and properties of national significance. Reasonable charges may be made for the dissemination of any such facts or information.”

Archeological Resources Protection Act (ARPA) (1979) (16 U.S.C. 470aa-470mm) (P.L. 96-95)

This act secured for the present and future benefit of the American people, the protection of archeological resources and sites on public lands.

National Historic Preservation Act (NHPA) (1966 as amended) (16 USC 470) (P.L. 89-665, 80 Stat. 915; as amended by P.L. 91-243, P.L. 93-54, P.L. 94-422, P.L. 94-458, P.L. 96-199, P.L. 96-244, P.L. 96-515, P.L. 98-483, P.L. 99-514, P.L. 100-127, and P.L. 102-575)

This act declared a national policy of historic preservation, including the encouragement of preservation on the state and private levels. In addition, the act:

- Authorized the Secretary of the Interior to expand and maintain a National Register of Historic Places including properties of state and local as well as national significance;
- Authorized matching federal grants to the states and the National Trust for Historic Preservation for surveys and planning and for acquiring and developing National Register properties; established the Advisory Council on Historic Preservation; and

- Required federal agencies to consider the effects of their undertakings on National Register properties and provide the Advisory Council opportunities to comment (Section 106).

Section 106 of the NHPA directs federal agencies to take into account the effect of any undertaking [a federally funded or assisted project] on historic properties. "Historic property" is any district, building, structure, site, or object that is eligible for listing in the National Register of Historic Places (National Register) because the property is significant at the national, state, or local level in American history, architecture, archeology, engineering, or culture. This section also provides the Advisory Council on Historic Preservation and the State Historic Preservation Officer (SHPO) an opportunity to comment on the undertaking. The 1992 amendments to the act have further defined the roles of American Indian Tribes and the affected public in the Section 106 process. Section 10 of the Act requires the ongoing documentation of historic resources by federal agencies.

Wilderness Act (1964) (P.L. 88-577) (16 USC 1131-1136)

The Wilderness Act and legislation establishing individual units of the national park system as wilderness establish consistent direction for the preservation, management, and use of wilderness and prohibit the construction of roads, buildings and other man-made improvements and the use of mechanized transportation in wilderness (with exceptions). The public purpose of wilderness in national parks includes the preservation of wilderness character and wilderness resources in an unimpaired condition, as well as for the purposes of recreational, scenic, scientific, education, conservation, and historical use.

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) (1947) as amended (P.L. 92516) (82 Stat. 973) (7 U.S.C. 135 et seq. 1972 amendments known as the Environmental Pesticide Act) and P.L. 94-140 (89 Stat. 751)

The Secretary of Agriculture, in cooperation with the Administrator, shall implement research, demonstration, and education programs to support adoption of Integrated Pest Management. Integrated Pest Management is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks. The Secretary of Agriculture and the Administrator shall make information on Integrated Pest Management widely available to pesticide users, including Federal agencies. Federal agencies shall use Integrated Pest Management techniques in carrying out pest management activities and shall promote Integrated Pest Management through procurement and regulatory policies, and other activities (Chapter 6, Title 7, 136 r-1)"

FIFRA and the regulations established by the U.S. Environmental Protection Agency (EPA) (FIFRA, Sections 116-117, 165, 170-172) act as primary guidance governing pesticide registration, pesticide usage, the training and certification of pesticide applicators, and the criminal and civil penalties associated with misuse of pesticides. FIFRA defines the term pesticide as:

(1) any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pests, (2) any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant, and (3) any nitrogen stabilizer, except that term "pesticide" shall not include any article that is a "new animal drug" within the definition of the Federal Food, Drug, and Cosmetic Act.

Both FIFRA and NPS policy use this definition of "pesticide" in their guidance.

Hazardous Materials Transportation Act (49 USC 5101-5127) (P.L. 93-633, 101-615, 103-311)

This act regulates the transportation of hazardous materials "to protect against the risks to life, property, and the environment that are inherent in the transportation of hazardous material in intrastate, interstate, and foreign commerce."

a) Designating Material as Hazardous. The Secretary shall designate material (including an explosive, radioactive material, infectious substance, flammable or combustible liquid, solid, or gas, toxic, oxidizing, or corrosive material, and compressed gas) or a group or class of material as hazardous when the Secretary determines that transporting the material in commerce in a particular amount and form may pose an unreasonable risk to health and safety or property.

(b) Regulations for Safe Transportation. (1) The Secretary shall prescribe regulations for the safe transportation, including security, of hazardous material in intrastate, interstate, and foreign commerce. The regulations:

(A) apply to a person who—

- i. transports hazardous material in commerce;*
- ii. causes hazardous material to be transported in commerce;*
- iii. designs, manufactures, fabricates, inspects, marks, maintains, reconditions, repairs, or tests a package, container, or packaging component that is represented, marked, certified, or sold as qualified for use in transporting hazardous material in commerce;*
- iv. prepares or accepts hazardous material for transportation in commerce;*
- v. is responsible for the safety of transporting hazardous material in commerce;*
- vi. certifies compliance with any requirement under this chapter; or*
- vii. misrepresents whether such person is engaged in any activity under clause (i) through (vi);*
and

(B) shall govern safety aspects, including security, of the transportation of hazardous material the Secretary considers appropriate.

Management of Undesirable Plants on Federal Lands (7 USC 61 § 2814, 1990).

This code provides for the control and management of non-indigenous weeds that injure, or have the potential to injure, the interests of agriculture and commerce, wildlife resources, or the public health.

Occupational Safety and Health Act of 1970 (29 USC 651-678) (P.L. 91-596)

This act found: “*that personal injuries and illnesses arising out of work situations impose a substantial burden upon, and are a hindrance to, interstate commerce in terms of lost production, wage loss, medical expenses, and disability compensation payments.*” Therefore, it regulates: “*commerce among the several States and with foreign nations and to provide for the general welfare, to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources.*”

Under the act, *(a) Each employer—*

(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;

(2) shall comply with occupational safety and health standards promulgated under this chapter.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this chapter which are applicable to his own actions and conduct.”

Government Performance Results Act of 1993 (GPRA) (31 USC 1115 et seq.) (P.L. 103-62)

The purpose of GPRA is to improve the confidence of the American people in the capability of the Federal Government by systematically holding federal agencies accountable for achieving program results.

To meet GPRA requirements, NPS has developed strategic performance goals that reflect and expand upon larger Department of the Interior Strategic Plan goals. These goals serve as indicators to show the National Park Service’s success in fulfilling its mission. Each park unit is required to select those goals that represent what can be measured as accomplished and reported

quarterly. The following is a description of the service-wide GPRA goals (excerpted from Technical Guidance (Manual) for National Park Service Strategic Goals 2004) that would be addressed by this plan:

Goal Category 1: Preserve Park Resources

The mission and long-term goals in Goal Category I are inclusive of the mandate regarding parks in the NPS Organic Act “...to conserve the scenery and the natural and historic objects and the wild life therein...”

Mission Goal 1a: Natural and cultural resources and associated values are protected, restored and maintained in good condition and managed within their broader ecosystem and cultural context.

Service-wide (NPS) Goals Relevant to This Planning Effort:

- Ia1A – Disturbed Lands: calls for restoration of targeted park lands that are disturbed by development or agriculture.
- Ia1B – Invasive (nonnative) Plants: calls for effective control of park lands that have invasive (nonnative) plant invasions.
- Ia1C – Land Health: Wetland Areas: requires wetlands achieve desired conditions where conditions are known and where desired conditions are specified in management plans consistent with applicable substantive and procedural requirements of state and federal water law.
- Ia1D – Land Health: Riparian and Stream Areas: requires stream/riparian areas achieve desired conditions where conditions are known and where desired conditions are specified in management plans consistent with applicable substantive and procedural requirements of state and federal water law.
- Ia1E – Land Health: Upland Areas: requires upland areas achieve desired conditions where condition is known and as specified in management plans consistent with applicable substantive and procedural requirements of state and federal water law.
- Ia2A – Federally-listed Threatened and Endangered Species: requires progress toward recovery of federally-listed species that occur or have occurred in parks.
- Ia2B – Species of Management Concern: requires populations of native plant and animal Species of Management Concern are managed to self-sustaining levels in cooperation with affected states and others, as defined in approved management documents.

