U.S. Department of the Interior
Bureau of Land Management
White River Field Office
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Meeker, CO 81641

ENVIRONMENTAL ASSESSMENT

NUMBER: DOI-BLM-CO-110-2010-0005-EA

PROJECT NAME: White River Field Office Integrated Weed Management Plan

LEGAL DESCRIPTION: White River Field Office Area Wide

APPLICANT: Bureau of Land Management (BLM) White River Field Office

ISSUES AND CONCERNS: The *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement (*PEIS) (BLM 2007a) identified and analyzed key issues brought up during the scoping process. These key issues are also applicable to this White River Field Office (WRFO) resource area-wide analysis and are incorporated either by reference or by addressing specific issues of concern at the field office level.

The key issues being addressed for implementation of the WRFO Integrated Weed Management Plan (IWMP) are based on a determination by the PEIS that the use of herbicides for weed treatment could result in adverse impacts (BLM 2007a, pages 4-7 to 4-8). These issues are as follows:

- Terrestrial and aquatic vegetation
- Terrestrial and aquatic wildlife
- Livestock, wild horses and burros
- Surface water and groundwater quality
- Cultural resources
- Visual, wilderness and recreation resources
- Ranching operations
- Human health and safety

The PEIS concluded that risks to these resources and human uses would be minor, given restrictions and other protections incorporated into the use of herbicides on public lands. Greater risk of adverse impacts would result from spills of herbicides or their inappropriate application. Because of the potential for adverse impacts, this environmental assessment (EA) addresses these resource issues within the context of resources, landscapes and land uses in the WRFO resource area (WRRA) and the treatment types and restrictions incorporated into the IWMP.

The Endangered Species of 1973 (ESA) established Federal policies and procedures for protecting Federally listed threatened or endangered plant and animal species, and species proposed for listing. *Section 7* of the ESA specifically requires agencies to work toward the conservation of listed species and to ensure that no agency action is likely to jeopardize a listed species or adversely modify critical habitat.

The BLM consulted with the U.S. Fish and Wildlife Service (USFWS) during the development of the PEIS, pursuant to Section 7 of the *Endangered Species Act* (ESA) and prepared a programmatic biological assessment (PBA) (BLM 2007d) to evaluate likely impacts to federally listed or proposed threatened or endangered species as a result of weed treatments. In conjunction with the current EA, the WRFO consulted with the USFWS and prepared a biological assessment (BA) (BLM 2010) analyzing potential impacts to listed or proposed species in the WRRA from implementing the proposed action and describing conservation measures to avoid or minimize adverse impacts. The USFWS issued its concurrence with the BA on February 18, 2010, including WRFO's determination of potential effects to listed species and proposed conservation measures. Conservation measures identified in the BA have been incorporated into the EA. Additional consultation with the USFWS is not required so long as there are no changes from the proposed action (including use of best management practices [BMPs], standard operating procedures [SOPs], mitigation measures, and conservation measures). If new information becomes available, new species are listed, or should there be any material changes to the project and its anticipated impacts that may affect any endangered or threatened species in a manner or to an extent not considered in the BA, WRFO will reinitiate Section 7 consultation with the USFWS.

BLM Manual Section 6840, Special Status Species Management (BLM 2008), stipulates that "BLM shall designate Bureau sensitive species and implement measures to conserve these species and their habitats, including ESA proposed critical habitat, to promote their conservation and reduce the likelihood and need for such species to be listed pursuant to the ESA." Additionally, "all federally designated candidate species, proposed species and delisted species in the 5 years following their delisting shall be conserved as Bureau sensitive species."

Wilderness Study Areas: Control of invasive plants on public lands within a Wilderness Study Area (WSA) must comply with and be managed consistent with the BLM's *Interim Management Policy Handbook for Lands Under Wilderness Review* (H-85550-1) (BLM 1195). The law provides for, and the BLM's policy is to allow invasive species control on lands under wilderness review in the manner and degree that does not degrade wilderness quality. Invasive plant control methods within WSAs are subject to reasonable regulations, policies and practices.

INTRODUCTION/BACKGROUND: The WRFO resource area (WRRA) encompasses approximately 2.6 million acres of BLM, national forest, national park, state, and private lands. The BLM manages approximately 1.5 million surface acres within the WRRA and an additional 360,000 acres of subsurface minerals underlying private and state lands. In recent years, infestations of noxious and invasive weeds have increased rapidly on these lands due to oil and gas development, livestock grazing, off-highway vehicle (OHV) use and other types of ground-disturbing activities. "Noxious weeds" are those listed by State of Colorado because they constitute a threat to the "continuous economic and environmental value of lands of the state"

(CDA 2003). "Invasive weeds" are those that are not listed by the State but considered by BLM as problematic in terms of habitat degradation and interference with reclamation. The recent increase in noxious and invasive weeds has contributed to a downward trend in the health of native plant communities in some parts of the WRRA. This has reduced the quality and quantity of habitat and forage for wildlife and livestock, altered soil productivity, increased the potential for soil erosion and adverse impacts on water quality, and caused a loss of riparian area function. By evaluating the impacts of weed treatment methods individually or in combination, long-term weed control strategies can be devised to meet different management objectives in different situations.

The WRFO is currently planning on conducting systematic, landscape-wide inventories for noxious weeds within the WRRA as well as mapping known infestations. The focus of these surveys will be on the inventory and mapping of noxious weed species that are considered the most harmful or pose the greatest threat of spreading into new areas. In 2008, approximately 500 infested acres (1,500 gross acres) were treated in the WRRA. Infested acres are areas where herbicide was actually sprayed on the ground while gross acres are the area protected by the treatment (i.e., an entire drainage may be protected but only 1 acre of the drainage may have actually had herbicide applied to it). The acreage treated includes treatments by the Colorado Division of Wildlife (DOW), Rio Blanco, Garfield and Moffat Counties, oil and gas operators and other projects on BLM lands.

Noxious weeds on the State of Colorado Noxious Weeds List, and where they are known to occur within the WRRA, are noted in Table 1. The three categories (A, B and C) indicated in Table 1 correspond to three lists of weed species as classified by the State of Colorado. The three lists are based on the following management objectives: List A – designated for statewide eradication; List B – managed for containment; and List C –not designated for control because of statewide distribution.

Table 1 – State of Colorado Noxious Weeds Known to Occur in the WRFO Area

Species	Primary Occurrence
List A	
African Rue	None Known.
Camelthorn	None Known.
Common Crupina	None Known.
Cypress Spurge	None Known.
Dyer's Woad	None Known.
Giant Salvina	None Known.
Hydrilla	None Known.
Meadow Knapweed	None Known.
Mediterranean Sage	None Known.
Medusahead	None Known.
Myrtle Spurge	None Known.
Orange Hawkhead	None Known.
Purple Loosestrife	None Known.
Rush Skeletonweed	None Known.
Serica Lespedeza	None Known.
Squarerose Knapweed	None Known.
Tansy Ragwort	None Known.
Yellow Starthistle	Has occurred. All known populations are eradicated.

