PARTNERS AGAINST WEEDS

An Action Plan for the Bureau of Land Management

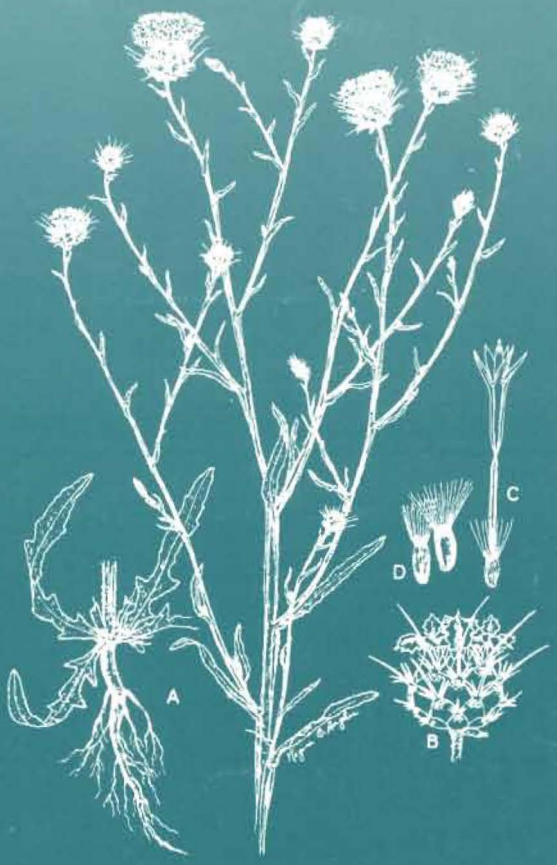
January 1996

United States Department of the Interior

Bureau of Land Management

knapweed

leafy spurge



yellow starthistle

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based on the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation; rangelands; timber; minerals; watershed; fish and wildlife; wilderness; air; and scenic, scientific, and cultural values.

BLM/MT/ST-96/003+1020

PARTNERS AGAINST WEEDS

FINAL ACTION PLAN FOR THE BUREAU OF LAND MANAGEMENT

JANUARY 1996

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EXECUTIVE SUMMARY

Ecosystem health is clearly a Bureau of Land Management (BLM) goal of the highest order. "Health of the land" and "maintaining or restoring healthy ecosystems" are the first and most often mentioned phrases in BLM's strategic plan, "Blueprint for the Future" (USDI 1994a). One of the greatest obstacles to maintaining healthy ecosystems and restoring impaired ecosystems is the rapid expansion of noxious weeds because these invasive plants can dominate many sites and often cause permanent damage to plant communities.

Noxious weeds are spreading on BLM lands at over 2,300 acres per day, and on all western public lands at approximately 4,600 acres per day. This is occurring in both disturbed and relatively undisturbed areas. While weed infestations are increasing at an ever-accelerating rate, currently only about 8.5 million acres or 5% of BLM's 180 million acres have serious weed populations. If cooperative weed management efforts are not dramatically increased, approximately 19 million acres of BLM land will be infested with these invasive plants by the year 2000. On the positive side, effective and economical strategies are available to immediately protect the portions of the remaining 95% of the land that are susceptible to noxious weeds.

This document, "Partners Against Weeds, An Action Plan for the Bureau of Land Management," is our strategy to prevent and control the spread of noxious weeds on BLM lands through cooperation with all partners. It is divided into two sections—Introduction and Actions. The Introduction describes the background of BLM's cooperative weed management program, the

impact of weeds on ecosystem health, the Integrated Weed Management (IWM) approach, the use of the fire/weed model, the origin of weeds in the United States, the legal direction for weed management, the recognition of the importance of cooperation and partnerships, BLM's budget, and weed program opportunities. The second section lists seven goals and associated actions necessary for implementing an improved weed management program.

The challenge of controlling weeds may seem overwhelming, but through developing partnerships at all levels—local, regional, and national—the likelihood of reaching our collective weed management goals can be quite high. The process that has been so successful in fire management; i.e., fire presuppression and initial attack, has great promise in weed management. An IWM approach is the best way to combat weeds with prevention clearly being the most inexpensive, most effective, and the highest priority weed management technique on non-infested lands. Our challenge is to develop management support and direction for preventing the spread of weeds before the situation gets more serious and requires a great deal of money and people to contain or control it.

The BLM hopes that the cooperative implementation of the "Partners Against Weeds Action Plan" will make a difference in fighting the spread of weeds and improving the health of BLM lands.

Mike Dombeck

Acting Director, BLM

INTRODUCTION

Invasive exotic plants are degrading wildland ecosystem health at a rapid and ever-increasing rate. Without major increased exotic plant management efforts, these aggressive plants will continue marching through and degrading lands we value so highly. Only if we act quickly, both locally and regionally, will cooperative exotic plant management be economical and effective.

Therefore, in December 1994 the Bureau of Land Management's (BLM) Assistant Director for Resource Assessment and Planning in Washington, D.C. established a team to prepare an action plan for the prevention and control of noxious weeds. Noxious weeds, for the purpose of this document, are defined as, "A plant that interferes with management objectives for a given area of land at a given point in time." This final plan, entitled "Partners Against Weeds, An Action Plan for the Bureau of Land Management," 1) describes the scope and resource impacts of noxious weeds, and 2) outlines several goals and specific actions to help prevent and control the spread of these exotic, alien plants on BLM lands. The underlying purpose is to maintain and restore desirable plant communities and healthy ecosystems on BLM lands through partnerships and education.

The BLM embarked on this endeavor to focus BLM managers on the challenges facing the agency in noxious weed management, and to better involve all BLM programs and activities in the fight against weeds. Of course the BLM recognizes that fighting weeds must be a cooperative effort and that one agency cannot possibly engage in the fight alone. It knows that any ongoing efforts with our partners must be con-

tinued and new ones established where needed. BLM managers must be aware of the problem and its causes and develop solutions with its partners.

The BLM would also like to recognize all the efforts, both individually and cooperatively, that have occurred over the past years to curb this invasion of undesirable plants. This includes the countless hours many, many individuals have spent bringing this ecosystem problem to the attention of managers and the public, and to the continuing cooperative efforts of federal, state, and county governments, industry and conservation organizations, and private citizens to work together to control existing weed populations and to prevent the further spread of weeds to uninfested lands.

BACKGROUND

Since 1974, the BLM has been actively working with others on IWM. It developed numerous methods; including policies, manuals, handbooks, environmental impact statements (EISs), memoranda of understanding, and training courses to guide BLM personnel and others in noxious weed management. It worked closely with other agencies to establish organizations, such as the Western Weed Coordinating Committee (WWCC) and the Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW), to cooperatively deal with the noxious weed situation. It helped develop the "Guidelines for Coordinated Management of Noxious Weeds in the Greater Yellowstone Area," a primer for integrated noxious weed management.

The goals and actions described in this action plan are based on the above-described policy and guidance. They also closely parallel the recommendations in the 1991 BLM Noxious Weed Program Evaluation.

DEGRADATION OF ECOSYSTEM HEALTH

As previously mentioned, noxious weeds are increasing on western BLM lands at approximately 2,300 acres per day, but it is also important to remember that 95% of BLM lands are not yet significantly infested. Therefore, it is imperative that we apply the effective and economical strategies that are available to immediately protect those lands from weed infestation.

"Even though we have seen unprecedented improvements in range condition, we are at or near a catastrophic shift toward weedy vegetation."
(Krueger 1990)

If a vegetative community is functioning well; the soil, air, water, and animal components of the ecosystem will usually function well also. Therefore, ecosystem health is critically dependent upon healthy vegetative communities. Management for biodiversity and ecosystem health are paramount management goals. Exotic plant populations are blocking our ability to achieve those goals on a grand scale. For example, exotic plants can invade a portion of a wilderness area following a fire or a riparian area following a flood. In a few years a near monoculture can develop, drastically reducing the variety of plants,

wildlife habitat, stable soil, and reforestation of some sites.