Mission Goal 1b: The NPS contributes to knowledge about natural and cultural resources and associated values; management decisions about resources and visitors are based on adequate scholarly and scientific information.

Service-wide (NPS) Goals Relevant to This Planning Effort:

- Ib3A – Vital Signs Identified: requires parks with significant natural resources to identify all vital signs for natural resource monitoring.
- Ib3B – Vital Signs Monitoring: requires parks with significant natural resources to implement natural resource monitoring of key vital signs parameters.

Plant Protection Act (Plant Protection Act of 2000, 7 U.S.C. 7701 et seq. (supersedes the Federal

Noxious Weed Act of 1974, except Sections 1 and 15) (2000)

The Plant Protection Act of 2000 provides the Agricultural Plant Health Inspection Service (APHIS) with the authority to regulate biological control agents, or “any enemy, antagonist or competitor used to control a plant pest or noxious weed.” APHIS’ Plant Protection and Quarantine (PPQ) division is responsible for granting permission for the use of biological control agents within the U.S.

Once a target nonnative plant and biological control agent are identified, the PPQ goes through extensive host-specificity testing. This testing is designed to ensure that introduced biological weed control agents are limited in host range and do not threaten endangered, native, or crop plants. The plant species tested are chosen from three groups of plants. The first group identified includes those native North America plants in the same family, genus, species, or type as the target weed. The next group is threatened and endangered species in the same family, genus, or species as the target weed. Finally, species in other orders or families that are similar in form or shape or that have historical or chemical similarities to the target weed are tested. This last group of plants would include any economically or environmentally important plants.

Precautions are also taken to ensure that the introduced agents are neither parasitized nor diseased so that when an introduction is made, only one organism is introduced. This requires that several generations of the proposed agent be reared in the lab.

The development of a list of host plants for host-specificity testing is aided by the involvement of an interagency committee. The Technical Advisory Group for Biological Control Agents of Weeds (TAG) is a voluntary interagency committee first formed in 1957 to provide advice to researchers. TAG members review petitions for biological control of nonnative plants and provide an exchange of views, information and advice to researchers and those in APHIS responsible for issuing permits for importation, testing, and field release of biological control agents of nonnative plants. Members in TAG include weed managers from the Bureau of Land Management (BLM), NPS, Bureau of Reclamation (BOR), National Plant Board, Agricultural Research Service, U.S. Army Corps of Engineers (ACOE), National Biological Control Institute, U.S. Geological Survey (USGS), U.S. Forest Service (USFS), EPA, APHIS, USFWS, Citrus Research and Education Center, Bureau of Indian Affairs (BIA), and the Weed Science Society.

Once the U.S. Department of Agriculture (USDA) has approved a nonnative biological control agent, a permit must also be obtained if this agent will be transported across state lines. In some instances, biological control agents may not be available from within the state, but can be obtained from sources located in other states. An application to transport a biological control agent must be prepared to obtain a permit from the USDA. The PPQ will review the request, assess the risk, and assign mitigating safeguards. Next, the request is faxed to the appropriate State Plant Regulatory Official for review and comment. After the State Official responds, the PPQ considers the comments and either issues or denies the permit.

Consolidated Natural Resources Act of 2008 (P.L. 110-229)

This recent law expands the authority of the NPS to spend money and to enter into agreements regarding lands outside park boundaries to protect natural resources. The law was passed, in part, in response to a General Accounting Office (GAO) report (February 2005), which found that the NPS was the only major federal land management agency that did not have authority to expend funds and other resources outside its jurisdictional boundaries. This was cited by the GAO as a barrier to effective management of invasive species on federal and non-federal lands. This law also allows the NPS to pursue opportunities for conservation partnerships.

According to a memo issued to Regional and Associated Directors from the Associate Director, Natural Resources Stewardship and Science, this new law allows the NPS to seek collaborative opportunities such as the following:

- Cooperation with adjacent private landowners for the control of exotic animals or plants;
- Participation in local cooperative weed management areas to inventory, treat and control invasive plants;
- . . . Collaboration with groups and adjacent landowners to inventory and monitor natural resources adjacent to or affecting park natural resources.

REGULATIONS

Occupational Health and Safety (OSHA) Hazard Communication Standard (29 CFR 1910.1200)

Under the OSHA Hazard Communication Standard (Section 1910.1200), employers must provide workers with training, protective equipment, and information about hazardous substances. The employer is also required to maintain Material Safety Data Sheets (MSDS) about these substances and to provide the employee with a copy of the sheets if they are requested. MSDS as well herbicide labels to review precautions and application restrictions for herbicides and associated chemicals (adjuvants, etc.) can be obtained at the following websites:

- Greenbook - <http://www.greenbook.net/>
- Crop Database Management Systems (CDMS) - <http://www.cdms.net/manuf/acProducts.asp>

Park resource managers must maintain a current set of MSDSs and labels for any pesticides used within their park.

OSHA Respiratory Program Standard (29 CFR 1910.134)

“In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to this section”

(http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=12716).

EXECUTIVE ORDERS

Floodplain Management Executive Order 11988 (1977, 42 CFR 26951, PL 93-234 Section I) (as amended by Executive Order 12148, 1979, 44 FR 43239, 42 USC 4321)

The Floodplain Management Executive Order (EO) was issued “to avoid to the extent possible the short- and long-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development whenever there is a practicable alternative.” NPS implementing guidance for this EO is found in Director’s Order 77-2: Floodplain Management.

EO 11988 requires federal agencies to provide leadership and take action to:

- 1) reduce the risk of flood loss,
- 2) minimize the impact of floods on human safety, health and welfare, and
- 3) restore and preserve the natural and beneficial values provided by floodplains.

Agencies implement these actions in:

- 1) acquiring, managing and disposing of federal lands and facilities;
- 2) providing federally undertaken, financed, or assisted construction and improvements; and
- 3) conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating and licensing activities.

In doing so, “each agency has a responsibility to evaluate the potential effects of any actions it may take in a floodplain; to ensure that its planning programs and budget requests reflect

consideration of flood hazards and floodplain management; and to prescribe procedures to implement the policies and requirements of this Order.”

Protection of Wetlands Executive Order 11990 (1977, 42 FR 26961) (as amended by Executive Order 12608, 1987, 52 FR 34617, 42 USC 4321)

The NPS manages wetlands in accordance with this executive order, the CWA, the Rivers and Harbors Appropriation Act of 1899 and the procedures in DO 77-1 (Wetland Protection). According to DO 77-1, the Service will 1) provide leadership and take action to prevent the destruction, loss or degradation of wetlands; 2) preserve and enhance the natural and beneficial values of wetlands; and 3) avoid direct and indirect support of new construction in wetlands unless there are no practicable alternatives and the proposed action includes all practicable measures to minimize harm to wetlands. The NPS will implement a “no net loss of wetlands” policy. In addition, the NPS will strive to achieve a long-term goal of net gain of wetlands across the national park system through restoration of previously degraded or destroyed wetlands.

Under this EO, the federal agencies are “. . .to avoid to the extent possible the short- and long-term adverse impacts associated with the destruction or modifications of wetlands and to avoid direct or indirect support of new construction in wetlands whenever there is a practicable alternative.” NPS implementing guidance for this EO is found in DO 77-1: Wetland Protection (October 22, 1998). Under NPS 77-1, the NPS adopted a “no net loss of wetlands” goal and the Cowardin *et al.* (1979) wetland classification system as the NPS standard for defining, classifying, and inventorying wetlands.