Species	Primary Occurrence
List B	
Absinth Wormwood	None Known.
Black Henbane	Small populations, Magnolia Plateau & Douglas Pass –other scattered, small populations throughout WRRA.
Boucingbet	None Known.
Bull Thistle	Scattered, moderate populations throughout WRRA.
Canada Thistle	Scattered, moderate populations throughout WRRA.
Chinese Clematis	None Known.
Common Tansy	None Known.
Common Teasel	None Known.
Corn Chamomile	None Known.
Cutleaf Teasel	None Known.
Dalmatian Toadflax (broad leaved)	Isolated, small population, Yellow Creek Jeep Trail by Meeker Gas Plant.
Dalmatian Toadflax (narrow leaved)	None Known.
Dame's Rocket	None Known.
Diffuse Knapweed	Scattered, small populations throughout WRRA.
Eurasian Watermilfoil	None Known.
Hoary Cress	Scattered, moderate populations throughout WRRA.
Houndstongue	Scattered, large populations throughout WRRA.
Leafy Spurge	Scattered, moderate to large populations throughout WRRA – most prevalent large populations, Nine Mile & Hay Gulch.
Mayweed Chamomile	None Known.
Moth Mullein	None Known.
Musk Thistle	Scattered, moderate populations throughout WRRA.
Oxeye Daisy	None Known.
Perennial Pepperweed	Scattered, moderate populations throughout WRRA.
Plumeless Thistle	Isolated, small populations
Quackgrass	None Known.
Redstem Filaree	None Known.
Russian Knapweed	Scattered, small populations throughout WRRA.
Russian-Olive	Scattered, moderate to large populations along riparian corridors.
Salt-Cedar (Tamarisk)	Scattered, moderate to large populations along riparian corridors.
Scentless Chamomile	None Known.
Scotch Thistle (Onopordum acanthium)	Isolated, small populations – most prevalent Strawberry Creek & Windy Gulch.
Scotch Thistle (Onoporfum tauricum)	None Known.
Spotted Knapweed	Scattered, small to large populations throughout WRRA.
Spurred Anoda	None Known.
Sulfur Cinquefoil	None Known.
Venice Mallow	None Known.
Wild Caraway	None Known.
Yellow Nutsedge	None Known.
Yellow Toadflax	Scattered, moderate populations throughout WRRA.

Species	Primary Occurrence
List C	
Chicory	None Known.
Common Burdock	Scattered, small populations throughout WRRA.
Common Mullein	Scattered, large populations throughout WRRA.
Common St. John's wort	None Known.

Species	Primary Occurrence
List C	
Downy Brome	Large Populations throughout resource area particularly western half
Field Bindweed	Scattered, moderate populations throughout WRRA.
Halogeton	Scattered, moderate populations throughout WRRA.
Johnsongrass	None Known.
Jointed Goatgrass	None Known.
Perennial Sowthistle	None Known.
Poison Hemlock	Scattered, small populations throughout WRRA.
Puncturevine	None Known.
Velvetleaf	None Known.
Wild Proso Millet	None Known.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES: This section describes and compares the four alternatives considered for management of noxious and invasive weeds in the WRFO: Alternative A (*Proposed Action*), Alternative B (*No Action*), Alternative C (*No Herbicide Use*) and Alternative D (*No Aerial Application of Herbicides*). All four alternatives (including no action, or a continuation of current management) would include implementation of an IWMP to guide future weed treatments on BLM lands within the WRRA, since that is current BLM policy. However, the specific IWMP would depend on the alternative selected.

Actions Common to all Alternatives: Regardless of the alternatives selected, the IWMP implemented by the WRFO pursuant to this EA would include the basic components summarized below, in addition to weed treatments.

Prevention - Prevention is generally recognized as the most effective and economic form of weed management (DiTomoso 2000). To prevent the spread of noxious and invasive weeds, the WRFO would require that a range of BMPs be incorporated in future project proposals, both internal and external. See Appendix B for a list of prevention measures that would be implemented with all alternatives.

Education - The goal of this element of the plan is to generate internal and external support for weed control by increasing awareness of noxious and invasive weeds and their impact on native ecosystems. Following BLM's action plan *Partners Against Weeds* (BLM 1996a), the WRFO would encourage the participation of BLM employees in training that would include identification of weed species, weed biology, environmental effects, the process for reporting infestations and employee involvement in reducing the spread of weeds.

To increase the general public's awareness of noxious and invasive weeds, a variety of outreach efforts would be considered such as assisting county governments and other organizations in the publication and distribution of brochures and other types of educational media such as videotapes, bumper stickers, posters and county fair displays.

Coordination and Cooperation: The WRFO plans to continue and enhance cooperation and coordination with other Federal agencies, State and county/local governments, other

organizations, and private landowners in an effort to more effectively manage noxious and invasive weeds. Examples include the following:

- Increase the efforts to develop assistance cooperative agreements with local governments to treat infestations that are located near or across jurisdictional boundaries.
- Exchange weed mapping data with other agencies.
- Share information on treatment effectiveness.
- Participate in periodic coordination meetings with local weed management entities.
- Seek opportunities to develop new partnerships.

Inventory and Mapping: Information on the presence, location and distribution of noxious weeds is fundamental to all subsequent management efforts. Funding constraints to date have precluded a complete inventory of the 1.5 million BLM surface acres in the WRRA. Therefore, areas of high human use and high resource value would be selected for inventory priority. These would include, at minimum:

- Areas proposed for ground-disturbing activities (e.g., oil and gas development, road construction, and range improvements).
- Burned areas.
- Areas of Critical Environmental Concern (ACECs).
- Habitat for special status species.
- Riparian areas.
- Developed recreation sites.
- Heavily used roads and trails.
- Wildland-Urban Interfaces (WUIs).
- Big game winter range.

Once located, noxious weed infestations would be mapped. Mapping a weed infestation provides information about the extent of the infestation, transport vectors, potential uninfested areas to be protected and monitored and the effectiveness of control methods. Over the long term, maps provide historical evidence of the epicenter of an infestation and aid in tracking its spread or decline. A global positioning system (GPS) unit would be used to map center points, lines or polygons to define the location and limits of the infestation. An ArcGIS shapefile of noxious weeds in the WRRA would be developed and maintained.

Revegetation and/or Temporary Resting from Grazing: Areas disturbed by weeds may be reseeded or planted with desirable vegetation following treatment if the native plant community is considered unlikely to recover on its own. The Department of Interior (DOI) policy states, "Natural recovery by native plant species is preferable to planting or seeding, either of natives or non-natives. However, planting or seeding should be used only if necessary to prevent erosion or resist competition from non-native invasive species" (BLM 2004). Where practicable, seed would be installed by drill-seeding to a maximum depth of 1 inch. Where drill-seeding is impracticable, seed may be installed by broadcast-seeding, possibly followed by raking or harrowing. If the site needs to be cultivated (disced) prior to seeding, cultural and biological surveys would be conducted prior to ground disturbance and a site-specific National Environmental Policy Act (NEPA) document would be prepared.

In cases of very large and severe infestations where natural recovery or re-vegetation are expected to be difficult, the area may be rested from grazing by up to 2 years to hasten the reestablishment of desirable vegetation. Exceptions may include situations in which the treated area represents a small portion of the allotment or where the timing, duration and intensity of use by livestock would not impede recovery.

Monitoring: Monitoring is an essential component of an IWMP; two types of monitoring would be conducted as part of the IWMP: Implementation Monitoring ("Did we do what we said we would do?") and Effectiveness Monitoring ("Were weed treatments effective?") (BLM 2007a). Evaluating the effectiveness of control techniques and ensuring that SOPs and mitigation and conservation measures are implemented appropriately and are effective are critical components of the IWMP. All weed treatments would be monitored. If all mature plants are eliminated, monitoring would continue in order to detect and eliminate new plants arising from seed, propagule, or root stock for the duration of the seed longevity for that species. The monitoring of infestations associated with the objectives of control or containment would continue at periodic intervals for an indefinite period. Table 2 lists the methods used to evaluate treatment effectiveness and are based on the management objective for a given infestation.