Ecosystem health is clearly a BLM management goal of the highest order. In a letter to all employees, Director Mike Dombeck said: "The most important item on my agenda is the health of the land" (Dombeck 1994). "Health of the land" and "maintaining or restoring healthy ecosystems" are the first and most often mentioned phrases in BLM's "Blueprint for the Future" (USDI 1994a).

INTEGRATED WEED MANAGEMENT AND FIRE/WEED MODEL

It is clearly recognized that an IWM approach, where all weed management practices are considered for use, is the best approach where noxious weeds have infested an area. However, where noxious weeds do not currently exist the cheapest, most effective, and highest-priority IWM technique is prevention. Unfortunately, management support and direction for prevention is generally very slow to develop because it requires an allocation of work force where weed infestations are not yet serious or well understood by most people.

Prevention, public and employee education, detection, and quick control of new/small infestations are very effective and economical first steps for implementing IWM. These strategies are urgently needed to protect the vast majority of western federal lands that are not yet seriously infested with exotic plants.

The process and urgency to control exotic plants is not widely understood, but it is almost identical to fire management which is widely understood and supported. The strategies of prevention, public education, detection, and quick control of spot fires are identical to the process of preventing and stopping new weed infestations.

Nature often helps put out fires, but nature does not help put out exotic plant infestations. Fire can be helpful to the resource, but exotic plants are never helpful. When impacts from fire are negative, they are usually short-term. Impacts from exotic plants can be equally severe, but are usually long-term and often permanent. Therefore, new weed infestations constitute an "emergency" that deserves at least as much attention as preventing and stopping new fires. This strategy is much more cost effective than large-scale weed containment.

EXOTIC PLANT INVASIONS ON WESTERN WILDLANDS

Exotic plants arrived from other countries without the natural enemies that kept them in check in their country of origin. Consequently, these new plants are typically very aggressive and

"Many of these exotics also show significant competitive advantage over natives. In the absence of predators, immune systems or other biological control mechanisms adapted to counteract these species, populations of some exotics have exploded."
(Monnig 1992)

have the ability to dominate many sites with dramatic impacts to native plant communities. Wildlife habitat deteriorates, erosion increases, water quality diminishes, nutrient cycling and infiltration are altered, recreation values are degraded, and exotic plants also contribute to desertification. Weeds often start in disturbed sites such as trailheads, trails, wildlife bedgrounds, overgrazed areas, and campgrounds. However, recent literature and field observations show that weeds commonly invade relatively undisturbed sites. Weeds are spread primarily by vehicles, humans, horses, livestock, wind, water, and a wide variety of wildlife.

Exotic plants on BLM lands increased from 2.5 million acres in 1985 to over 8 million acres in 1994. When exotic plant populations on Forest Service, National Park Service, and Fish and Wildlife Service lands are included, that infested area nearly doubles. Recognizing that exotic plants typically spread about 14% per year if unchecked, the increased infestation rate on these federal lands is now about 4,600 acres per day - an "explosion in slow motion."

A few examples will serve to demonstrate invasions that are underway. Spotted knapweed, first reported in Montana in 1920, has invaded over 4 million acres in that state alone. There are over 600,000 acres of leafy spurge in Montana, and 1 million acres in North Dakota. In Idaho, rush skeleton weed expanded from 40 acres in 1964 to over 4 million acres today!

Since 1978, yellow starthistle has spread in northern California from 1 million acres to over 10 million acres. Yellow starthistle is expanding rapidly in eastern Oregon and western Idaho as well.

LEGAL DIRECTION, COOPERATION, AND PARTNERSHIPS

Several laws, regulations, and policies govern the management of noxious weeds on public lands (Appendix 1). The Carlson-Foley Act (1968) directs agencies to destroy noxious plants. The Federal Noxious Weed Act (1974), as amended by Section 15 - Management of Undesirable Plants on Federal Lands (1990), directs agencies to have an office or person trained to coordinate an undesirable plant management program, adequately fund the program, implement cooperative agreements, and conduct IWM.

Federal, state, and county governments are responsible for the control of noxious weeds within their respective jurisdictions. Private property owners are responsible for the control of noxious weeds on their own land. BLM lands are commonly intermingled with several other ownerships—affording opportunities to develop partnerships where everyone cooperatively works together toward a common goal of preventing and controlling weeds. Because weeds know no boundaries, cooperation is critical. Establishing cooperative weed management areas (CWMAs) facilitates cooperation among all land managers and owners to attack weeds on a watershed or in a general infestation area. Guidelines for developing these partnerships can be found in "Guidelines for Coordinated Management of Noxious Weeds in the Greater Yellowstone Area" (USDA and USDI 1992).

CURRENT SITUATION

There are about 8.5 million acres of noxious weeds on BLM land, and they are expanding at about 14% annually for most species (USDI 1985). The BLM has an active weed management program; however, there has been considerable concern expressed by federal, state, and county agencies, academicians, and conservation and user groups about the expansion of noxious weeds in spite of BLM's efforts. While many examples of progressive efforts can be found in the BLM field offices, the current approach is so fragmented that it deals only with "the tip of the iceberg."

> "When concern rises, the battle is lost," i.e., the general public and key people generally don't recognize a weed problem until the infestation is severe and the opportunity for quick control of the small patches has long past. (Gooch 1991)

Infestation rates have reached the point in many areas where complete eradication is no longer possible. The best outlook is simply to curtail the increase of infestations currently in place.

BUDGET AND PROGRAM OPPORTUNITIES

The FY94 BLM budget for noxious weed control was $850,000 — a significant reduction from recent years. About 60% was allocated to biological control, 35% to chemicals, and 5% to other activities. The FY95 budget was slightly higher at $1.2 million. Although budgets are low for weed management, there are many actions that can be taken by managers and staff to help reduce the spread of weeds without a lot of extra money or people. It is a matter of awareness and priority. Following are some suggestions:

1. Since all resource activities are involved in the spread of weeds and all resource activities are negatively impacted by weeds, then noxious weeds are everyone's responsibility. Weed management is an integral part of BLM's resource management mission of maintaining ecosystem health.

2. Each Field Office should have at least one individual who has weed management as their primary responsibility depending upon local need. Appendix 2 describes both State and Field Office Weed Coordinator duties. The assigned employee would provide IWM information and knowledge to other staff, managers, and team efforts. Training is currently available through BLM's Integrated Pest Management and Pesticide Certification Course in Denver, Colorado, and the Western Society of Weed Science/Western Weed Coordinating Committee's Noxious Weed Management Short Course in Bozeman, Montana.

3. Any effort to prevent or manage noxious weeds on public lands must be incorporated into the Resource Management Plans (RMPs) that direct day-to-day management of public lands at the Field Office level. The direction for considering noxious weeds in land use plans should be included in the Supplemental Program Guidance for Environmental Resources, BLM Manual 1621.

4. Decisions affecting on-the-ground actions always include some level of NEPA compliance through a categorical exclusion, environmental assessment, or EIS. These documents should consider noxious weeds and,

subsequently, the appropriate measures to prevent or mitigate their impacts. The serious threat from noxious weeds warrants inclusion of noxious weeds as one of the mandatory items in BLM's National Environmental Policy Act Handbook, H-1790-1. Authority for including this is based on the Federal Noxious Weed Act (Public Law 93-629).

5. Awareness of noxious weed impacts is needed at all levels of BLM. Training and education on weed identification and IWM principles would improve our effectiveness. Training assistance at the local level is available from many sources; including BLM staff, universities, extension agents, county weed and pest supervisors, State Departments of Agriculture, and chemical companies. Training field personnel on weed identification will substantially improve our ability to detect and take action on new infestations before they become significant problems.