Under the EO, federal agencies are to:

- 1) provide leadership and take action to minimize the destruction, loss, or degradation of wetlands,
- 2) preserve and enhance the natural and beneficial values of wetlands, and
- 3) avoid direct or indirect support of new construction in wetlands unless there are no practicable alternatives to such construction and the proposed action includes all practicable alternatives to minimize harm to wetlands in carrying out agency responsibilities.

For proposed new development or other activities, plans or programs either located in or which otherwise have the potential to affect wetlands, the NPS will:

- avoid adverse wetland impacts to the extent practicable;
- minimize impacts that cannot be avoided; and
- compensate for remaining unavoidable adverse wetland impacts by restoring wetlands that have been previously destroyed or degraded.

13112: Control of Invasive Species (February 1999) (64 FR 6183) as amended by EO 13286 (68 FR 10619) (42 USC 4321)

Section 2 of EO 13112 on Invasive Species directs federal agencies to identify actions that may affect the status of invasive species and to take action to:

- Prevent the introduction of invasive species;
- Detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner;
- Monitor invasive species populations accurately and reliably;
- Provide for restoration of native species and habitat conditions in ecosystems that have been invaded;
- Conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and
- Promote public education on invasive species and the means to address them.

EO 13112 also established the Invasive Species Council and authorized the Council to develop and implement a National Management Plan (NMP) for Invasive Species. The first edition of this plan was finalized on January 18, 2001. The plan is updated every two years and serves as a blueprint for all federal action on invasive species.

13175: Consultation and Coordination with Indian Tribal Governments (2000) (65 FR 67249) (25 USC 450)

This EO requires “regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes. . . Agencies shall respect Indian tribal self-government and sovereignty, honor tribal treaty and other rights, and strive to meet the responsibilities that arise from the unique legal relationship between the Federal Government and Indian tribal governments. . .”

13352: Facilitation of Cooperative Conservation (2004) (69 FR 52689) (42 USC 4332)

This executive order mandates that the Secretaries of the Interior, Agriculture, Commerce, and Defense and the Administrator of the EPA work together to carry out the programs, projects and activities of their agencies in cooperation with each other. It also identifies the need for local participation in federal decision-making.

POLICIES

Section 4.1.4 Partnerships

In addition, the Service will seek the cooperation of others in minimizing the impacts of influences originating outside parks by controlling noise and artificial lighting, maintaining water quality and quantity, eliminating toxic substances, preserving scenic views, improving air quality, preserving wetlands, protecting threatened or endangered species, eliminating exotic species, managing the use of pesticides, protecting shoreline processes, managing fires, managing boundary influences, and using other means of preserving and protecting natural resources.

Section 4.4.1.3 Definition of Native and Exotic Species

Native species are defined as all species that have occurred, now occur, or may occur as a result of natural processes on lands designated as units of the national park system. Native species in a place are evolving in concert with each other. Exotic species are those species that occupy or could occupy park lands directly or indirectly as the result of deliberate or accidental human activities. Exotic species are also commonly referred to as nonnative, alien, or invasive species. Because an exotic species did not evolve in concert with the species native to the place, the exotic species is not a natural component of the natural ecosystem at that place. Genetically modified organisms exist solely due to human activities and therefore are managed as exotic species in parks.

Section 4.4.4 Management of Exotic Species

Exotic species will not be allowed to displace native species if displacement can be prevented.

Section 4.4.4.2 Removal of Exotic Species Already Present

All exotic plant and animal species that are not maintained to meet an identified park purpose will be managed—up to and including eradication—if (1) control is prudent and feasible, and (2) the exotic species

- *interferes with natural processes and the perpetuation of natural features, native species or natural habitats, or*
- *disrupts the genetic integrity of native species, or*
- *disrupts the accurate presentation of a cultural landscape, or*

- damages cultural resources, or
- significantly hampers the management of park or adjacent lands, or
- poses a public health hazard as advised by the U. S. Public Health Service (which includes the Centers for Disease Control and the NPS public health program), or
- creates a hazard to public safety.

High priority will be given to managing exotic species that have, or potentially could have, a substantial impact on park resources, and that can reasonably be expected to be successfully controlled. Lower priority will be given to exotic species that have almost no impact on park resources or that probably cannot be successfully controlled. Where an exotic species cannot be successfully eliminated, managers will seek to contain the exotic species to prevent further spread or resource damage.

The decision to initiate management should be based on a determination that the species is exotic. For species determined to be exotic and where management appears to be feasible and effective, superintendents should (1) evaluate the species' current or potential impact on park resources; (2) develop and implement exotic species management plans according to established planning procedures; (3) consult, as appropriate, with federal, tribal, local, and state agencies as well as other interested groups; and (4) invite public review and comment, where appropriate.

Programs to manage exotic species will be designed to avoid causing significant damage to native species, natural ecological communities, natural ecological processes, cultural resources, and human health and safety. Considerations and techniques regarding removal of exotic species are similar to those used for native species (see 4.4.2.1 NPS Actions That Remove Native Plants and Animals). (Based on Executive Order 13112 (Invasive Species))

Section 4.4.5 Pest Management

All park employees, concessioners, contractors, permittees, licensees, and visitors on all lands managed or regulated by the National Park Service will comply with NPS pest management policies.

Section 4.4.5.1 Pests

Pests are living organisms that interfere with the purposes or management objectives of a specific site within a park or that jeopardize human health or safety. Decisions concerning whether or not to manage a pest or pest population will be influenced by whether the pest is an exotic or a native species. Exotic pests will be managed according to both the policies in this section (4.4.5) and the exotic species policies in section 4.4.4. Native pests will be allowed to function unimpeded, except as noted below. Many fungi, insects, rodents, disease organisms, and other organisms that may be perceived as pests are, in fact, native organisms existing under natural conditions and are natural elements of the ecosystem. Also, native pests that were evident in pesticide-free times are traditional elements in park cultural settings.

The Service may control native pests to

- conserve threatened, rare, or endangered species, or unique specimens or communities;
- preserve, maintain, or restore the historical integrity of cultural resources;
- conserve and protect plants, animals, and facilities in developed areas;
- prevent outbreaks of a pest from invading uninfested areas outside the park;
- manage a human health hazard when advised to do so by the U. S. Public Health Service
- (which includes the Centers for Disease Control and the NPS public health program); or to otherwise protect against a significant threat to human safety.

Section 4.4.5.2 Integrated Pest Management Program

The Service conducts an integrated pest management (IPM) program to reduce risks to the public, park resources, and the environment from pests and pest-related management strategies. Integrated pest management is a decision-making process that coordinates knowledge of pest biology, the environment, and available technology to prevent unacceptable levels of pest damage by cost-effective means while posing the least possible risk to people, resources, and the environment.

The Service and each park unit will use an IPM approach to address pest issues. Proposed pest management activities must be conducted according to the IPM process prescribed in Director's Order #77-7: Integrated Pest Management. Pest issues will be reviewed on a case-by-case basis. Controversial issues, or those that have potential to negatively impact the environment, must be addressed through established planning procedures and be included in an approved park management or IPM plan. IPM procedures will be used to determine when to implement pest management actions and which combination of strategies will be most effective for each pest situation.

Under the Service's IPM program, all pesticide use on lands managed or regulated by the Service, whether that use was authorized or unauthorized, must be reported annually.

Section 4.4.5.3 Pesticide Use

A pesticide, as defined by the Federal Insecticide, Fungicide and Rodenticide Act, is any substance or mixture that is used in any manner to destroy, repel, or control the growth of any viral, microbial, plant, or animal pest. Except as identified in the next paragraph, all prospective users of pesticides in parks must submit pesticide use requests, which will be reviewed on a case-by-case basis, taking into account environmental effects, cost and staffing, and other relevant considerations. The decision to incorporate a chemical, biological, or bioengineered pesticide into a management strategy will be based on a determination by a designated IPM specialist that it is necessary and other available options are either not acceptable or not feasible. Pesticide applications will only be performed by or under the supervision of certified or registered applicators licensed under the procedures of a federal or state certification system.