Table 2 – Management Objectives, Monitoring Methods and Measures of Effectiveness

Management Objective	Monitoring Method	Measure of Effectiveness
Eradication	Visually inspect infested area.	Absence after a period of time (depends on seed longevity of the weed species).
Control or Suppression	Measure percent cover via quadrants or transects.	Reduction in percent cover
Containment	Measure area of infestation by mapping via GPS or recording length and width of infestation.	Reduction in area of infestation.

As seen in Table 2, if the management objective for an infestation is eradication, the post-treatment monitoring would emphasize the collection of presence/absence data by visual inspection. In this case, the treatment would be considered successful when the target species is absent from its former location. Typically, this would be evaluated through the period over which the seed bank would remain. In comparison, monitoring associated with the objectives of control/suppression or containment would focus on quantitative methods (i.e., the reduction in percent cover or infestation size).

If monitoring demonstrates that a treatment has not been effective in achieving the management goal, corrective actions (e.g., retreatment with the same or different method or combination of methods) would be identified and implemented to enhance the level of success. Data on treatment effectiveness collected during monitoring would be entered into the National Invasive Species Information Management System (when available). In the interim, these data would be entered into a WRFO weed management database.

Management Objectives and Treatment Selection Process: Management objectives for noxious weed infestations under the Proposed Action would be established and treatment priorities

assigned based on the weed species and the size, density and location of the infestation. Management objectives would include:

- Eradication**:** Eliminate the weed species, including seeds and fruits.
- Containment: Prevent the weed species from spreading beyond the current infestation perimeter.
- Control or Suppression**:** Reduce the extent and density of the weed species.

The selection of a management objective is guided by the requirements of the ***Colorado Noxious Weed Act***. As described previously, this Act places Colorado noxious weed species into three categories: List A species are designated for statewide eradication, List B species are managed for containment; and List C species are not designated for control because they are widespread. However, counties typically have their own management objectives for weed species. At a minimum, the WRFO would comply with both State and county management objectives but may establish stricter objectives for eradication or containment in situations where small infestations of a species occur. Once a management objective is established for a given infestation, its treatment is prioritized in relation to other infestations. The need for prioritization arises from the large number of infestations requiring treatment and limited funding and weed personnel available.

The *first (highest) priority* would be given to treating infestations of species likely to have the most substantial impact on resources and to treating these infestations while they are small and relatively easy to manage. Thus, as a general rule the highest priority would be to eradicate small infestations of List A and List B species in the newly disturbed areas (or areas proposed for disturbance) with high resource value.

The *second priority* would be to limit the spread of established infestations of List B species. The emphasis would be on control of larger infestations in areas that have a high potential for spread. Examples include roads and trails (including rights-of-way), campgrounds and trailheads, stock tanks and corrals, heavily grazed riparian areas, big game winter concentration areas and other areas of locally intensive use. In these circumstances, it may not be practical to eradicate the entire infestation and containment or control may be the most cost-effective management goal.

The *third priority* would also focus on controlling the spread of List B species but would emphasize less developed recreational facilities, riparian areas that receive relatively light use by livestock, big game winter range that receives dispersed rather than concentrated use and areas in wildland-urban interface that are subject to reinvasion from adjacent private lands and roadways. Small infestations of List C species would also fall into this category. The most cost-effective management goals would largely depend on the size of the infestation and could include eradication, containment or control.

The *fourth priority* would emphasize the containment or control of large infestations of List C species. The extent of these infestations would probably preclude eradication and favor suppression and containment as cost-effective management goals.

The purpose of the prioritization process is to ensure that the treatment method selected is appropriate for the situation while minimizing risks to non-target species. Several variables would be considered when determining what treatment or combination of treatments would be used in a specific situation. These include:

- Potential hazards to human health.
- Possible damage to non-target plants and animals.
- Adverse impacts to the general environment.
- Cost effectiveness over the long-term and short-term.
- Ease of implementation.

Table 4a presents preferred methods of treatment under the Proposed Action, given treatment priorities, management goals and types of infestations. In general, manual treatments are preferred for individual or small isolated populations, while chemical or biological treatments are preferred for larger infestations – depending on the specific weed species and on the presence/absence of special status or other desirable plant species that could be adversely affected by herbicides.

Note in Table 4a that the first, second and third priority categories, which include eradication, control and/or containment of List A or List B species, specify use of only manual treatment or direct application (including spot spraying) of herbicides onto target weeds near special status plants rather than broadcast spraying by aerial or ground methods. This is intended to avoid injury to special status species by offsite drift or runoff of herbicides.

Prioritization is less of an issue for project proponents (e.g., oil and gas operators, rights-of-way holders), who typically are required by BLM to manage weeds on the public lands they impact. For these proponents, priorities would not be established in relation to other infestations across the WRRA. Instead, they would be required to control noxious and invasive weeds as a Condition of Approval applied to drilling permits, right-of-way grants, or other authorizations by the BLM of ground-disturbing activities.

NEPA Process: At present, absent an approved programmatic EA at the office level, compliance with NEPA requires that the WRFO prepares a project-specific EA for every new weed treatment activity and location. The Proposed Action would streamline the process for NEPA compliance by allowing the WRFO to prepare a Documentation of NEPA Adequacy (DNA) tied to the programmatic EA. The DNA process, while avoiding the need for project-specific EAs, would ensure and document that impacts of weed treatment activities and locations approved as part of an annual plan were fully analyzed and disclosed in the programmatic EA, that no new information is available that would affect the WRFO's selection and implementation of treatments and that the process conforms to the current land use plan.

Alternative A – Proposed Action: The Proposed Action is to implement the IWMP presented in this EA as Alternative A to guide the management of noxious and other invasive weeds on BLM lands administered by the WRFO. The intent of this plan is to provide a comprehensive range of management actions and a decision-making framework to allow resource managers to select actions or combination of actions to meet the objectives of eradicating, significantly

reducing, or containing existing weed infestations and preventing the spread of new infestations. The IWMP proposed as Alternative A would differ from Alternative B (No Action) by authorizing the use of four new herbicides approved in the PEIS (BLM 2007a).

The proposed IWMP is intended to be broad in scope and to apply to weed control associated with any resource management decisions under WRFO's current or future land use plans and plan amendments. The treatment methods, management objectives and NEPA process for weed treatments under the Proposed Action are described below

Treatment Methods: Noxious and invasive weeds would be treated using the best available weed control technique(s) at the appropriate times based on the life history of the target species and cost-effectiveness. Under the Proposed Action, weed treatments could include manual, biological, or chemical control methods, or combinations thereof. Total area of weed treatments under the Proposed Action would not exceed 5,000 acres per year, of which up to 1,000 acres would be treated aerially. The focus of aerial treatments would be mainly large infestations of leafy spurge and cheatgrass. Potential treatment methods for use by BLM or project proponents in the WRRA under this alternative are described in Table 3.

Chemical treatments using selective or non-selective herbicides would comply with the EPA label directions, follow BLM procedures outlined in Handbook H-9011-1 (*Chemical Pest Contro*l, BLM 2006a) and BLM Manual Sections 1112 (*Safety*) (BLM 2000) and 9015 (*Integrated Weed Management*) (BLM 1992) and comply with State label standards (BLM 1991b). Herbicide applications would adhere to all State and Federal pesticide laws. All applicators that apply herbicides on lands administered by the WRFO (i.e., certified applicators or those directly supervised by a certified applicator) would comply with the application rates, uses and handling instructions specified on the herbicide label or, where more restrictive, the rates, uses and handling instructions developed the BLM for the PEIS.