6. Cooperative work with other federal, state, and county agencies should continue and be expanded in IWM programs. Emphasis on education, awareness, prevention, and early detection can yield positive results that transcend jurisdictional boundaries.

7. Volunteer programs provide potential for expanding the workforce on IWM activities. Projects such as inventory, monitoring, and hand grubbing small infestations offer opportunities for success. Including volunteers in projects increases the public's awareness of the noxious weed issue.

8. Workforce and funding for noxious weed management are available from other sources. The Rocky Mountain Elk Foundation, Chukar Partridge Association, Ducks Unlimited, Native Plant Society, Trout Unlimited, The Nature Conservancy, 4x4 clubs, sportsmen clubs, and many other organizations are ready and willing to help with inventory, monitoring, public education, funding, and control work. Well-planned and coordinated projects have a high probability of success.

9. Informational brochures and literature of every type used by BLM and other cooperating agencies have the potential to carry messages related to the impacts caused by noxious weeds and the ways they are introduced and spread. Even the most causal public land user has some connection to noxious weeds.

10. For all actions on public lands that involve surface disturbance or rehabilitation, reasonable steps should be required to prevent the introduction or spread of noxious weeds. Preventative measures can be developed to fit local situations and applied to a wide range of circumstances. These measures should include such things as requiring equipment to be cleaned before being transported to the site, reseeding only with weed-free seed, requiring straw used as mulch to be weed seed free, and requiring followup monitoring to ensure noxious weeds were not introduced. Preventative measures should be applied to both BLM actions such as range improvements, fire rehabilitation, and road maintenance; as well as BLM authorized actions including rights-of-ways, timber sales, oil and gas activities, grazing permits, and recreation permits.

11. Requirements for using weed seed-free forage and feeds can be put into effect on public lands. These requirements should be applied consistently to all uses of public lands, including casual recreational use and authorized grazing use. A cooperative program with other land management agencies and county weed and pest districts would enhance weed seed-free forage programs.

ACTIONS

This section outlines goals and actions for implementing a program to prevent and control the spread of weeds on BLM-administered lands. The recommended actions under each goal closely parallel the findings of the BLM Noxious Weed Evaluation completed in 1991 (WO IB No. 93-317).

GOAL 1
PREVENTION AND DETECTION:

Develop a prevention and early detection program.

Discussion:

Prevention, early detection, and eradication of early-detected noxious weed species are the most practical, economical, and effective means of weed management where noxious weeds have not currently been introduced or established. Prevention and public education are the highest priority weed management activities. Vegetation management priorities listed in the Record of Decision for Vegetation Treatment on BLM Lands (USDI 1991) are as follows:

Priority 1: Take actions to prevent or minimize the need for vegetation control when and where feasible considering the management objectives for the site.

Priority 2: Use effective nonchemical methods of vegetation control when and where feasible.

Priority 3: Use herbicides after considering the effectiveness of all potential methods or in combination with other methods or controls.

Prevention is best accomplished by ensuring that new weed species' seed or vegetative reproductive plant parts are not introduced into a new area.

Common methods of introduction include:

- √ Contaminated seed, feed grain, hay, straw, mulch
- √ Movement of unclean equipment across uncontaminated lands
- √ Animal furs and fleece
- √ Spreading gravel, roadfill, and top soil contaminated with noxious weed seed
- √ Plants and seeds sold through nurseries as ornamentals

The presuppression/initial attack fire/weed model conveys the urgency and process of preventing and controlling new, small weed infestations. When impacts are negative from a wildfire, they are usually short-term. Impacts from weeds can be equally severe, but are usually long-term and often permanent. Therefore, new weed infestations constitute an "emergency" that deserves at least as much attention as preventing and stopping new fires. The presuppression and initial attack aspects of fire management provide a

model for effective prevention, education, early detection, and timely control of weeds. Use of the analogy will help employees, cooperators, and the general public understand the urgency and the process of preventing and attacking new weed infestations. The prevention, early detection, and quick eradication elements of this model can be much more cost effective than large-scale weed containment.

Strategies:

1. Each field office will prepare a weed prevention schedule as phase one of IWM. Appendix 3 is a partial list of prevention activities to include, when to do them, and who is responsible. Appendix 4 is a complete list of weed prevention measures developed by the Lolo National Forest.

2. Implement the presuppression/initial attack fire/weed model to assist people's understanding of the process and urgency of preventing and attacking new infestations.

3. Delineate highest priority areas for prevention. High-priority areas are usually lands that are relatively free of weeds with high to moderate ecological risk to weed invasions. Lands in this category that have especially high resource values merit an even higher priority.

4. Review, and modify where necessary, all activities authorized or conducted on BLM land for their potential to spread weeds or create conditions that are conducive to weed establishment. This includes evaluating the potential for noxious weed invasion in the effects analysis of each National Environmental Policy Act (NEPA) document. The following table lists some examples of these activities.

Program or Activity	Example
Road Construction and Maintenance	Use weed-free gravel and fill.
Recreation Facility Maintenance and Recreation Management	Weed-free hay for pack animals, recreation permits, etc. Weed-free recreation sites.
Wilderness Management	Weed-free trails and campgrounds, instructions about people and stock not traveling through infested areas, etc.
Wildlife/Fisheries Management	Incorporate weed prevention into habitat improvement projects.
Livestock Management	Minimize livestock carrying weed seed.
Pipeline Construction	Clean equipment after going through weed-infested areas.
Timber Management	Ensure that weed prevention is built into timber management project designs. Minimize creation of sites suitable for weed establishment.
Minerals Management	Include weed prevention and treatment in all mining plans, oil and gas activity plans, and sand and gravel plans.
Lands	Include assessment for weed control in all land tenure adjustments. Include weed prevention stipulations in all rights-of-way authorizations.
Fire	Include prevention measures in all activities; i.e., washing fire trucks, minimize crews walking through infested areas, etc.
Seismograph Activities	Prevent weed establishment by not driving through weed-infested areas.

5. Identify and document newly introduced weed species in formerly uninfested areas. This task can be greatly enhanced by encouraging adjacent landowners and managers to recognize and document weed populations and to coordinate their prevention and early detection efforts with state and local weed management entities as a vital part of IWM programs.

6. Develop cooperative education and awareness programs with state and federal agencies, local organizations, county weed districts, CES, and others where visitors and users of an area assist managers in preventing or locating invader species.

7. Develop and enforce policy designed to ensure seed, seed mixtures, hays, grains, and straws are free of weed seed.

8. Develop contract clauses that ensure only certified and tested seed mixtures are used to revegetate and reclaim disturbed sites.

9. Develop cooperative weed prevention programs with suppliers of sand, gravel, top soil, seed, hay, straw, and any other materials that may transport seed and vegetative matter of invader species, including nurseries that grow and sell ornamental plants.

10. Work with county and city planning staffs and zoning committees to consider noxious weed management when developing or approving subdivision plans, special use permits, and leases.

GOAL 2
EDUCATION AND AWARENESS:

Generate internal and external support for noxious weed control.