Insect repellents, bear deterrent sprays, and insecticides applied to persons or to livestock must conform to NPS policies and approval procedures, except that pesticides used under the following conditions do not require approval:

- cleansers and disinfectants used in restrooms and restaurants*
- personal insect repellents, insecticides, and bear deterrent sprays that employees or park visitors personally obtain and use to meet personal needs*
- insect repellents and insecticides applied to personally owned pets and pack and saddle stock.*

Section 4.4.5.4 Biological Control Agents and Bioengineered Products

The application or release of any bio-control agent or bioengineered product relating to pest management activities must be reviewed by designated IPM specialists in accordance with Director's Order #77-7 and conform to the exotic species policies in section 4.4.4.

Section 4.4.5.5 Pesticide Purchase and Storage

Pesticides must not be stockpiled. No pesticides may be purchased unless they are authorized and expected to be used within one year from the date of purchase. Pesticide storage, transport, and disposal will comply with procedures established by (1) the Environmental Protection Agency; (2) the individual states in which parks are located; and (3) Director's Order #30A: Hazardous and Solid Waste management, Director's Order #77-1: Wetland Protection, and Director's Order 77-7: Integrated Pest Management.

Director's Order 28: Cultural Resources Management (NPS-28: Cultural Resources Management Guideline)

As noted in this DO, management of cultural resources includes: first, to discover the significance or meaning of each resource; second, to slow the rate at which their essential material qualities are lost; and third, to support the use and enjoyment of cultural resources while minimizing negative effects on them (NPS-28: 1D1).

Director's Order 77-7 (DO 77-7): Integrated Pest Management (IPM)

This order will supplement and clarify existing NPS policies on IPM. It is to include a Reference Manual 77-7 (RM 77-7) to provide parks with additional information and procedures for carrying out NPS responsibilities included in NPS-77, DO 77-7, and *Management Policies* (NPS 2006). Once formalized, policy and guidance included in DO 77-7 and RM 77-7 would apply to any actions taken under this plan. Since DO 77-7 has not been approved, this plan was developed based on existing policy included in NPS-77 and *Management Policies*.

Integrated Pest Management

IPM is a science-based decision-making process that guides park managers when investigating a pest situation. The IPM approach determines the most appropriate, cost effective, and environmentally sound management solution for the specific pest situation. IPM includes identification of the pest, understanding the use and significance of a site or the importance of protecting a historic item, and education of the people involved. IPM also establishes pest tolerance levels and monitoring protocols. Then, with the help of technical experts and on a case-by-case basis, an effective, site specific and low risk strategy is developed to manage the pest. This includes altering conditions which attracted pests to the site in the first place. IPM often involves changing human behavior as well (NPS 2010a).

IPM is used because it works. IPM reduces risks to people, park resources, and the environment from pests and from the strategies used to manage them. IPM is also used because federal agencies are directed to use it by the FIFRA and NPS policy. The focus is on finding solutions to pest problems and determining why the pest is there in the first place, rather than simply treating the damage and symptoms caused by the pest (NPS 2010a).

In IPM, a pest, as defined by NPS policy, *is any organism that interferes with the purpose of a park or that threatens human health or safety. A pest can be a native or nonnative organism; it can be a weed, an insect, a fungus, a disease, a fish, a bird, or a mammal; to reach "pest status" depends on the situation. An individual mouse, such as the native deer mouse for example, is a pest when inside the Yosemite Museum. Mice may damage museum items by gnawing on them or using them for nesting material. But outside the museum the same individual deer mouse is part of the natural ecosystem and is not considered a pest* (NPS 2010a).

National parks implement IPM through the use of an eleven-step process detailed in (Appendix A: *11-Step IPM Process*). In short, that process is:

1. Describe site management objectives and set priorities.
2. Build consensus.
3. Document decisions and maintain records.
4. Know the resource.
5. Know the pest.
6. Monitor pest and environmental conditions.
7. Establish "action thresholds."
8. Review available tools and best management practices for the management of the identified pest(s).
9. Define responsibilities and implement the most effective, low risk pest management strategies in accordance with applicable laws, regulations, and policies.
10. Evaluate results; determine if objectives have been achieved; modify strategy if necessary.

11. Education and outreach; continue the learning cycle (NPS 2010a).

NPS-77: Natural Resources Management Guideline (1991)

This guideline provides resource managers with an overview of the IPM concept, summarizes NPS policies regarding pesticide use, and provides directions for applying for approval to use pesticides. NPS-77 also provides general guidelines and recommendations for nonnative plant management.

Review and Approval to Use Pesticides: NPS-77 provides guidance on the review and approval process for pesticides, biological control, and other treatments. The natural resource manager at the park can approve treatments that do not involve the use of pesticides or biological control. However, if pesticides or biological control treatments will be used, a use proposal must be sent to the Regional IPM Coordinator. The Regional IPM Coordinator may then forward requests to the National IPM Coordinator in Washington D.C., as necessary. Parks that propose the use of pesticides or biological control agents must also follow established state and federal regulations.

Pesticides must be reviewed and approved prior to use if they:

- Are applied to any lands, waters, or structures that are owned, managed, or regulated by the NPS; or
- Are purchased by NPS or cooperating association funds; or
- Are used on privately owned lands or lands managed by another government agency and are located within a park boundary, and NPS approval is required under the terms of a legally binding agreement between the park and the landowner; or
- Are purchased by the park for employees (e.g., insect repellants and bear deterrents).

The following pesticides do not require approval (unless approval is required by a regional director or superintendent):

- Personal insect repellants and bear deterrents that are purchased by park employees or visitors from their own funds and applied to their own persons, pets, and privately owned livestock;
- Personal insect repellants and bear deterrents sold by concessioners; and
- Disinfectants and cleaning solutions used in restrooms and restaurants, even though these products have EPA pesticide registration numbers.

To obtain approval for pesticide use, each park is required to prepare a pesticide use proposal (PUP). An Intranet Based System has been developed whereby resource managers can submit these requests electronically. The Regional and, as necessary, the National IPM Coordinator then reviews these requests.

Except as noted below, Regional IPM coordinators review PUPs and either approve them, approve them with conditions, or deny them (and provide alternative methods). Currently, the following pesticide use proposals also require a second level of review by the National IPM Coordinator:

- Pesticide uses that involve aquatic applications or situations in which the applied pesticide could reasonably be expected to get into waters or wetlands;
- Pesticide uses that may affect rare, threatened, or endangered species or associated critical habitat;
- Pesticide use involving aerial application; and
- Restricted-use pesticides as defined by the USEPA.

In the future, broadcast applications over a specified acreage may also require approval from the National IPM Coordinator under DO 77-7. While not yet formally approved, the National IPM

Coordinator has indicated that, in practice, approval should be obtained from the National IPM Coordinator for any chemical treatment of 400 or more contiguous acres.

The decision by either the Regional IPM Coordinator or National IPM Coordinator to approve a pesticide use proposal is based on its conformance with NPS policies and guidelines, a determination of whether other alternatives are available or feasible, and whether the pesticide is registered for the proposed use. If proposals are denied, the Regional or National IPM Coordinator will provide a written explanation of the denial and suggestions for suitable alternatives.

PUPs are approved on an annual basis, with each approval expiring on December 31 of the year of approval. However, approval can also be obtained for situations where the pesticide need was not anticipated at the beginning of the year, including emergency situations. These “emergency” pesticide use proposals may be submitted via telephone, fax, or email to the Regional IPM Coordinator, or in their absence, the National IPM Coordinator.

Reporting Pesticide Use: Under NPS-77, parks are required to maintain records of pesticide use, including pesticide use reports, during the year. Pesticide use reports are submitted electronically using the Intranet Based IPM System. Pesticide use reports must be entered into this system by March 15 of each year.