Table 3 – Summary of Potential Treatment Methods under the IWMP*

Manual
Description: Involves the use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species. Treatments include cutting undesired plants above ground level; pulling, grubbing or digging out root systems of undesired plants to prevent sprouting and regrowth; cutting at ground level or removing competing plants around desired species; or placing mulch around desired vegetation to limit weed germination and growth (BLM 1991b). Hand tools include a handsaw, axe, shovel, rake, machete, grubbing hoe, mattock, Pulaski, brush hook, hand clippers, motorized chainsaws, weed whacker, and power brush saw.
Effectiveness: Manual treatments are most effective when weed infestations are small and complete removal of the roots is possible (Rees et al. 1996). Manual treatments work well for annual or biennial species with tap roots or shallow roots that do not re-sprout from tissue remaining in the soil. Sandy or gravelly soils allow for easier root removal. Repeated treatments are often necessary due to soil disturbance and residual weed seeds in the seed bank. Manual control can be used with minimal impacts and are useful in sensitive habitats, such as wetlands or riparian areas, or where special status species occur. However, manual treatments are labor intensive compared to other treatment methods such as herbicide and biological control. Typical manual vegetation control costs $70 to $700 per acre (BLM 2007b).

Table 3 – Summary of Potential Treatment Methods under the IWMP*

Biological Control
Description: Biological controls involve the intentional use of domestic animals, insects, nematodes, mites or pathogens (agents such as bacteria or fungi) that weaken or destroy vegetation. The use of domestic livestock to control weeds requires "prescribed grazing" in which the kind of animals and the amount and duration of grazing are designed to control a particular species while minimizing impacts to perennial native vegetation. In order for prescribed grazing to be effective, the right combination of animals, stocking rates, timing and rest must be used. Grazing should occur when the target plant is palatable and viable seeds can be reduced. Currently, tamarisk leaf beetles will be used on portions of the White River and Douglass Creek within the WRRA along with weevils on spotted knapweed in the Piceance Creek area. Tamarisk beetles are a defoliating beetle that repeatedly defoliates tamarisk eventually weakening and killing the plant. Two types of weevils can be used on spotted knapweed. The first is a seed-head boring weevil that kills the seeds produced by the plant and the second is a root boring weevil that affects the plants ability to absorb nutrients eventually killing the plant.
Effectiveness: Biological control agents are not currently available for many weed species. They are most effective for large populations of weeds, but it is unlikely that they would completely eradicate a weed population because as the population of the host plant decreases, populations of the agent would also decline. Biological control agents can take many years to get established and bring about the desired level of control, but can be a useful tool in reducing the initial size or density of a weed infestation, making other treatments more feasible. Biological treatments are most effective when followed with other treatments. Biological control using insects, nematodes, mites or other pathogens can range from $80 to $150 per release for ground applications. Treatment of weeds using domestic animals is relatively inexpensive, costing $12 to $15 per acre. Biological control agents such as insects, nematodes, mites or pathogens that are approved by the BLM have undergone rigorous testing by the USDA Agricultural Research Service to ensure they are host specific and would feed only on the target plants and not on crops, native flora or endangered or threatened plant species. Before releasing a new agent, an environmental analysis is prepared by APHIS (Agricultural Plant Health Inspection Service). Once approved, a biological control can be released only in states covered by the environmental assessment. The WRFO would only use those biological controls approved by APHIS for release in Colorado. Biological control agents would be used in accordance with BLM Manual 9014 (BLM 1990). When releasing biological agents on BLM lands, the following process would be followed: - A Biological Control Agent Release Proposal (BCARP) is an internal BLM document that includes the type of biological control agent, collection origin, number of specimens planned for release, planned release date number of releases, target pest species and estimated treatment acres. A BCARP also includes a discussion of sensitive aspects and precautions and mitigations to minimize impacts to non-target vegetation. A BCARP requires review and approval by the Originator, Field Office Manager; State Pest Management Specialist and Deputy State Director. - A Biological Control Agent Release Record (BCARR) must be completed within 24 hours after release of the biological control. These records must be kept for 10 years. Information on the BCARR includes location of release, actual area (acres) or release, weather conditions and weed species treated.

Table 3 – Summary of Potential Treatment Methods under the IWMP*

Chemical Control
Description: Chemical control involves the use of herbicides to kill or surpass target plants and chemicals applied with the herbicides that improve their efficacy ("adjuvants"). Herbicides can be used selectively to control specific vegetation types or non-selectively to clear all vegetation in a particular area (e.g., bare-ground treatments on oil and gas pads.) Manual (i.e., spot) applications are effective for small infestations, areas inaccessible by vehicle or areas where minimizing potential impacts to non-target plants is desired. Manual applications include spraying from a backpack unit or spray bottle or wiping (wicking) directly onto the foliar tissue. In remote areas and areas where mechanized equipment is not appropriate (e.g., wilderness areas and wilderness study areas), herbicides may be carried and applied using pack animals. Larger weed infestations in highly disturbed areas with good accessibility can be treated by sprayers mounted on ATVs or trucks. Oil and gas pads, pipeline corridors and roadsides can be effectively treated in this manner. Herbicides could be applied aerially with helicopters or fixed-wing aircraft for large infestations of weeds in areas where it's not economically and/or physically feasible to treat on the ground (e.g., areas burned in wildfires, cheatgrass treatments, wildlife habitat treatments). When applying herbicides on BLM lands, the following process would be followed: - Applicator must be present certified pesticide applicator's license. - A Pesticide Use Proposal (PUP) must be approved by the BLM State Office. (A PUP is an internal document that includes the type of herbicide, application rate, application dates, number of applications and estimated treatment acres. A PUP also includes a discussion of sensitive aspects and precautions and mitigations that will be taken to minimize impacts to non-target vegetation.) A PUP requires review and approval by Certified Pesticide Applicator, Field Office Weed Coordinator, Field Office Manager, State Office PUP Coordinator, and Deputy State Director. A PUP is valid for 3 years and requires renewal after that time. - The pesticide applicator would fill out a Pesticide Application Record (PAR) within 24 hours of applying herbicides on BLM lands. The pesticide applicator must keep these records for 10 years according to State law. Information on the PAR includes location of application, which and how much herbicide were applied, weather conditions, equipment used, weed species treated and number of acres treated. Applicators are required to turn these records into the WRFO at the end of each year. - The WRFO would prepare an annual Pesticide Application Record (PAR) which would be submitted to the BLM State Office. This report includes a total of all pesticides applied in the WRRA.
Effectiveness: The proper use of herbicides at the optimum time can be the most effective method for controlling persistent weeds, including perennial species. Not all herbicides are equally effective on all weeds, nor can every herbicide be used in every situation. Herbicides can damage or kill non-target plants and can be toxic or cause health problems in humans, livestock and wildlife. Weed populations may develop a resistance to a particular herbicide over time. Herbicide control is less labor intensive than manual methods and is able to more effectively control larger weed infestations. The cost of herbicide application Is generally $20 to $250 per acre (BLM 2007b).

**Information taken primarily from BLM 2007b.*

The Proposed Action includes potential use of any of the 18 herbicide active ingredients approved in the PEIS (2,4-D, bromacil, chlorosulfuron, clopyralid, dicamba, diflufenzopyr, diquat, diuron, fluridone, glyphosate, hexazinone, imazapic, imazapyr, metsulfuron, methyl, picloram, sulfometuron methyl, tebuthiuron and triclopyr). Four of these – diquat, diflufenzopyr,

fluridone and imazapic – had not previously been approved for use. The ability to use imazapic as part of the Proposed Action is of particular benefit because it has been shown to be effective in the control of cheatgrass and other invasive annual species.