Discussion:

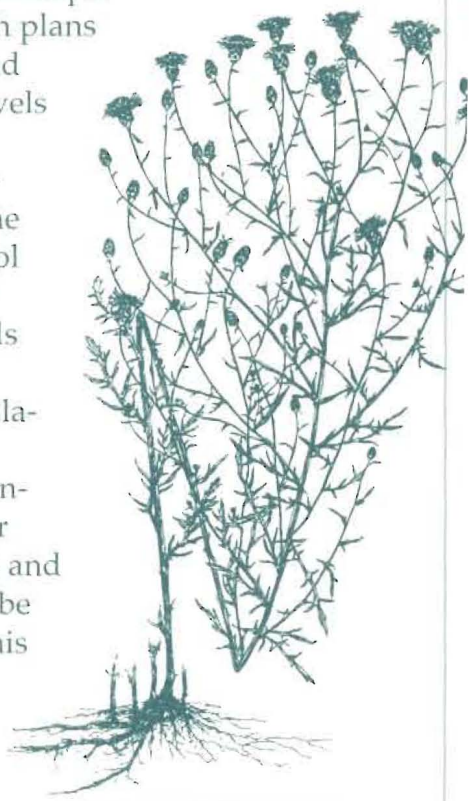
Awareness of what noxious weeds are and the problems they cause will help land managers and the public understand why long-term weed management is so important. Knowledge about the impacts of noxious weeds to an area's natural diversity of flora and fauna is needed. Federal, state, and local agency personnel, as well as private landowners involved in weed management programs, will require proper training in the correct use of weed management techniques. Educating the next generation of land managers is just as important as what we, as current land managers, learn ourselves.

Knowing how and where noxious weeds are spread is critical in preventing the expansion of weeds into new territories. Recognizing that weed seeds can be spread in the coats of cattle, horses, and sheep, in seed mixtures, in the mud stuck to off-road vehicles, and even in the feathers of migrating birds is essential in knowing how to prevent the spread of weeds. Relaying this information to the public, other agencies, user groups, and the academic community will assist in weed control.

Strategies:

1. Develop a training program for most BLM field office employees. Design and conduct the training in cooperation with the CES and other local agencies and organizations. This training would include identification of weeds by species existing and potential to the area; why weeds are the single greatest impact to rangeland ecosystem health; how these weeds can be imported into the area; where various species will be found; what action to take when new infestations are found; how all the resource activities are negatively impacted by weeds; what IWM means; how or why all activities are impacted by weeds; and how most employees can get involved in reducing the spread of weeds.

2. Develop and implement outreach plans at the field and state office levels to improve public understanding of the need to control the spread of noxious weeds and manage existing populations. These plans will identify how other organizations and agencies will be included in this outreach effort.



3. In cooperation with other agencies and organizations, develop and deploy various educational and public awareness materials; including video tapes, printed brochures, bumper stickers, schoolchildren talks, posters, and county fair displays. Encourage training for all interested parties. Conduct tours of infested sites, discuss various opportunities for management and control, and provide guidance and expertise to other agencies and support groups.

4. The BLM Washington Office will direct the National Training Center (NTC) to incorporate the principles of noxious weed management (i.e., IWM) as part of healthy ecosystems into the core curriculum for managers and interdisciplinary teams and into all appropriate technical training; e.g., range, wildlife, recreation, wilderness, riparian, and planning. The NTC will develop both a managers' and a specialists' course on IWM in cooperation with other federal/state agencies, local governments, and organizations.

5. Each state will develop a recognition program for good weed management stewardship for counties, landowners, and agencies. Cooperative involvement in local advisory boards and councils and in education and awareness programs is encouraged to promote a better understanding of weed management goals.

6. Each State Director should develop cooperative outreach programs on weed management with public documents, newsletters, flyers, and other materials. Public education and awareness of weed management needs to be encouraged among a variety of organizations such as sportsmen groups, counties, extension offices, schools, and service clubs.

7. Weed management personnel at the state and field office levels will attend the (1) BLM Integrated Pest Management and Pesticide Application Certification Training Course and maintain that certification, and the (2) Western Society of Weed Science Sponsored Noxious Weed Short Course. Other training; e.g., state or CES weed training and workshops, chemical company-sponsored workshops, and county weed district workshops is encouraged.

8. Develop cooperative education and awareness programs with state and federal agencies, local organizations, county weed districts, CES, and others where visitors and users of an area assist managers in preventing or locating invader species. Encourage CES to take the lead since education and awareness are their responsibilities. These programs would include IWM; the presuppression/initial attack fire/weed model; weed environmental considerations, economic impact, aesthetic values; agroecosystems; and natural ecosystems.

9. Encourage a university to work with BLM and others to develop a semester course which teaches the necessary IWM courses for personnel assigned weed management responsibilities.

10. The BLM needs to work closely with the Forest Service personnel who are developing the "Treeture Program" and the update of the "Woodsie Owl Program." Weed prevention needs to be incorporated into these major new public education programs that cover environmental awareness and fire prevention. They are targeted at key audiences that can have a major influence on weed prevention.

GOAL 3
INVENTORY:

Ensure that adequate baseline data are available on the distribution of weeds.

Discussion:

Early detection, treatment, and containment of invaders is an extremely effective method of weed management. Baseline information important to decisionmaking includes: 1) weed species, 2) locations of infestations, 3) acreage infested, 4) density of plants, 5) general plant community, 6) environmental conditions; e.g., soil conditions, exposure, level of disturbance, and 7) current land-use activities.

Basic inventory for noxious weeds is one of BLM's most urgent needs. A "thumbnail" or "ballpark" estimate is no longer adequate. The effects of noxious weeds on ecosystem health requires solid information to formulate management actions that will effectively address the impacts of noxious weeds on natural resources and economic activities. Periodic, systematic inventories followed by prompt treatment will ensure that new invaders do not become established and begin to spread.

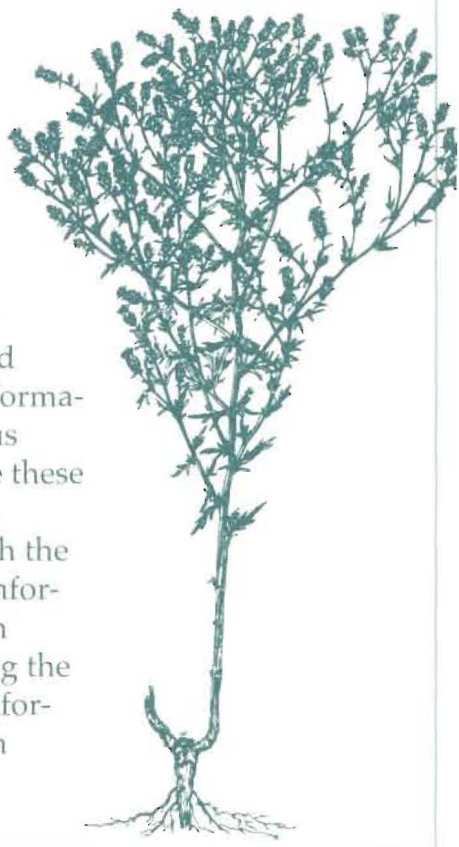
Complying with laws, regulations, and policies and achieving management objectives relies on baseline information to define the scope of the problem and to make informed management decisions. "What is out there" must be known for a successful weed management program.

Strategies:

1. All field offices will use the inventory and mapping guidelines in the "Guidelines For Coordinated Management of Noxious Weeds in the Greater Yellowstone Area" (USDA and USDI 1992). Cooperative agreements with county weed districts are encouraged for conducting inventories and mapping on BLM-administered lands.

2. Determine the distribution of noxious weed species through systematic inventories on all BLM lands.

3. In cooperation with others, develop new and implement existing automated data bases for the storage and retrieval of information on noxious weeds. Ensure these data bases are integrated with the BLM's Land Information System (LIS), including the Geographic Information System (GIS).



GOAL 4
PLANNING:

Include provisions for noxious weed management in all BLM-funded or authorized actions.

Discussion:

BLM can fulfill its responsibilities for noxious weed management under the Federal Noxious Weed Act, as amended by Section 15, through its planning processes and NEPA compliance procedures. Integrating noxious weed management into each aspect of planning, whether it be regional, project, or activity planning, will contribute directly to prevention, control, and management of weeds. Noxious weed management is an integral part of ecosystem-based management.