Review and Approval to Use Biological Control Agents: Any park proposing to release a biological control would follow a protocol similar to that for approval to use pesticides. The park must submit a biological use proposal (BUP) to the Regional IPM Coordinator. BUPs are approved annually, with expiration on December 31 of the year of approval. The Regional IPM Coordinator may deny the proposal, modify the proposal in cooperation with the park and forward the modified request, or forward the request (without modification) to the National IPM Coordinator for review and approval. State permitting may also be required prior to the release of a biological control agent. Following approval, an annual report detailing the releases, including the number of insects, size of the area where they were released, etc. is required. Follow-up monitoring of the insects, their population levels and results are also requested.

Other Pesticide Related Guidelines: NPS-77 also provides guidelines for the following activities: pesticide purchase, pesticide storage, disposal of pesticides, pesticide safety, and contracted pest management services. These guidelines have been incorporated into the health and safety practices provided in Appendix F: *Pesticide Handling Procedures* and Appendix G: *Sample (Nez Perce National Historical Park) Safety Plans*.

Nonnative Species Management: NPS-77 also provides guidance on a number of nonnative species management topics. These topics include prevention of nonnative species invasions, management of established nonnative species, biological control, IPM and pesticide use, and environmental compliance and planning documents. This guidance has been used to develop this plan.

NPS-77 also includes guidance for NPS concessioners that manage pests on NPS property or in NPS buildings. Based on NPS-77, the NPS has developed guidance to help educate concessioners on NPS procedures for managing pests. The guidance document is titled, *Understanding the National Park Service’s Integrated Pest Management Program* (NPS 2003) and can be accessed at: <http://www.planning.nps.gov/concessions/document/CoEMPGuidanceIPM.pdf>

This guidance focuses on procedures and requirements governing pesticide use in national parks. All concessioners are required to review and comply with this document or subsequent versions prior to conducting any nonnative plant management activities.

PARK PLANNING DOCUMENTS

a. City of Rocks National Reserve

Comprehensive Management Plan (NPS CIRO 1996)

Note: This plan is currently being updated.

“Reserve managers would strive to maintain the highest degree of integrity of the air, water, biological, geological and scenic resources in the reserve by establishing a resource baseline to determine the present condition of these resources, monitoring changes in resource conditions, and identifying, and if possible, mitigating the sources of changes” (NPS CIRO 1996:41 and 87).

“Resource managers would continue to cooperate with the Bureau of Land Management, the U.S. Forest Service, state and local governments, and landowners for compatible management on adjacent lands to ensure continued preservation of the reserve’s natural resources and significant related resources on lands adjacent to the reserve” (NPS CIRO 1996:41).

Many introduced plant species exist within the reserve. Some are a potential threat to resources; for example, halogeton is toxic to livestock and wildlife. Nonnative plant species would be eradicated or controlled only if they threatened to spread or compete with reserve resources and if control was feasible. Care would be taken to ensure that programs to manage nonnative species “did not significantly damage native species” (NPS CIRO 1996:42).

“Management actions to protect the natural environment would include the following:

- . . . Unauthorized roads would be closed and allowed to revegetate. . .”
- “Heavily disturbed areas would be revegetated.”
- “For areas where grazing would be allowed, a grazing managed plan directed at protecting the natural diversity of native biological communities would be developed and implemented” (NPS CIRO 1996:87). A Grazing Management Plan was developed and implemented beginning in 1998. It was recently revised and an EA for the revision is currently being prepared.
- “Various techniques would be developed involving fire and vegetation management to restore the range to more natural vegetative communities. For example, some basin areas now covered with monotypic stands of sagebrush and nonnative annual grasses would be managed toward a natural community of native perennial grasses and widely dispersed sagebrush” (NPS CIRO 1996:44).

b. Craters of the Moon National Monument and Preserve

Monument Management Plan (NPS CRMO 2006)

The Monument Management Plan (MMP) serves as the guiding management strategy for the monument and preserve. It provides a framework for decision-making, including decisions regarding visitor use, the preservation of natural and cultural resources, development and park operations. Implementation plans, which provide more detailed strategies, tier off this plan. This plan replaced the 1992 Craters of the Moon GMP as well as four BLM Land Use Plans. The MMP was developed jointly with BLM which manages the adjoining BLM National Monument. As a result, information from the MMP is applicable not only to the NPS but also the BLM.

Applicable portions of this plan include the park purpose and significance (see Chapter I: *Introduction*) and the following sections.

BLM and NPS manage separate portions of the area according to different laws, regulations and policies, however this plan pertains to both and provides a jointly developed framework for cooperative management of the entire area by both agencies (NPS 2006:3).

Among the key components of the MMP is that the plan:

- . . . Supports a large and proactive integrated weed management program.
- Proactively protects and restores sagebrush steppe communities (NPS CRMO 2006:13).

Four management zones (frontcountry, passage, primitive and pristine) were designated by the MMP. These zones are described by their physical, social, and managerial settings (see Table 1: Management Zones in NPS CRMO 2006:14).

Desired Future Conditions (DFCs) for vegetation include:

- . . . There is no net loss, and preferably a net gain, of sagebrush steppe communities over the life of the plan.
- Natural ecological processes are the dominant factor in determining the composition and distribution of plant communities in the Preserve and Wilderness areas. . .
- Preventing or limiting the spread of noxious weeds using integrated weed management perpetuates the natural condition and biodiversity of the planning area.
- The areas dominated by invasive annual species (cheatgrass and other similar plants) are minimized.
- Kipukas in the Pristine Zone are free of noxious weeds. . .

Among the management actions to achieve these DFCs include:

- Current science and best available technologies and plant materials will be considered in analysis and implementation of all restoration projects. Restoration treatments may be active or passive and may include but are not limited to the following: prescribed fire, thinning, mowing, herbicide treatment, seeding, temporary removal of livestock and/or changes in grazing regimes or facilities and road closures (VEG-6).
- . . . About 31,000 acres of annual grassland and 49,000 acres of highly degraded low elevation sagebrush steppe (poor to fair biotic integrity) will be treated to control cheatgrass and restore big sagebrush cover with a perennial understory (VEG-9).
- Use of native plants will be emphasized in rehabilitation and restoration projects, and only native plants will be used for rehabilitation or restoration projects within the Pristine Zone. Integrated weed management principles will be used to:
 - Detect and eradicate all new infestations of noxious weeds;
 - Control existing infestations; and
 - Prevent the establishment and spread of weeds within and adjacent to the planning area (VEG-12).
- Weed infestations in wilderness areas will be controlled by methods consistent with minimum tool requirements and integrated weed management principles including prevention of disturbance activities, use of cultural and mechanical methods to control or physically remove noxious weeds, and selective application of herbicides and possibly biological controls (VEG-13).
- Integrated weed management principles will be applied proactively throughout all zones. This program will emphasize protection of weed-free areas and aggressive detection and control of noxious or highly invasive exotic weeds and will include an analysis of the trade-offs involved in herbicide use versus non-chemical methods of weed control (VEG-14).
- Only certified weed-free hay, straw and mulch will be permitted within the monument (VEG-15).
- Fire will be managed to maximize protection and restoration of sagebrush steppe in the Passage and Primitive zones (VEG-17).

Problems noted include that “Large tracts of sagebrush have been lost due to extensive wildfires, and fires have perpetuated exotic annual grasslands” (NPS CRMO 2006:23). When the MMP in

2006, there were 10 species of weeds designated as noxious by Idaho State Law in the monument. These included: spotted, diffuse and Russian knapweeds, rush skeletonweed, leafy spurge, Canada, musk and Scotch thistle, Dalmatian toadflax and field bindweed. These primarily occurred in areas most susceptible to invasion by exotics, including previously disturbed areas such as road rights-of-way, intensively grazed areas, and wildland fire areas (NPS CRMO 2006:25). In 2007 infestations of dyers woad were discovered within the lava flows at the south end of Wapi Lava Field in areas with little prior disturbance.

c. Fossil Butte National Monument

General Management Plan (NPS FOBU 1980)

Applicable portions of this plan include the park purpose and significance (see Chapter I: *Introduction*) and the following sections.