The herbicide Overdrive® (dicamba + diflufenzopyr) is another important addition to the approved list. Diflufenzopyr is only approved in this formulation with dicamba. This formulation holds promise for controlling both annual and perennial broadleaf weeds. BLM could approve diflufenzopyr as a stand-alone herbicide in the future if registered by the EPA under FIFRA. The two newly added herbicides (diquat and fluridone) are primarily for use in aquatic sites and therefore not likely to be used in the WRFO, where aquatic weeds are not a significant issue. In addition to approving four new herbicides, the PEIS also dropped six herbicides previously available under the 1991 Vegetation EIS (2,4-DP, asulam, atrazine, fosamine, mefluidide and simazine). See Appendix A for a complete listing or herbicides and adjuvants currently approved for use on BLM lands.

The proposed IWMP would incorporate the BMPs for preventing weed infestations and SOPs and conservation measures for implementing weed treatments (see Appendices A, B, and C). These appendices were taken from PEIS (BLM 2007a) and *Vegetation treatments on BLM lands in 17 western states, Programmatic Environmental Report* (PER) (BLM 2007b) and adapted to site-specific conditions in the WRRA. The proposed IWMP would also incorporate conservation measures developed during Section 7 Consultation with the USFWS (see Appendices E and F). Analysis of impacts and risks to humans and to non-target plants, fish, terrestrial wildlife and other resources or resource uses are presented in detail in the PEIS and summarized in the current programmatic EA prepared by the WRFO.

Alternative B – No Action (Continue Present Management): Under the No Action alternative, the WRFO would continue its current approach to weed management. Specifically, the WRFO would continue to select herbicides from among those previously approved in the 1991 Vegetation EIS, except that the six herbicides dropped in the PEIS would not be used (2,4-DP, asulam, atrazine, fosamine, mefluidide, and simazine). Not having the newly approved herbicide imazapic available would impair the WRFO's ability to effectively treat cheatgrass, which is very aggressive, difficult to control and widespread in the WRRA. Not being authorized to apply three other herbicides would also limit the WRFO's ability to effectively choose the right chemical for each management situation. Under the No Action alternative, herbicides would continue to be applied aerially with helicopters or fixed-wing aircraft for large infestations of weeds in areas where it's not economically and/or physically feasible to treat on the ground (e.g., areas burned in wildfires, cheatgrass treatments, and wildlife habitat treatments). Because the preferred treatment methods under Alternatives B would be the same (only with the aforementioned select herbicides precluded), as those listed for Alternative A, they are also summarized on Table 4a below.

Table 4a[1]
Preferred Methods of Treatment Given Priorities, Goals & Infestation Type - Alts A & B[*]

Priority	Goal	Infestation	Preferred Treatment
Highest Priority: – List A Species.	Eradication	Individual Plants or Small Groups.	Manual Treatment; Spot Application of Herbicide.

Table 4a[1]
Preferred Methods of Treatment Given Priorities, Goals & Infestation Type - Alts A & B[*]

Priority	Goal	Infestation	Preferred Treatment
– List B Species new to the WRFO RMA. – Small Infestations of List B Species in Areas of Special Concern (Wilderness, ACECs, Habitat for Special Status Plants).		Infestations near Special Status Plants.	
		Small Populations in areas w/ Substantial Desirable Species.	Chemical Treatment w/ Selective Herbicide.
		Small Populations in areas w/ Minimal Desirable Species.	Chemical Treatment w/ Non-Selective Herbicide, followed by Revegetation.
Priority	**Goal**	**Infestation**	**Preferred Treatment**
Second Priority: – Large Infestations of List B Species in Areas of Special Concern. – List B Species in areas w/ heavy use or where infestation is more likely to spread (heavy Recreational Use, heavy Livestock use, or concentrated use of Wintering Big Game).	Eradication, Control or Containment	Individual Plants or Small Groups.	Manual Treatment; Spot Application of Herbicide.
		Infestations near Special Status Plants.	
		Small Populations in areas w/ Substantial Desirable Species or Small Populations in areas w/ Minimal Desirable Species.	Spot Chemical Treatment w/ Selective or Non-Selective Herbicide, followed by Revegetation.
		Large Infestations in areas w/ Substantial Desirable Species	Aerial Treatment with Selective Herbicides or Ground Treatment with selective herbicides with Revegetation, if necessary.
			Biological Treatment, possibly w/ Selective Herbicides along perimeters.
Priority	**Goal**	**Infestation**	**Preferred Treatment**
Third Priority: – List B Species in areas w/ light use or where infestation is less likely to spread (less Recreational Use, dispersed Livestock or use by Wintering Big Game. – List B Species in Riparian areas, Big Game winter range or Wildland-Urban Interfaces. – Small Infestations of List C Species.	Eradication, Control or Containment	Individual Plants or Small Groups.	Manual Treatment; Spot Application of Herbicide.
		Small Populations in areas w/ Substantial Desirable Species or Small Populations in areas w/ Minimal Desirable Species.	Spot Chemical Treatment w/ Selective Herbicide, or w/ Non-Selective Herbicide, followed by Revegetation..
		Large Infestations in areas w/ Substantial Desirable Species	Aerial or Non-Aerial Chemical Treatment w/ Selective Herbicide followed by Revegetation, if necessary.
		Large Infestations in areas w/ Minimal Desirable Species.	Aerial or Non-Aerial Chemical Treatment with Selective or Non-Selective Herbicide followed by Revegetation.
Priority	**Goal**	**Infestation**	**Preferred Treatment**

Table 4a[1]
Preferred Methods of Treatment Given Priorities, Goals & Infestation Type - Alts A & B*

Priority	Goal	Infestation	Preferred Treatment
Lowest Priority: – Large Infestations of List C Species.	Control & Containment	Large Infestations of List C Species, including weeds dispersed throughout degraded Rangeland.	Aerial or Non-Aerial Chemical Treatment w/ Selective Herbicide or Non-Selective Herbicide followed by Revegetation (e.g. cheatgrass).

[1]*Table 4a describes preferred methods of treatment given an idealized series of variables. The preferred treatment would vary depending on site-specific conditions.*
**Information taken primarily from BLM 2007b.*

The proposed IWMP would incorporate the BMPs for preventing weed infestations and SOPs and conservation measures for implementing weed treatments (see Appendices A, B, and C). These appendices were taken from PEIS and PER (BLM 2007a, b) and adapted to site-specific conditions in the WRFO area. The proposed IWMP would also incorporate conservation measures developed during Section 7 Consultation with the USFWS (see Appendices E & F). Analysis of impacts and risks to humans and to non-target plants, fish, terrestrial wildlife and other resources or resource uses are presented in detail in the PEIS and summarized in the current programmatic EA prepared by the WRFO.

***Alternative C – No Herbicide Use*:** This alternative would implement an IWMP that would contain the elements of the plan described under the Proposed Action, with the exception that herbicides would not be used. The absence of chemical controls would be offset to some extent by an increase in manual and biological controls. As shown in Table 4b, these would essentially be limited to manual removal of plants in small weed infestations, areas near special status plants and clumps of tamarisk, or to biological control of specific weeds through targeted grazing.

Because of the limitations of manual and biological methods, the total area treated annually under this alternative would not exceed 1,000 acres per year. While targeted grazing can cover larger areas, the effectiveness (percent removal of target species) is much lower than with herbicides. In the future, biological control of larger areas of tamarisk using an introduced Asiatic beetle may be implemented by the WRFO and has been used in the past.