Weed Management Areas (WMAs), distinguishable areas based on similar geography, weed problems, climate, and human-use patterns, are a planning tool to facilitate cooperation among all land managers and owners to manage a common problem with weeds. The goal of WMAs is to prevent the reproduction and spread of weeds into and within WMAs. The formation of a WMA replaces jurisdictional boundaries that are barriers to weed management programs in favor of natural or more logical boundaries that facilitate cooperation, coordination, and implementation of an IWM program. One agency or landowner's weed management success will be largely determined by the cooperative efforts of other agencies or landowners in that area. The boundary of a WMA is usually a hydrographic divide, vegetational zone boundary, or landscape.

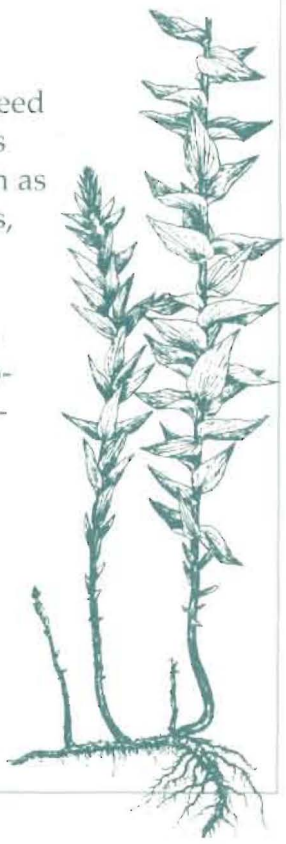
WMA plans, developed cooperatively among the WMA partners, identify goals, objectives, priorities, and actions for WMAs. WMAs and weed management plans may not be necessary where integrated ecosystem areas and plans have already been established. In those cases, the prevention and control of weeds will be an integral part of those plans.

All NEPA documents should analyze the potential for weed spread and establishment as an environmental consequence of the proposed actions and include measures to minimize or avoid increases in weeds.

Strategies:

1. Incorporate noxious weed management into various planning documents such as RMPs, coordinated RMPs, or activity plans. All new and revised planning documents will include a full discussion and appropriate guidance or restrictions on activities that have the potential to spread weeds.

2. In cooperation with other agencies, organizations, and landowners,



establish WMAs and develop weed management plans or incorporate WMAs into existing or proposed coordinated RMPs and activity plans. As soon as possible, at least one field office in each state will develop a weed management plan for an area using the strategies found in the "Guidelines for Coordinated Management of Noxious Weeds in the Greater Yellowstone Area" (see References). Other guidance can be found in BLM Manuals 9011, 9014, 9015, and H-9011-1.

3. All NEPA documents (e.g., projects, coordinated RMPs, and activity plans) must include an analysis of the potential for weed spread and establishment as an environmental consequence of proposed actions. Measures and stipulations to minimize or avoid the spread of weeds must be provided. Any new NEPA guidance must include a discussion and appropriate direction or constraints on operations that have the potential to spread weeds.

4. As "Standards and Guidelines" are developed for rangeland health, fully consider reducing the spread of weeds, including not creating conditions that favor the establishment of weeds.

5. Establish policies for management of noxious weeds in the following priority:

- √ Stop the spread to uninfested lands.
- √ Concentrate on small patches and isolated infestations.
- √ Contain heavily-weed infested areas.

6. Develop a noxious weed risk assessment when it is determined that an action may introduce or spread noxious weeds or when known weed habitat exists. (See BLM Manual 9015.8.)

7. The Washington Office needs to develop a weed management reporting procedure that includes the top priority items in IWM strategies. Examples include public education (brochures, videos, talks to schools and service clubs), prevention activities (weed-free hay, prevention plans, training sessions), inventory, WMAs, prevention plans, and weed management plans. Currently, units of accomplishment in weed management only include "treated acres" and are only in the range management program.

8. The BLM Budget and Performance Directives will include weed management in all appropriate programs; e.g., wildlife, minerals, and fire. Specific direction for accomplishing various aspects of IWM such as prevention schedules, weed management plans, and training will be addressed.

GOAL 5
INTEGRATED WEED MANAGEMENT:

Determine the best methods for an integrated approach to weed management and implement on-the-ground operations.

Discussion:

IWM involves four general categories of management options including cultural, biological, physical, and chemical. IWM is a decisionmaking process that uses site-specific information to make decisions about treatment choices. IWM is based on the fact that combined strategies for weed management work more effectively than a single strategy. (See BLM Manual 9015 and "Guidelines for Coordinated Management of Noxious Weeds in the Greater Yellowstone Area.")

Strategies:

1. Conduct IWM on BLM lands, including authorized land uses; e.g., rights-of-ways and timber sales using the best combinations of the following methods: (See Appendix 5 for specific guidelines.)

- √ Cultural
- √ Physical Control
- √ Biological Controls
- √ Herbicides

GOAL 6
COORDINATION:

Ensure that management for noxious weeds is carried out efficiently and consistently across jurisdictional and political boundaries.

Discussion:

It is imperative that BLM continue and expand cooperation with other federal agencies, state and county governments, organizations, and private landowners in the fight against weeds. Developing management agreements to share training, courses, and financial resources are often quite effective and efficient. Establishing WMAs and developing weed management plans with others are cooperative ways of working together to prevent the spread of weeds. Challenge cost-share funding is another opportunity to improve coordination, reduce BLM costs, and expand partnerships.

Strategies:

1. Initiate or continue statewide and regional-level interagency coordination meetings.

2. Develop standard procedures for interagency and intergroup data storage, management, and exchange. Cooperate with federal, state, and county agencies and private organizations to develop consensus on Automated Resource Data (ARD) standards.

3. Organize and participate in state, regional, and national workshops that are attended by personnel from other agencies and organizations involved with noxious weed management.

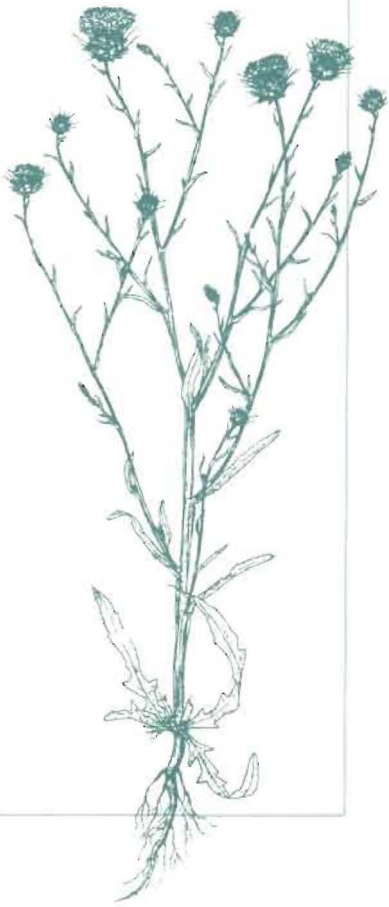
4. Participate in the WWCC and Exotic Pest Plant Councils.

5. Assist in developing procedures for interagency and intergroup participation in cooperative IWM studies.

6. Develop and support interagency training courses in inventory, monitoring, treatment, and control with improved opportunity for field-level participation.

7. Coordinate treatment of local noxious weeds with all local agencies.

8. Work with other agencies and landowners to establish WMAs and WMA Plans.



GOAL 7
MONITORING, EVALUATION, RESEARCH AND TECHNOLOGY TRANSFER:

Ensure sufficient data are available to evaluate management actions, to provide a basis for making informed decisions, to assess progress towards management objectives, and to develop new and more effective management methods.