Management objectives for the Monument as identified in the park GMP include:

- limit extraction of the paleontological resource;
- obtain a representative collection of fossil specimens;
- protect and preserve within the constraints of the enabling legislation all elements of the natural and historic resources of Fossil Butte National Monument;
- inventory and evaluation of cultural resources;
- maximize alternative energy sources;
- develop administrative and visitor use facilities;
- and develop interpretive programs (NPS FOBU 2005:3).

“The distribution of exotics will be monitored to assess the effects of grazing, fencing and competition between livestock and wildlife. Until such species are determined to be detrimental to the natural ecosystem, no action will be taken” (NPS FOBU 1980).

Fossil Butte Resource Management Plan (NPS FOBU 1998)

Resource management objectives from the Resource Management Plan, as described in the Fire Management Plan are as follows:

- management of the fossil resources;
- development of a wildfire management program;
- erosion control; livestock grazing management;
- management of museum collections;
- boundary control;
- collection of baseline natural resource data;
- water resources management;
- vegetation management, as related to grazing; exotic plants identification and control;
- air quality inventory (NPS FOBU 2005:4).

A draft Resource Management Plan (RMP) was prepared in 1998 “to serve the superintendent as a manual for management activities that will preserve the natural environment (including restoration of the resource similar to pre-grazing conditions) or achieve an environmental status that complies with Park Service standards” (NPS FOBU 2005:4).

Further discussion identifies an “ecosystem management” approach to managing the resources of Fossil Butte NM. “To manage the resources of Fossil Butte, the NPS must identify what the resources are, their location, their relative significance, their sensitivities and management needs. Priorities for resources management include employee and visitor safety, collection of baseline

resource inventories and establishing monitoring programs, identification, protection and reestablishment of natural processes” (NPS FOBU 2005:4).

Fire Management Plan (NPS FOBU 2005)

Prescribed fire – *any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met prior to ignition. This term replaces management ignited prescribed fire.*

Prescribed fire is used as a management tool to achieve specific resource objectives or manage hazardous fuels. NPS units are required in DO-18 to “reduce, to the extent possible, hazardous fuels in the wildland urban interface.” In many cases similar resource management objectives will be in place on large tracts of lands inside and outside Monument lands. This plan will emphasize cooperation with adjacent land managers, when management objectives coincide, on the implementation of landscape scale fuels and vegetation management projects. The use of prescribed fire as a management tool is integral to meeting the objectives of the Resource Management Plan relating to restoration of the Chicken Creek drainage and the adoption of an ecosystem management approach to managing the resources of Fossil Butte.

Prescribed fire will be used to return fire to the ecosystem and to maintain and/or restore plant communities, cycle nutrients, reduce or remove exotic plants, maintain or improve wildlife habitat, reduce hazardous fuel accumulations, reduce future fire suppression costs, and for other resource management objectives (NPS FOBU 2005).

... For the foreseeable future, the prescribed fire program under this Plan will be aimed at restoring fire as a natural ecological process in lieu of wildland fire use, and reducing hazardous fuels concentrations (NPS FOBU 2005).

Fire Management Objectives

- Monitor, evaluate, and report on the effects of fire (and non-fire) treatments on biotic systems, air and water quality, and cultural resources and quantify the overall effectiveness of these activities to improve the program, with particular emphasis to the following
- Sagebrush obligate mammal and bird species (sage-grouse, pygmy rabbits, sage sparrow, etc.)
- Invasive, nonnative plant species (spotted knapweed, henbane, houndstongue, various thistles etc.)
- Rare or sensitive plant species (tufted twinpod, entire-leaved pepperweed)
- Winter range health for large ungulates (elk, deer, moose) (NPS FOBU 2005:16).

d. Golden Spike National Historic Site

General Management Plan (NPS GOSP 1976)

(Note: This plan is currently being updated.)

Applicable portions of this plan include the park purpose and significance (see Chapter I: *Introduction*) and the following sections.

The 1976 plan identifies the general plant communities of the park and recommends reestablishment of natural vegetation in some areas, primarily to minimize soil erosion, but also to revegetate heavily grazed areas (GOSP Powell 2000:2).

In 1977, the Soil Conservation Service (SCS) (now the NRCS) was asked by the park for vegetation management recommendations. Those recommendations included:

- Reseeding native species;
- Fencing all property lines;

- Using prescribed fire as a mechanism to reduce the quantity of sagebrush; and
- Experimenting with controlled grazing of livestock on park lands.

As noted in the *Vegetation Management at Golden Spike National Historic Site Issue Paper*, except for fencing, none of these recommendations were implemented (GOSP Powell 2000:2).

Fire Management Plan (NPS GOSP 1998)

Following completion of this plan, the first prescribed burn was conducted in September 1999 (Powell 2000:3).

Resource Management Plan (NPS GOSP 1999)

This plan documents the park's need for additional vegetation management including the apparent change from a landscape dominated by native grasses to a landscape dominated by sagebrush. Three project statements are noted by Powell (2000:3) regarding vegetation management: 1) an inventory and distribution map of vegetation in preparation for a vegetation management plan; 2) completion of a cultural landscape report potentially calling for replicating 1869 vegetation conditions; and 3) the use of prescribed fire to change the relative proportion of sagebrush and grasses to replicate 1869 conditions, to reduce fuel levels and the amount of woody shrubs (sagebrush and rabbitbrush).

Cultural Landscape Report (NPS GOSP 2005)

This plan documents the significance of the cultural landscape for Golden Spike. See specific references in Chapter IV: *Affected Environment*.

e. Grant-Kohrs Ranch National Historic Site

General Management Plan (NPS GRKO 1993)

Applicable portions of this plan include the park purpose and significance (see Chapter I: *Introduction*) and the following sections.

The following management objectives are identified in the GMP for preparing planning documents, formulating alternatives, and analyzing potential impacts to park operations:

- To provide opportunities for the visitor to understand the cattle industry and its evolution from the open range of the mid-1860's, to mechanized feedlot operations that began in the 1930s and extended until the establishment of the park in the 1970s.
- To maintain historic structures, buildings, objects, and landscapes in such a manner as to complement the ranch's primary purpose and enhance visitor understanding and appreciation of cattle ranch operations.
- To manage natural resources in such a manner as to complement the historic context of the ranch and cattle ranching operations.

Among the purposes of natural resource management identified by the GMP to support the park's primary purpose of preserving and interpreting a working ranch that relate to this plan are establishing noxious weed control programs and stabilizing streambanks (NPS GRKO 1993:19).

Wildland Fire Plan and Environmental Assessment for the Grant-Kohrs Ranch (NPS GRKO 2004a)

The selected alternative notes that: "Opportunities for prescribed fire use exist in grass rangeland and riparian/woodland areas. Objectives would include fuel reduction, rangeland improvement, integrated pest management, and habitat maintenance. Tactics involved in prescribed fire activities could include, but are not limited to, line construction using equipment or hand crews, mechanical fuel treatment using hand tools, holding/suppression activities at predetermined boundaries, and burnout operations using hand crews, depending on the resources at risk and specific fire management restrictions that might apply. Resources involved include equipment, hand crews, water tenders, and monitoring and support personnel (NPS GRKO 2004a)"

Grant-Kohrs Ranch Cultural Landscape Report, Part One: Landscape History, Existing Conditions, and Analysis and Evaluation (NPS GRKO 2004b)

This report divides the landscape into seven component landscapes. Vegetation in each of these components is listed and evaluated as being contributing or non-contributing to the significance of that landscape. The report also summarizes the significance of the vegetation in each component landscape. The following is a summary of these key evaluation points:

- Riparian Area: Nonnative species not intentionally introduced are non-contributing;
- Hayfields: early grains gave way to hay by 1950s, all varieties contribute;
- Uplands: changed little since Grant's time and contribute; grass migrating from fields up into hayfields are non-contributing;
- Warren Residence: many features are missing;
- Kohrs Residence: new trees contribute – blue spruce and willow contribute, as do junipers and lilacs.