Table 4b
Preferred Methods of Treatment Given Priorities, Goals and Infestation Type - Alt C*

Priority	Goal	Infestation	Preferred Treatment
Highest Priority: – List A Species- List B Species new to the WRRA. – Small Infestations of List B Species in Areas of Special Concern (Wilderness, ACECs, Habitat for Special Status Plants).	Eradication	Individual Plants or Small Groups.	Manual Treatment.
		Infestations near Special Status Plants.	
		Small Populations in areas w/ Substantial Desirable Species.	
		Small Populations in areas w/ Minimal Desirable Species.	

Table 4b
Preferred Methods of Treatment Given Priorities, Goals and Infestation Type - Alt C*

Priority	Goal	Infestation	Preferred Treatment
Second Priority: – Large Infestations of List B Species in Areas of Special Concern. – List B Species in areas w/ heavy use or where infestation is more likely to spread (heavy Recreational Use, heavy Livestock use, or concentrated use of Wintering Big Game.	Eradication, Control or Containment	Individual Plants or Small Groups.	Manual Treatment.
		Infestations near Special Status Plants.	
		Small Populations in areas w/ Substantial Desirable Species or Small Populations in areas w/ Substantial Desirable Species.	
		Large Infestations in areas w/ substantial desirable species or Large Infestations in areas w/ minimal desirable species.	Biological Treatment.
Third Priority: – List B Species in areas w/ light use or where infestation is less likely to spread (less Recreational Use, dispersed Livestock or use by Wintering Big Game. – List B Species in Riparian areas, Big Game winter range or Wildland-Urban Interfaces. – Small Infestations of List C Species.	Eradication, Control or Containment	Individual Plants or Small Groups.	Manual Treatment.
		Small Populations in areas w/ Substantial Desirable Species or Small Populations in areas w/ Minimal Desirable Species.	
		Large Infestations in areas w/ Substantial Desirable Species or Large Infestations in areas w/ Minimal Desirable Species.	Biological Treatment.
		Infestations of Tamarisk and/or Russian-Olive.	Manual Treatment, followed by re-vegetation and control of re-sprouting.
Lowest Priority: – Large Infestations of List C Species.	Control & Containment	Large Infestations of List C Species, including weeds dispersed throughout degraded Rangeland.	Biological Treatment (including Prescribed Grazing) & localized re-vegetation or area-wide interseeding to resist reinfestation.

**Information taken primarily from BLM 2007b.*

Alternative D – No Aerial Application of Herbicide: The IWMP implemented under this alternative would be similar to the Proposed Action regarding the herbicides approved for use, including the four newly approved herbicides diquat, diflufenzopyr, fluridone and imazapic. The preferred treatment methods for this alternative are summarized on Table 4c. The inability to use aerial applications would preclude treatment of up to 1000 acres per year of leafy spurge and other extensive weed infestations, as could be done under the Proposed Action. Thus, annual treatments would not exceed 4,000 acres per year.

As with Alternatives A and B, weed treatments near special status plants would be limited to the use of manual methods or direct application of herbicides, rather than broadcast spraying, to avoid the potential for drift or runoff into non-target areas.

Table 4c
Preferred Methods of Treatment Given Priorities, Goals & Infestation Type - Alt D*

Priority	Goal	Infestation	Preferred Treatment
Highest Priority: – List A Species – List B Species new to the WRFO WRRA. – Small Infestations of List B Species in Areas of Special Concern (Wilderness, ACECs, Habitat for Special Status Plants).	Eradication	Individual Plants or Small Groups.	Manual Treatment; Spot Application of Herbicide.
		Infestations near Special Status Plants.	
		Small Populations in areas w/ Substantial Desirable Species.	Non-Aerial chemical treatment w/ Selective Herbicide.
		Small Populations in areas w/ Minimal Desirable Species.	Non-Aerial chemical treatment w/ Selective Herbicide, followed by re-vegetation.
Second Priority: – Large Infestations of List B Species in Areas of Special Concern. – List B Species in areas w/ heavy use or where infestation is more likely to spread (heavy Recreational Use, heavy Livestock use, or concentrated use of Wintering Big Game.	Eradication, Control or Containment	Individual Plants or Small Groups.	Manual Treatment; Spot Application of Herbicide.
		Infestations near Special Status Plants.	
		Small Populations in areas w/ Substantial Desirable Species or Small Populations in areas w/ Substantial Desirable Species.	Non-Aerial Spot treatment w/ Selective Herbicide, or w/ Non-Selective Herbicide, followed by re-vegetation.
		Large Infestations in areas w/ substantial desirable species or Large Infestations in areas w/ minimal desirable species.	Non-Aerial chemical treatment w/ Selective Herbicide, or w/ Non-Selective Herbicide, followed by re-vegetation.
			Biological treatment, possibly w/ Selective Herbicide application along perimeters.
Third Priority: – List B Species in areas w/ light use or where infestation is less likely to spread (less Recreational Use, dispersed Livestock or use by Wintering Big Game. – List B Species in Riparian areas, Big Game winter range or Wildland-Urban Interfaces.	Eradication, Control or Containment	Individual Plants or Small Groups.	Manual Treatment; Spot Application of Herbicide.
		Small Populations in areas w/ Substantial Desirable Species or Small Populations in areas w/ Minimal Desirable Species.	Non-Aerial spot treatment w/ Selective Herbicide, or w/ Non-Selective Herbicide, followed by re-vegetation.
		Large Infestations in areas w/ Substantial Desirable Species or Large Infestations in areas w/ Minimal Desirable Species.	Non-Aerial spot treatment w/ Selective Herbicide, or w/ Non-Selective Herbicide, followed by re-vegetation.

Table 4c
Preferred Methods of Treatment Given Priorities, Goals & Infestation Type - Alt D*

Priority	Goal	Infestation	Preferred Treatment
– Small Infestations of List C Species.			Biological treatment, possibly w/ selective herbicide application along perimeters.
		Infestations of Tamarisk and/or Russian-Olive.	Manual Treatment, w/ Herbicide applied to stumps, followed by re-vegetation and control of re-sprouting.
Lowest Priority: – Large Infestations of List C Species.	Control & Containment	Large Infestations of List C Species, including weeds dispersed throughout degraded Rangeland.	Biological Treatment (including prescribed grazing), possibly w/ Selective Herbicide application along perimeters & localized re-vegetation or area-wide interseeding to resist reinfestation.

**Information taken primarily from BLM 2007b.*

The proposed IWMP would incorporate the BMPs for preventing weed infestations and SOPs and conservation measures for implementing weed treatments (see Appendices A, B, and C). These appendices were taken from PEIS and PER (BLM 2007a, b) and adapted to site-specific conditions in the WRRA. The proposed IWMP would also incorporate conservation measures developed during Section 7 Consultation with the USFWS (see Appendices E & F). Analysis of impacts and risks to humans and to non-target plants, fish, terrestrial wildlife and other resources or resource uses are presented in detail in the PEIS and summarized in the current programmatic EA prepared by the WRFO.

ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD: None

PURPOSE AND NEED FOR THE ACTION: This Environmental Assessment (EA) has been prepared to analyze and disclose the environmental consequences of implementing a programmatic Integrated Weed Management Plan (IWMP) proposed by the White Rive Field Office (WRFO). The EA tiers to the *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS) (BLM 2007a), which analyzed the impacts of using herbicides (chemical control methods) to treat noxious weeds and other invasive weeds on public lands. In addition, this EA incorporates by reference the *Vegetation Treatments on BLM Lands in 17 Western States Programmatic Environmental Report* (PER) (BLM 2007b), which evaluated the general effects of non-herbicide treatments (i.e., biological, physical, cultural, and prescribed fire) on public lands. The PEIS identifies impacts to the natural and human environment associated with herbicide use and appropriate best management practices (BMPs), standard operating procedures (SOPs), mitigation measures, and conservation measures for avoiding or minimizing adverse impacts. The PER describes the environmental impacts of using non-chemical vegetation treatments on public lands.