Discussion:

Comprehensive monitoring programs are necessary to evaluate management activities, control noxious weeds, and demonstrate BLM compliance with applicable laws, regulations, and policies. Monitoring and research are essential to provide information necessary for long-term planning and decisionmaking. For example, monitoring and research will help determine if: 1) BLM is achieving the management objectives established in land use and activity plans, 2) certain projects or management actions are having the desired effect, 3) species-specific control methods are effective, and 4) BLM should change its management. Monitoring and research also allows BLM to base its noxious weed management program on sound ecological knowledge of noxious weeds and their relationships to management actions.

Monitoring information should be collected on treatment sites to determine effectiveness, the effects on nontarget species, and subsequent species that invade the treated site. Established infestation sites not currently being treated should be monitored for growth rates, rates of spread, population structure, and the environmental conditions that support the noxious weed invasion.

Research agencies should address the ecology of noxious weed species so that conditions that support infestation are understood. Research on control methods would develop more effective techniques for noxious weed management. Biological control research would assist in developing effective species-specific agents for long-term control of widespread weed species. Knowledge gained from these research efforts should be rapidly transferred to the field.

Strategies:

1. Develop monitoring schemes for a minimum level of information. The Greater Yellowstone Noxious Weed Control Plan is one model.

2. Develop a BLM technical reference on noxious weed treatment monitoring techniques.

3. Ensure that site-specific monitoring objectives are included in activity plans to address infestation and control of noxious weed species. Noxious weeds need to be considered as part of the overall monitoring effort.

4. Ensure that the BLM's LIS provides for entry of data into a standard data base and has the capability to store, retrieve, and analyze monitoring data.

5. Support research on a variety of areas; such as the ecology of noxious weed species, biological controls, emerging remote sensing, and IWM.

6. Contribute to increased funding for biological control research.

ACKNOWLEDGEMENTS

The prevention and control of noxious weeds is a cooperative effort among a variety of agencies, universities, and organizations. The authors of this document wish to acknowledge the following people who represented these entities for the time and effort they spent reviewing and providing valuable comments to improve its quality:

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*Tom Whitson - University of Wyoming and Western Society of Weed Science; Laramie, WY
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For more information on public information materials (e.g., videos and brochures) contact:

Weed Management Resources Library
Dow Elanco Chemical Co.
1001 South 24th Street West
Suite 115
Billings, MT 59102
(406) 652-4977
1-800-554-WEED

APPENDICES

APPENDIX 1

FEDERAL LAWS, REGULATIONS, AND POLICIES

The following laws, regulations, and policies provide the foundation for management of noxious weeds on public lands. Many states also have applicable laws.

Federal Land Policy and Management Act of 1976

> Directs the BLM to "take any action necessary to prevent unnecessary and or undue degradation of the public lands."

Public Rangelands Improvement Act of 1978

> Requires that BLM will manage, maintain, and improve the condition of the public rangelands so that they become as productive as feasible.

Carlson-Foley Act of 1968

> Directs agency heads to enter upon lands under their jurisdiction with noxious plants and destroy noxious plants growing on such land.

Federal Noxious Weed Act of 1974, as amended by Sec. 15 - Management of Undesirable Plants on Federal Lands, 1990

> Authorizes the Secretary "to cooperate with other federal and state agencies, and others in carrying out operations or measures to eradicate, suppress, control, prevent, or retard the spread of any noxious weed. Each federal agency shall 1) designate an office or person adequately trained to develop and coordinate an undesirable plants management program for control of undesirable plants on federal lands under the agency's jurisdiction, and 2) establish and adequately fund an undesirable plants management program through the agency's budgetary process, 3) complete and implement cooperative agreements with State agencies regarding the management of undesirable plant species on federal lands, and 4) establish integrated management systems to control or contain undesirable plant species targeted under cooperative agreements."

Final Environmental Impact Statement Vegetation Treatment on BLM Lands in 13 Western States (1991)

> Vegetation treatment using integrated pest management methods.

Final Northwest Area Noxious Weed Control Program Environmental Impact Statement (1985)

> Noxious weed management in the five northwestern states.

Final Supplemental Environmental Impact Statement for Noxious Weeds (1987)

> Declares that the BLM has the statutory duty to control or eradicate noxious weeds on public lands in five northwestern states.

Departmental Manual 517

Prescribes policy for the use of pesticides on the lands and waters under its jurisdiction, and for compliance with the Federal Insecticide, Fungicide, and Rodenticide Act, as amended.

Departmental Manual 609

Prescribes policy to control undesirable or noxious weeds on the lands, waters, or facilities under its jurisdiction to the extent economically practicable, and as needed for resource protection and accomplishment of resource management objectives.

BLM Manual 9011 and Handbook H-9011-1

Provides policy for conducting chemical pest control program under an integrated pest management approach.

BLM Manual 9014

Provides guidance and procedures for planning and implementing biological control in integrated pest management programs.

BLM Manual 9015

Provides policy relating to the management and coordination of noxious weed activities among BLM, organizations, and individuals.

APPENDIX 2

WEED COORDINATOR DUTIES

State Office Weed Specialist/Leader Duties:

√ Provide guidance and assistance to the districts in the preparation of weed management and prevention plans.

√ Coordinate inventory, monitoring, detection, evaluation, and treatment.

√ Budget preparation.

√ Prepare and offer guidance as to methods of treatment (biological control, mechanical, chemical, etc.) and "how to get the job done."

√ Coordinate with state clearance procedures.

√ Prepare and administer statewide contracts and MOUs (memorandum of understanding).

√ Develop policy and best management practices with other cooperating agencies.

√ Coordinate training and safety plans.

√ Incorporate the training with the state certification and licensing procedures. Ensure that the safety and training is coordinated with the Hazardous Material Management and Safety Programs, particularly when the use of herbicides or pesticides is part of the weed management program.

√ Coordinate with other agencies and interest groups (Department of Agriculture, The Nature Conservancy, U.S. Forest Service, etc.).

√ Offer guidance and assistance to academic community.

√ Develop and coordinate the development of informational materials; i.e. posters, brochures, etc.

Field Office Weed Specialist/Leader Duties:

√ Coordinate and conduct awareness/prevention programs.

√ Initiate cooperative weed efforts with user groups, recreationists, volunteers, etc.

√ Review all permits, leases, etc., to determine if the authorizations are contributing to weed spread. If so, facilitate the needed changes.

√ Initiate/maintain data base, maps, GIS.

√ Ensure that rare plant and plants important to Native American surveys are conducted in a timely fashion.

√ Coordinate volunteer prevention, detection, and hand-pulling efforts.

√ Provide support and direct assistance to Weed Management Area Committee Chairpersons (if they exist).

√ Conduct inventory, monitoring, detection, evaluation.

- √ Prioritize and prepare treatment plans by species.
- √ Prepare Environmental Assessments, Cooperative Agreements, MOUs.
- √ Prepare and administer contracts.
- √ Prepare Pesticide Use Proposals and Pesticide Application Records.
- √ Prepare Biological Control Agent Release Proposal.
- √ Prepare Biological Control Agent Request Record.
- √ Implement Policy Manual 9014 (distribution of biological control agents).
- √ Develop and coordinate safety plan.
- √ Develop and coordinate safety plan - the herbicide portion of an IWM should also be part of the field office hazardous material chemical management or safety plan.
- √ Prepare annual pest report.
- √ Provide direction/supervision of seasonal employees.
- √ Maintain pesticide application license and training.
- √ Prepare budget.
- √ Coordinate weed activities with county, state, and federal governments.
- √ Solicit participation internally and externally for inventory and prevention activities.
- √ Coordinate, where feasible, the purchase, application, storage, and disposal of any herbicides with the Field Office Hazardous Materials Management Coordinator and Safety Officer.