Grant-Kohrs Ranch Cultural Landscape Report, Part Two: Treatment Recommendations; Pasture / Hayfields and Upland Pasture Component Landscapes (NPS GRKO 2009)

- *Key Management Issues:* Noxious weeds are a major threat to the cultural landscape and must be controlled using an IPM approach that strives to minimize environmental harm.
- *Key Recommendations:* Using an IPM approach to control invasive exotic plants or animal pests that threaten the cultural landscape. These include: spotted knapweed, leafy spurge, Canada thistle...

General Treatment Guidelines: Use an IPM approach to control invasive exotic plants including spotted knapweed, leafy spurge, and Canada thistle. Use ecologically sound removal techniques such as the “educated cattle” program. Use herbicides only as part of a comprehensive plan in combination with other strategies. Use only approved herbicides. Monitor water quality for impacts. Continue to use data from monitoring to inform management practices.

Grant-Kohrs Ranch National Historic Site Foundation for Planning and Management (NPS GRKO 2008a)

This report identifies the current condition and trends, issues and opportunities related to ranching processes:

Current Condition and Trends: In 2002, the park chief of resource management assessed that the landscape was functioning at risk with individual component landscapes not functioning (on a qualitative scale ranging from “functioning” to “functioning at risk” to “not functioning”). The landscape was littered with noxious weeds, and there was extensive soil loss and water runoff. After five years of intensive management, changes in agricultural practices and the addition of the exotic plant management team, the landscape is properly functioning in general with two component landscapes functioning at risk due to soil instability (a few isolated locations within fields 3 and 4). This turnaround was substantial given the practices were largely not consistent with the agricultural practices common to the valley.

It also states that the cultural landscape is currently healthy, with good biological integrity because noxious weeds are largely under control.

Grant-Kohrs Ranch Business Plan (NPS GRKO 2008b)

Park Mission Statement: To share and communicate the traditions, practices and vestiges of America's Frontier cattle era; a history whose timeless Old West values live on, and whose artifacts are preserved unimpaired to educate, inspire and foster enjoyment in this and future generations.

The business plan mentions the need to control noxious weeds and identified the FTE needed to do it along with other natural resource/cultural landscape planning needs.

f. Hagerman Fossil Beds National Monument

General Management Plan (NPS HAFO 1996)

Applicable portions of this plan include the park purpose and significance (see Chapter I: *Introduction*) and the following sections.

Some types of paleontological research activities, such as major excavations could disturb large amounts of vegetation and soil. Most field research activities, including the salvage of specimens exposed by erosion, will involve minimal disturbance of surface and subsurface resources (NPS HAFO 1996:16). Specific criteria are defined under which no further environmental analysis is needed for paleontological research activities (NPS HAFO 1996:16-17).

The NPS will conduct a fully professional paleontological resource management program. The resources management program for cultural resources and for nonpaleontological natural resources and values will not receive the same emphasis but will meet all requirements (NPS HAFO 1996:17).

The NPS will work to perpetuate the integrity of natural ecosystems by maintaining or restoring natural processes to the extent practicable. Sites disturbed by past, present, or future human activities in the monument generally will be revegetated with native species to stabilize soils, restore native ecosystems, and reduce the opportunity for nonnative plants to become established. . . (NPS HAFO 1996:17).

Except for trails, the preferred location for facilities will be previously disturbed areas. Facilities will not intrude on riparian zones, wetlands, or other sensitive areas. Trails will be routed and constructed to minimize impacts on vegetation, soils and other resources (NPS HAFO 1996:22).

The Snake River overlook and the Oregon Trail overlook will be improved to be permanent, with permanent parking lots, wayside exhibits, trails, trash receptacles, and toilets as needed, but no water or sewer. The Hagerman Horse Quarry overlook will be improved only the minimum needed to facilitate research, interpretation and education activities. Access to the overlook will be restricted to protect resources and research activities (NPS HAFO 1996:22).

Hagerman Fossil Beds Management Goals: Consistent with the monument's purpose and applicable laws and policies, Hagerman Fossil Beds will be managed for the benefit and enjoyment of present and future generations to accomplish the following goals:

- Preserve and protect the paleontological resources of the Hagerman Valley fossil sites, including both specimens and their context.
- Provide a center for continuing paleontological research, education and interpretation.
- Encourage and support scientific research and related activities associated with monument resources and the science of paleontology.
- Achieve appropriate accreditation for monument facilities and programs.
- Provide a range of opportunities for visitors to experience and understand the present and past environmental interrelationships, resources, and values of the monument.
- Preserve, protect and interpret the natural and cultural resources associated with the monument.
- Provide for the health and welfare of monument visitors, researchers and staff.
- Cooperatively manage hunting and fishing in the monument to ensure the continuance of this historic use as legislatively required, while protecting monument resources, values, public safety, research and other authorized activities.

- Cooperate with the operation, maintenance, repair, upgrade, and modification of existing electrical and irrigation facilities within the boundaries of the monument as legislatively required while minimizing any adverse impacts of these activities on monument resources, values, research or visitors.
- Consistent with the above, strive to be a good neighbor and an asset to the long-term welfare of the Hagerman Valley region. Maintain effective relations with local communities, state and federal agencies, and tribal governments (NPS HAFO 1996).

g. Little Bighorn Battlefield National Monument

General Management Plan (NPS LIBI 1986)

Applicable portions of this plan include the park purpose (see Chapter I: *Introduction*) and the following sections.

Although the GMP does not specifically address invasive species, the following excerpts identify maintenance of an historic landscape as it was at the time of the battle:

“Landscapes within the primary viewshed surrounding the national monument are an important element of the national monument's historic resources. Preservation of these viewsheds in a natural appearing condition is necessary to maintain the element of "historic association" the visitor feels with the landscape while at Custer Battlefield.”

“... This plan could allow continuance of agricultural practices as they exist today on lands recommended for addition to the national monument. However, it would preclude industrial, commercial, residential, and other developments that may adversely affect – the landscapes historic association with the national monument. Practices such as plowing the existing prairie, ranch buildings, access roads, overhead powerlines, and other manmade infrastructures will be avoided” (NPS LIBI 1986:4).

“The national monument's National Register Nomination states, "All of the land in both sections of the monument are (sic) considered significant for the historic scene, resources, and archeology” (NPS LIBI 1986:8).

Resource Management Plan (NPS LIBI 2007)

The Resource Management Plan calls for an Invasive Plant Management Plan: “Exotics and nonnative plants – Expand the baseline survey to include a broader range of species and include the riparian area of the park. Develop an Invasive Plant Management Plan for the entire park” (NPS LIBI 2007:10).

There is a buffer zone for wildfire prevention around areas in the developed zone. These areas are either irrigated, mowed, or a combination of the two . . . Landscaped areas are managed to maintain or improve aesthetics. Such maintenance activities include mowing, maintaining water systems, fertilizing, weeding, ornamental planting and replacing turf” (NPS LIBI 2007:6).

In accordance with Montana Department of Transportation Maintenance Manual, Little Bighorn staff maintains roadside vegetation by chemical treatments to control or prevent the growth of vegetation such as noxious weeds, brush or other vegetation. Chemical spraying is done by or under the supervision of a licensed chemical applicator.

“Designated as developed lands, landscaped areas will be managed to maintain or improve aesthetics. Such maintenance activities may include mowing, maintaining water systems, fertilizing, weeding, ornamental planting and replacing turf” (NPS LIBI 2007:17-18).

The Resource Management Plan calls for developing partnerships: “Develop strategies to work with local landowners, the Bureau of Indian Affairs (BIA), and the Crow Tribe that will result in cooperative management relationships” (NPS LIBI 2007:6).

Fire Management Plan (NPS LIBI 2005)

“The program includes:

- Wildland fire suppression
- Mechanical fuels management” (NPS LIBI 2005:4).