The proposed IWMP for the WRFO is needed to reduce the adverse impacts associated with an increase in noxious and invasive weeds on BLM-administered lands within the WRRA. The proposed IWMP also provides a mechanism for evaluating a range of treatment options, or combination of options, to eradicate or control weed populations. The plan would be implemented in accordance with Federal and State laws, regulations and policies and the White River Record of Decision and Approved Resource Management Plan (ROD/RMP).

LAND USE PLAN AND CONFORMANCE REVIEW:

Conformance with Related Federal and State Laws, Regulations and Policies

The WRFO has prepared this IWMP in compliance with Department of Interior (DOI) and BLM policy and manual direction, including DOI Manual 517 (*Integrated Pest Management*) and BLM Manual Section 9015 (*Integrated Weed Management*). The EA associated with this plan has been prepared in compliance with NEPA and in accordance with Council on Environmental Quality (CEQ) format requirements. The EA discloses the direct, indirect and cumulative impacts of the proposed IWMP and a reasonable range of alternatives, including no action (continuation of current management), and determines whether significant environmental impacts necessitating an environmental impact statement (EIS) would result from their implementation.

Several Federal laws, regulations and policies guide BLM management of public lands. *The Federal Land Policy and Management Act of 1976 (FLPMA)* directs the BLM to manage public lands "in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archaeological values." *The Carlson-Foley Act of 1968* and the *Plant Protection Act of 2000* authorize and direct the BLM to manage noxious weeds and to coordinate with other Federal and State agencies in activities to eradicate, suppress, control, prevent or retard the spread of any noxious weeds on Federal lands.

The Federal Noxious Weed Act of 1974 established and funded an undesirable plant management program, implemented cooperative agreements with state agencies and established integrated management systems to control undesirable plant species. *The Noxious Weed Act of 2004* established a program to provide assistance through states to eligible weed management entities to control or eradicate harmful and non-native weeds on public and private lands. *The Public Rangelands Improvement Act of 1978* requires the BLM to manage, maintain and improve the condition of the public rangelands so they become as productive as feasible. *Executive Order 13112, Invasive Species,* directs Federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological and human health impacts that invasive species cause (BLM 2007a). The President and Congress have directed the DOI and BLM, through implementation of the *National Fire and Healthy Forests Restoration Act of 2003,* to make more aggressive actions to reduce catastrophic wildfire risk on public lands. Actions should be taken to manage vegetation in a manner that provides for long-term economic sustainability of local communities by improving the health of the nation's forests and habitat for fish and wildlife (BLM 2007a).

The BLM has also produced national-level strategies for invasive prevention and management. These include *Partners Against Weeds* (BLM 1996a), which outlines the actions the BLM will take to develop and implement a comprehensive integrated weed management program, and *Pulling Together: National Strategy for Invasive Plant Management* (BLM 1998a), which illustrates the goals and objectives of a National invasive plant management plan (prevention, control and eradication). The Federal Interagency Committee for the Management of Noxious and Exotic Weeds is leading a national effort to develop and implement a *National Early Detection and Rapid Response System for Invasive Plants in the United States* (FICMNEW 2003). The primary long-term goals of the proposed systems are to detect report and identify suspected new species of invasive plants in the United States.

The Environmental Protection Agency (EPA) regulates pesticides (including herbicides) under the *Federal Insecticide, Fungicide, and Rodenticide Act of 1972* (FIFRA) as amended in 1988. This act establishes procedures for the registration, classification and regulation of all pesticides. Before any herbicide may be sold legally, it must be registered by the EPA. The EPA may classify a pesticide for general use if it determines that it is not likely to cause unreasonable adverse effects to applicators or the environment. A pesticide that is classified as restricted use must be applied by a certified applicator and in accordance with other restrictions.

Additional direction from the State of Colorado provided in the *Colorado Noxious Weed Act of 1996* (C.R.S. Title 35, Article 5.5), declares that certain undesirable plants constitute a threat to the "continuous economic and environmental value of lands of the state" and requires that these "noxious weeds" be managed on private and public lands. The Act further declares that control of noxious weeds should use methods that are least damaging to the environment but are also practicable and economically reasonable. In 1999, the Governor of Colorado issued *Executive Order D 006 99*, directing the development and implementation of noxious weed management programs.

The Colorado Pesticide Applicator's Act of 1990 implements FIFRA and requires certification and training for every commercial supervisor and applicator of a registered pesticide and requires commercial entities to maintain records of each pesticide application for 3 years. Additional direction comes from the *Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act* (8 CCR 1206-2), which contain statewide management plans for all List A and List B species (CDA 2003).

As required by Department of Interior (DOI) regulations (43 CFR 1610.5) and *BLM Manual Section 1617, Resource Management Plan Approval, Use, and Modification* (BLM 1984b), the Proposed Action and analyzed alternatives are subject to, and in conformance with, the current land use plan and amendments approved July 1, 1997.

The current land use plan is the White River Record of Decision and Approved Resource Management Plan (ROD/RMP).

Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS) (BLM 2007a)

As required by DOI regulations (43 CFR 1610.5) and *BLM Manual Section 1617, Resource Management Plan Approval, Use, and Modification* (BLM 1984b), the Proposed Action and analyzed alternatives are subject to and have been reviewed for conformance with, the current land use plan and amendments. (43 CFR 1610.5, BLM 1617.3):

AFFECTED ENVIRONMENT / ENVIRONMENTAL CONSEQUENCES / MITIGATION MEASURES

STANDARDS FOR PUBLIC LAND HEALTH: In January 1997, Colorado Bureau of Land Management (BLM) approved the Standards for Public Land Health. These standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. Because a standard exists for these five categories, a finding must be made for each of them in an environmental analysis. These findings are located in specific elements listed below:

NATURAL, BIOLOGICAL, AND CULTURAL RESOURCES

AIR QUALITY

Affected Environment: This Proposed Action is located in rural northwest Colorado mostly within the White River Basin. Industrial facilities in northwest Colorado include coal mines, soda ash mines, natural gas processing plants and power plants. Due to these industrial uses, increased population and oil and gas development in this region, emissions of air pollutants due to exhaust emissions and dust (particulate matter) are likely to increase into the future. The White River Field Office resource area (WRRA) has been classified as either attainment or unclassified for all air pollutants, and most of the area has been designated for the prevention of significant deterioration (PSD) class II for Dinosaur National Monument.

Environmental Consequences of Alternative A - Proposed Action: Alternative A would authorize the use of four new herbicides approved in the PEIS (BLM 2007a) and include a broad scope in weed treatment and control options associated with any resource management decisions under WRFO's current or future land use plans and plan amendments. The Proposed Action includes potential use of any of the 18 herbicide active ingredients approved in the PEIS, four of these – diquat, diflufenzopyr, fluridone and imazapic – had not previously been approved for use. The proposed action would also allow for manual and biological controls for weeds as appropriate and recommended in Table 4a.

Surface disturbing activities on public lands include oil and gas development, mining, livestock grazing, utility installations and other activities. Many times some or all of these activities will require reclamation of disturbed lands. Noxious and invasive weeds can reduce the success of reclamation efforts and may make undisturbed environments less stable. Bare ground and less stable areas may contribute to fugitive dust levels that can have local and regional implications.

Therefore as weed treatment and control activities are successful with this alternative impacts to fugitive dust production would be reduced and an indirect beneficial impact to air quality.