APPENDIX 3

EXAMPLE: PARTIAL DISTRICT-WIDE PREVENTION SCHEDULE*

PREVENTION ACTIVITY	WHEN	WHO IS RESPONSIBLE
Clean off-road equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts before moving into relatively weed-free areas.	All Year	Equipment Operators; Fire Crew
Re-establish vegetation on all disturbed soil from construction, reconstruction, and maintenance activities.	Spring/Fall	Project Proponent
Inspect gravel pits and fill sources to identify weed-free sources. Gravel and fill to be used in relatively weed-free areas must come from weed-free sources.	Spring/Summer	Surface Protection Specialist; Equipment Operator
Ensure that areas under recreation permit have on-site weed control and minimize spread to other areas.	All Year	Recreation Specialist
Control timing of grazing animal movement from infested to noninfested areas to minimize weed seed transport in moderate or high-ecological risk areas.	Grazing Season	Range Conservationist
Prefer winter skidding on high weed-risk sites for timber management.	Winter	Forester
For mineral activity, retain bonds for weed control until the site is returned to desired vegetative conditions.	All Year	Minerals Specialist
Sign trailheads for weed awareness and weed prevention techniques.	Spring/Summer	Recreation Technician
Environmental analysis for habitat improvement projects will include weed-risk considerations.	All Year	Wildlife Biologist
Weed identification training for field-going employees and managers.	Winter/Summer	Weed Coordinator
Distribute public information/brochures.	Spring/Summer	Public Affairs Officer
Include weed risk factors and weed prevention considerations in Resource Advisor (Environmental Specialist) duties on all Incident Overhead Teams and Fire Rehab Teams.	Summer	Resource Advisor

*See Goal No. 1 and Appendix 4 for a more complete list of prevention measures and activities.

APPENDIX 4

PROTOTYPE WEED PREVENTION MEASURES

(U.S. Dept. of Ag. 1991 Record of Decision, Noxious Weed Mgmt. Amendment to Lolo Natl. Forest Plan. U.S. Forest Service)

Management Requirement	Best Known Practices (should be followed unless the intent of the first column can be met with an alternative method which is discussed in the project environmental document)
Roads	
1) Incorporate weed prevention into road layout, design, and alternative evaluation.	1.1) During transportation planning and alternative development, consider weed risk factors (presence of weeds, habitat type, aspect, shading, etc.) to evaluate road location and design.
2) Remove seed source that could be picked up by passing vehicles and limit seed transport into relatively weed-free areas at moderate or high-ecological risk.	2.1) Before construction equipment moves into a relatively weed-free area at moderate or high-ecological risk; mow, grade, or otherwise treat all seed-bearing noxious weed plants on the travelway of existing Forest Service access roads. Treated sites must be reseeded as described in Weed Prevention Measure #4.1. 2.2) Clean off-road equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts before moving into relatively weed-free areas at moderate or high-ecological risk. (This is not meant to apply to service vehicles that will stay on the roadway traveling frequently in and out of the project area.)
3) Retain shade to suppress weeds.	3.1) Minimize the removal of trees and other roadside vegetation during construction, reconstruction, and maintenance; particularly on south aspects.
4) Re-establish vegetation on all bare ground to minimize weed spread.	4.1) For all construction, reconstruction, and maintenance activities, seed all disturbed soil (except traveled way) within seven days of work completion at each site - unless ongoing disturbance at the site will prevent weed establishment. In that case, seeding shall be done within seven days of final disturbance. Use a seed mix that includes fast, early-growing species to provide quick, dense revegetation. Seed should be certified relatively weed-free and/or analyzed (as deemed appropriate by the Forest Soils Scientist) before purchase to ensure minimum weed content. Consider the following options: • fertilization concurrent with seed application and followup fertilization; • applying relatively weed-free mulch with seeding; • double-seed, full rate at initial ground disturbance, and full rate again at the end of the project. See the current *Lolo Seeding Guidelines* for detailed procedures and appropriate mixes.

Management Requirement	Best Known Practices (should be followed unless the intent of the first column can be met with an alternative method which is discussed in the project environmental document)
5) Minimize weed spread caused by moving infested gravel and fill material to relatively weed-free locations	5.1) Gravel and fill to be placed in relatively weed-free areas which are at moderate or high-ecological risk to weed invasion must come from weed-free sources. Inspect gravel pits and fill sources to identify weed-free sources.
6) Minimize sources of weed seed in areas not yet revegetated.	6.1) Keep active road construction sites which are in relatively weed-free areas at moderate or high-ecological risk to weed invasion closed to vehicles that are not involved with construction.
7) Ensure establishment and maintenance of vigorous, desirable vegetation to discourage weeds.	7.1) Monitor all seeded sites. Refertilize and spot reseed as needed. Prefer native, pioneer species for seeding (low nutrient demanding) to minimize the need for fertilization. 7.2) Road maintenance programs should include scheduled fertilization where needed (three-year period suggested).
8) Minimize roadside sources of weed seed that could be transported to other areas.	8.1) Road maintenance programs should include monitoring for noxious weeds. Weed infestations should be inventoried and scheduled for treatment according to the selected alternative. Consider developing timber sale "C" clauses and "T" specifications to collect deposits for use in weed-control road maintenance.
9) Ensure that weed prevention and related resource protection is considered in travel management.	9.1) Consider weed risk and spread factors in Travel Plan (road closure) decisionmaking.
Recreation, Wilderness, Roadless Areas	
10) Minimize transport of weed seed by pack and saddle stock.	10.1) Require that all pack and saddle stock in designated areas use only certified weed-free and straw bedding. (In established wilderness, this requirement should be deferred to the Limits of Acceptable Change Planning Process.) Encourage the use of weed-free feed in all areas of the forest. 10.2) Pack and saddle stock should be quarantined and fed only weed-free feed for 24 hours prior to traveling off roads in the forest. Before quarantine, tail and mane should be brushed out to remove any weed seed.
11) Encourage a weed-free trail user's ethic.	11.1) Sign trailheads for weed awareness and weed prevention techniques.

Management Requirement	Best Known Practices (should be followed unless the intent of the first column can be met with an alternative method which is discussed in the project environmental document)
12) Ensure that areas under permit have on-site weed control and minimize spread to other areas.	12.1) Revise recreation special-use permits to require weed treatment consistent with the Forest Plan Amendment for Noxious Weed Management. Require all bare soil to be reseeded as described in Weed Prevention Measure #4.1.
Cultural Resources	
13) Ensure all bare ground is covered by desirable vegetation to discourage weeds.	13.1) Archeological site excavations will be reseeded to the standards given in Weed Prevention Measure #4.1.
Wildlife	
14) Incorporate weed prevention into wildlife habitat improvement project design.	14.1) Environmental analysis for habitat improvement projects (prescribed fire) will include weed-risk considerations in the development and evaluation of alternatives.
Range	
15) Minimize the creation of bare soil and other factors that support weeds.	15.1) Manage allotments to prevent excessive soil disturbance at salt licks, watering sites, and sensitive soil conditions. 15.2) All salt must be kept in containers and moved periodically. 15.3) Revise special use permits and allotment management plans to require weed treatment consistent with the Forest Plan Amendment for Noxious Weed Management. Require all base soil to be reseeded as described in Weed Prevention Measure #4.1.
16) Minimize weed seed transport to relatively weed-free areas at moderate or high-ecological risk.	16.1) In range allotments that have both weed-infested and relatively weed-free areas at moderate or high-ecological risk, control timing of animal movement from infested to noninfested areas. Prevent movement from infested to noninfested areas after weed seed set.
17) Ensure success of revegetation efforts to minimize weed spread.	17.1) Avoid grazing any reseed sites until vegetation is well established.
18) Retain desirable roadside vegetation to discourage weeds.	18.1) Roadside vegetation should not be included when calculating allotment grazing capacity.