The FMP calls for mechanical hazard fuel reduction: “Apply mechanical hazard fuel reduction adjacent to developed areas to reduce fire intensity and severity to lesser levels” (NPS 2005: 7).

Draft Cultural Landscapes Inventory (CLI) (NPS LIBI 2010a)

The following are the Draft Contributing and Non-contributing Features for vegetation crafted for the in-process CLI:

“Contributing features:

- Sagebrush, yucca, native grasses, and prickly pear cactus on the ridges, and chokecherry, willow, cottonwood, and other native deciduous trees in the riparian zones.
- Ornamental plantings of lawn and evergreens in the Custer National Cemetery.

Non-contributing features:

- Exotic grasses and plant species, especially along the roadways.
- Absence of big sagebrush.
- Shade trees and other landscaping in visitor center and administrative complexes” (NPS LIBI 2010a).

The CLI identified impacts on Little Bighorn:

Impact Type	External / Internal	Impact Explanatory Narrative
Adjacent Lands	External	Development in surrounding tribal lands has impacted the views from the site, and may continue to do so in areas where conservation groups have not purchased rights.
Fire	External / Internal	Fires have destroyed much of the big sagebrush that was an important component of the historic vegetation on the site
Invasive Plants	External / Internal	Invasive plants are a problem in maintaining historic vegetation, especially along roadways.

From (NPS LIBI 2010a:83).

h. Minidoka National Historic Site

Minidoka Internment National Monument General Management Plan (NPS MIIN 2006)

Applicable portions of this plan include the park purpose and significance (see Chapter I: *Introduction*) and the following sections.

Desired Future Conditions

The following desired future conditions are among those identified in the GMP:

- Cultural and natural resources are preserved, protected, and maintained at the national monument for present and future generations.

- The vastness, isolation, and open character of the site’s desert environment that existed during the historic period are maintained through collaborative partnerships and cooperative efforts within surrounding land owners and others.
- Diverse partnership opportunities are actively pursued and developed in order to achieve the goals and objectives of the national monument (NPS MIIN 2006:55-56).

Natural Resource Management

- Noxious weeds will be controlled in cooperation with the Northside Tri-Counties Cooperative Weed Management Area. Vegetation will be managed to minimize or eliminate undesirable exotic plant species. In the historic open spaces, vegetation will be rehabilitated and managed to be consistent with patterns of vegetation during the historic period (NPS MIIN 2006:75).

Park Operations and Management

- Hunting, trapping, grazing and mineral extraction will be prohibited within the national monument (NPS MIIN 2006:84).

i. Bear Paw Battlefield

j. Big Hole National Battlefield

Nez Perce National Historical Park General Management Plan (NPS NEPE 1997)

Applicable portions of this plan include the park purpose and significance (see Chapter I: *Introduction*) and the following sections.

The GMP identified the following issues that are applicable to the Invasive Plant Management Plan:

- The historic scene will be retained, and the viewshed north and south of the site will be preserved (p. 71).
- There is a desire to get rid of exotic species and noxious weeds, returning the land to native or historic vegetation (p. 13).
- There is encouragement to preserve the aesthetic qualities and the historic scene and character, to avoid encroachment, and to keep sites ‘natural’ and open (p. 13).

The GMP for Nez Perce National Historical Park identified the following actions applicable to the Invasive Plant Management Plan for Bear Paw Battlefield:

- Visitor facilities and operational support will be provided at the battlefield.
- Resource impacts from “social trails” will be reduced and strategies developed to protect the viewshed and resources outside current boundaries.
- The Park Service will conduct resource surveys. A vegetation and resource management plan will be developed.

The GMP also identified the following applicable management actions for Big Hole National Battlefield:

- The lower parking lot will be redesigned to minimize visual impact.
- The housing and parking intrusions will be mitigated through redesign, realignment and screening.
- The historic scene will be retained and the viewshed north and south of the site will be preserved.
- Land acquisition of 355 acres will be completed.
- Surveys for special concern species will be conducted, and any mitigation needed to avoid impacts on such species will be implemented.

Nez Perce National Historical Park: Resource Management Plan (NPS NEPE 1999a)

The park's enabling legislation does not expressly include the preservation of natural resources beyond those that have cultural associations. Yet as a unit of the NPS, part of the mission of Nez Perce NHP is the preservation of its natural resources. The plan has long-range vision because it identifies all perceived resources problems or needs, regardless of the time frame within which they may be addressed. Simultaneously, it is a budgeting tool, used year to year in allocating money and staff to solve resources problems (NPS NEPE 1999:4)."

Nez Perce National Historical Park: Integrated Pest Management Plan (NPS NEPE 1999b)

The overall objective of the IPM program at Nez Perce NHP and Big Hole is the protection of human health and welfare, as well as the protection of the natural and cultural resources of the park. With this in mind, native pests will be allowed to function unimpeded except where control is desirable under the following circumstances:

- To prevent the loss of the host or host-dependent species from the ecosystem.
- To conserve threatened, endangered, or unique faunal/floral specimens or communities.
- To preserve, maintain, or restore the historical integrity of cultural resources.
- To conserve and protect fauna/flora in developed zones.
- To manage a human health hazard as defined by the Centers for Disease Control or to protect against a significant threat to public safety.
- To prevent outbreaks of the pest from spreading to forest, trees, and other faunal/floral populations/communities outside the park (NPS NEPE 1999b:3).

Nez Perce National Historical Park Vegetation Management Plan (NPS NEPE 2002)

This vegetation management plan addresses the following:

- Assessment of vegetation composition. This information will aid in identification of invasive species and documenting the presence of native species. Identification of the plants will also allow the appropriate form of weed control and vegetation management to be used.
- Outline of soil types. Soil identification will aid in the control of erosion and plant establishment as well as management of native species that are appropriate. A soil survey map is provided for most sites.
- Documents concerns for hazard trees. Trees that present a serious risk to site visitors, staff, and historic structures are hazardous and should be removed, pruned or replaced when possible.
- Outline of scheduled routine landscape maintenance. Scheduled grounds maintenance, such as mowing and weed removal, will provide optimum growing conditions for native species as well as other desired species (NPS NEPE 2002:2-3).

Nez Perce National Historical Park Fire Management Plan (NPS NEPE 2004)

This FMP was written as an operational guide for managing Nez Perce NHP / Big Hole wildland and prescribed fire programs (NPS NEPE/BIHOa 1999:1). "Prescribed fire can be a useful tool for restoring and maintaining natural conditions and processes at Nez Perce NHP / Big Hole and may be used on burn units in two of the park's FMU's. The goals for the prescribed fire program are consistent across all park FMU's and they relate to direction provided from the approved park GMP and RMP" (NPS NEPE 2004: 52).

General Nez Perce NHP / Big Hole prescribed burn objectives will be the following:

- Enhance and maintain the significant cultural landscapes.
- Reduce fuel accumulations and lessen the potential intensity and rate of spread of future wildfires.
- Reduce exotic vegetation in park sites and replicate natural fire frequency intervals under managed conditions.

- Manage vegetation to maintain vistas, promote growth of native species, and control encroachment and spread of noxious species (NPS NEPE 2004:52).

Big Hole National Battlefield Cultural Landscape Inventory (NPS BIHO 2008)

Disturbance by decades of farming on and around the battlefield site has allowed a number of invasive exotic species to move in. The most aggressive of these found in the battlefield is spotted knapweed (*Centaurea stoebe*). This invasive perennial is found throughout the bench area, the open hillside, the dryer areas of the bottomland, in the camas meadow, and in disturbed areas throughout the site. In the context of the fragile native ecosystems of the battlefield, control of the weed is best achieved through manual removal and/or spot treatment with herbicide. Other invasive species located in the battlefield area that have been identified as potential problems include yellow sweet clover (*Melilotus officinalis*), dandelion (*Taraxacum officinale*), mallow (*Malva neglecta*), and knotweed (*Polygonum sp.*)” (NPS BIHO 2008:55).