Management Requirement	Best Known Practices (should be followed unless the intent of the first column can be met with an alternative method which is discussed in the project environmental document)
Timber	
19) Ensure that weed prevention is considered in all timber management project designs.	19.1) Consider weed risk and prevention factors (e.g., maximize shade and minimize soil disturbance) in all silvicultural prescriptions and in alternative development and evaluation for all timber sale environmental analyses.
20) Minimize the creation of sites suitable for weed establishment.	20.1) Minimize soil disturbance: • no more than needed for tree regeneration, • prefer winter skidding on high weed-risk sites, • prefer broadcast burning over dozer piling, • when using dozer piles, prefer small piles and burn under conditions that minimize heat transfer to the soil, • avoid dozer fireline construction on high weed-risk sites, • ensure prompt regeneration to maximize shading, • seed skid trails, landings, and other disturbed sites as described in Weed Prevention Measure #4.1.
21) Remove seed source that could be picked up by passing vehicles, and limit seed transport into relatively weed-free areas at moderate or high-ecological risk.	21.1) Before skidding equipment moves into a relatively weed-free area at moderate or high-ecological risk; mow, grade or otherwise treat all seed-bearing noxious weed plants on the travelway of existing Forest Service access roads. Treated sites must be reseeded as described in Weed Prevention Measure #4.1. 21.2) Clean skidding equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts before moving into relatively weed-free areas at moderate or high-ecological risk.
22) Examine weed prevention and treatment needs, and seek funding sources.	22.1) Inspect proposed timber sale areas for weed status and risk. Collect KV or other funds to prevent, monitor, and treat soil disturbance or weeds as needed during and after timber harvest and regeneration activities.
Minerals	
23) Minimize chances of weed establishment in mining operations.	23.1) Include weed prevention and treatment in all mining plans of operation and reclamation plans. Retain bonds for weed control until the site is returned to vegetative conditions matching the surrounding area.

Management Requirement	Best Known Practices (should be followed unless the intent of the first column can be met with an alternative method which is discussed in the project environmental document)
24) Remove seed source and limit seed transport into relatively weed-free areas at moderate or high-ecological risk.	24.1) Before equipment moves into a relatively weed-free area at moderate or high-ecological risk; mow, grade, or otherwise treat all noxious weeds along existing access roads (include in plan of operation). Treated sites must be reseeded as described in Weed Prevention Measure #4.1. 24.2) Clean equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts before moving into relatively weed-free areas at moderate or high- ecological risk (include in plan of operation).
25) Ensure that all disturbed soil is revegetated as soon as possible to discourage weeds.	25.1) Reseed all bare soil within seven days as described in Weed Prevention Measure #4.1 (include in plan of operation).
26) Incorporate weed prevention in all lands projects.	26.1) Consider weed risk, prevention, and treatment factors in alternative development and evaluation for all project planning. 26.2) Require weed control until the site is returned to a vegetative condition that matches the surrounding area. 26.3) Revise special-use permit plans to require weed treatment consistent with the Forest Plan Amendment for Noxious Weed Management. Require all bare soil to be reseeded as described in Weed Prevention Measure #4.1.
27) Ensure quick re-establishment of desired vegetation to discourage weeds.	
Fire *(See also measures under Timber and Wildlife)*	
28) Ensure that fire suppression and rehabilitation efforts minimize weed spread.	28.1) Include weed-risk factors and weed prevention considerations in the Resource Coordinator duties on all Incident Overhead Teams and Fire Rehabilitation Teams. 28.2) During fire rehabilitation, reseed all disturbed soil in relatively weed-free areas at moderate or high risk to weeds as described in Weed Prevention Measure #4.1.

APPENDIX 5

INTEGRATED WEED MANAGEMENT (IWM) GUIDELINES

Use the following guidelines to implement and determine the best methods for an IWM approach:

Cultural

- Develop available preventive measures, such as quarantine and closure, to reduce the spread of the infestation.
- Determine whether changes in livestock management will affect the target weeds.
- Determine whether changes in movement or type of livestock is necessary to reduce or contain the infestation due to movement of seeds on or in the animals.
- Determine whether containing livestock in a weed-free area before entering the area would prevent new infestations.
- Determine whether livestock or wildlife feeding programs can be managed to reduce weed infestations.
- Determine feasibility of changes in wildlife movement that would reduce or contain the infestation due to movement of seeds on or in the animals.
- Revegetate all bare soil following disturbance.
- Only allow weed-free equipment in an uninfested area; e.g., logging, mining, recreation.
- Limit, restrict, or modify recreational uses such as ORVs, bicycling, rafting, and hiking to reduce spreading weeds. In some cases, recreational sites may have to be quarantined.
- Determine if changes of season and type of recreational use are necessary to reduce or contain the spread of noxious weeds.
- Defer or reduce soil disturbance, if possible, until weeds are controlled or under management.
- Obtain rock from uncontaminated sources.
- Determine if exclusion of various uses would reduce weed spread.

Physical Control

- Determine if hoeing or grubbing will reduce (or increase) the infestation.
- Determine if hand-pulling weeds will reduce the seed source.
- Evaluate the terrain to allow for mowing and determine whether it is an acceptable option for controlling the spread of seeds.
- Evaluate whether a controlled-burning program will reduce the infestation without long-term deleterious effects upon desirable native vegetation.

- Monitor heavy recreational use sites seasonally for early detection of new weeds. Mark and hand- pull when found, especially before seed ripe.

Biological Controls

- Determine whether there are naturally-occurring agents within the ecosystem which can reduce the infestation.
- Determine whether the introduced biological control agent can survive in the environment of the treatment area.
- Determine what biological control agents are available for specific weed species.
- Determine if domestic animals (sheep/goats) are a viable option to control or contain specific weed species.

Biological control, including the use of domestic animals, is a proven method of successfully controlling some species of invasive weeds. The introduction of weed selective insects, known as classical biocontrol, has provided economical and sustainable control of St. Johnswort, tansy ragwort, and musk thistle in a majority of infested areas. Sheep and goats have controlled leafy spurge in several WMAs. Insects released against leafy spurge within the last 8 years are significantly reducing weed populations in several locations; the most promising insects have not been redistributed to thousands of locations.

Although biocontrol research is continuing on insects and plant pathogens for leafy spurge, knapweeds, and a few other weeds, the overall effort is severely limited in scope.

Thus, the promise of biocontrol should never be used as an excuse to postpone other IWM activities for prevention, containment, or control of weed invasions. Classical biological control is not appropriate for small spot infestations, for sites where rapid control is desired, or where other management practices are preferred for weed control or might be damaging to the agents (Quimby, 1995).

Herbicides

- Determine if the herbicides are labeled for:
  - √ Use on the target weed.
  - √ Use on the infested site (consider water, groundwater locations, climate, state labeling, soils, etc.).
- Determine if the herbicides are approved for use on BLM lands.
- The proposal is for weed control in an area covered by a WMA where the majority of landowners and managers are cooperatively working on IWM.
- Ensure properly trained and licensed personnel are available to apply the herbicide.

APPENDIX 6

ACRONYMS

ARD	Automated Resource Data
ARS	Agricultural Research Service
BLM	Bureau of Land Management
CES	Cooperative Extension Service
CWMA	Cooperative Weed Management Area
EIS	Environmental Impact Statement
FICMNEW	Federal Interagency Committee for the Management of Noxious and Exotic Weeds
GIS	Geographic Information System
IWM	Integrated Weed Management
LIS	Land Information System
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
RMPs	Resource Management Plans
USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFWS	United States Fish and Wildlife Service
WMAs	Weed Management Areas
WWCC	Western Weed Coordinating Committee

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U.S. GOVERNMENT PRINTING OFFICE: 1997 - 589-111 / 41511 REGION NO. 10