The potential impacts to air quality from the use of herbicides include the use of vehicles to apply the herbicide. Although each of the other methods of weed eradication and control include travel to the work site and may include equipment in some cases, herbicide will likely be applied using fixed wing aircraft and helicopters as wells as truck mounted and all terrain vehicle (ATV) mounted sprayers where the terrain or the treatment area allows. Depending on spraying conditions overspray is possible with most application rates, but impacts from this type of unintended application will not likely be a factor for air quality due to how local temporary the overspray would be. Herbicide applications will also result in volatilization of chemicals off the soil and plant surfaces; chemicals have different volatilization rates and humidity is a big factor. The herbicide imazapic does not volatilize in field applications, fluridone might volatilize slowly in wet soils and not at all in dry soils. The PEIS analysis predicted that herbicide application impacts would be minor for each alternative and volatilization of evaluated herbicides would not impact air quality (BLM, 2007a).

Environmental Consequences of Alternative B - No Action Alternative: The use of the four new herbicides would need to be authorized through location and project specific impact analysis. Impacts to air quality would be the same as under Alternative A.

Environmental Consequences of Alternative C – No Herbicide Use: No impacts from herbicide treatments would occur, however impacts from vehicles to achieve manual treatment methods would still occur.

Environmental Consequences of Alternative D – No Aerial Herbicide Application: This alternative would be less likely to result in the temporary and localized impacts that would occur due to over spraying herbicides and may reduce the minor impacts identified from volatilization of herbicides.

Mitigation: None

SOILS (includes a finding on Standard 1)

Affected Environment: Soils within the WRRA area have been mapped and analyzed by the Natural Resources Conservation Service (NRCS) in four separate Order III soil surveys. These include Rio Blanco County Area (1982), Moffat County Area (2001), Rifle Area (1984) and Douglas Plateau Area (2003).

The semi-arid climate found in the WRFO area has affected soil development. Lack of moisture, cool nights, and infrequent high temperatures suppress vegetation growth and slow the chemical and biological processes needed for good soil development. In addition, geologic erosion has progressed too rapidly for soils to develop distinct deep horizons.

The White River ROD/RMP (1997) identifies soils that are fragile within the resource area. These soils occur on slopes of greater than 35% and exhibit the following criteria:

1) Areas rated as highly or severely erodible by wind or water, as described by NRCS area soil survey reports or as described by on-site inspections. The erodibility of a soil is determined by texture, particle size, structure, cohesion, and the level of ground cover. The magnitude of erosive forces is determined by the quantity of surface runoff and its associated energy (related to precipitation and slope characteristics) as well as wind factors.

2) Areas with slopes >35%, if they have one of the following soil characteristics: (a) a surface texture that is sand, loamy sand, very fine sandy loam, fine sandy loam, silty clay, or clay; (b) a depth to bedrock that is <20 inches; c) an erosion condition that is rated as poor; and (d) a K (erosion potential) factor >0.32.

Typical of semi-arid areas, plant growth is limited because soil moisture is in short supply for at least part of each growing season. The ability of soil to hold moisture is at least as important as nutrient availability. Finer textured soils (loams and clay loams) are more effective at holding moisture than coarser textured soils (sandy loams, rocky sandy loams, and, very rocky sandy loams) and will also hold onto the water more tightly, making it unavailable for plant growth. Soils on steep slopes will generate more runoff than gently sloping soils. Water is not available for plant growth from sites having high runoff events while bottomland soils in concave areas derive additional moisture during periods of runoff. These bottomland areas tend to have deeper, more strongly developed horizons, are more heavily leached, and are often more productive than the side slopes or uplands since they receive relatively more effective precipitation. Badland areas are a worst-case example of fragile soils. They are steep, sparsely vegetated, shallow, high in salt concentrations, and often fine textured.

General impacts of weed treatments on soils: All four alternatives involve the removal of vegetation from the soil surface. As a result of the removal of vegetation, there is an increase in the potential of erosion of soils until vegetation is re-established on the site. Soil compaction as a result of domestic livestock or vehicle travel can also occur from weed treatment activities. Soil compaction could lead to an increase in runoff by reducing pore spaces used for water storage and air exchange. These impacts would generally last until the re-establishment of vegetation on the treated areas.

All alternatives involve some manual treatments, which would have less direct impact on soils than other proposed treatments. Workers and vehicles accessing the site could disturb topsoil and/or surface organic matter, increasing the opportunity for re-invasion by weedy species; however, the extent of this disturbance would be limited. Coarse-textured soils and steep slopes would be the most fragile. Some potential exists for contamination of the soil from petroleum products used in hand-held power equipment, but these effects would be extremely localized (BLM 2009).

Manual, hand-spraying, and ungulate bio-control weed treatments could further result in localized disturbance to biological (cryptogrammic) soil crusts, which could reduce soil quality and ecosystem productivity, increase susceptibility to erosion, encourage weed establishment,

and reduce water infiltration (Belnap et al. 2001). The duration of these effects would vary, but soil crust recovery rates typically are much slower than the recovery of vascular plants (BLM 2007b).

Over the long term, all treatments that remove invasive vegetation and restore native plants should enhance soil quality on public lands (BLM 2007a). For example, sites dominated by spotted knapweed display substantially higher surface runoff and stream sediment yield than sites dominated by native perennial grasses (Lacey et al. 1989). Cheatgrass dominance and associated fires also reduce biological soil crusts, which affect soil erosion, water infiltration, and nutrient cycling (Belnap et al. 2001 and BLM 2009).

All weed treatment alternatives would further benefit soil quality by reducing the risk of wildfire. Wildfires cause a loss of soil nutrients and the consumption of soil organic matter. Given the ability of severe wildfires to cover large areas, their impacts on soil quality could potentially be quite high (BLM 2009).

Environmental Consequences of Alternative A - Proposed Action: Under the proposed action, WRFO would be able to treat up 5,000 acres per year for noxious/invasive weeds and up to 1,000 acres would be from aerial herbicide application. This alternative would also allow the WRFO to use the four newly approved chemicals from the 2007 PEIS. This alternative would allow for the greatest number of acres to be treated with the most treatment options.

Since the proposed action has a higher number of chemicals to choose from, WRFO would be able to select an herbicide that best fits management goals with the least amount of impacts. Effects on non-target vegetation would be minimized and native vegetation ground cover would increase and stabilize soils more effectively than non-native species.

The Proposed Action could also affect soil physical, chemical, and/or biological properties. These changes could include changes in soil structure (e.g., decreased percentage of fines), porosity, salinity, cation exchange capacity, microfaunal diversity, or organic matter content. Whether such changes are beneficial or harmful would depend on the method of treatment, the soil type, and in some cases (e.g., tamarisk) the weed species being treated. For example, some herbicides are toxic to various soil organisms (BLM 2007b and BLM 2009). However, the large majority of soil impacts resulting from the Proposed Action are expected to be positive; these would include the return of more stable soils, attenuated nutrient cycling, and a return to normal fire cycles (BLM 2007a and BLM 2009).

Manual weed treatments are expected to have minimal impacts on soils due to the small areas treated. Manual treatments would require some disturbance to the soil surface and generally will not require seeding or any other significant re-vegetation practices. Application of SOP's and mitigation measures listed in appendix C and D would minimize soil disturbance and changes in soil chemical properties.

Environmental Consequences of Alternative B - No Action Alternative: Under the no action alternative, the four new herbicides approved in the 2007 PEIS would not be used in the WRRA. Two of the new chemicals (imazapic and diflufenzopyr) would be beneficial tools for

noxious weed management within the WRRA. There are also two chemicals that were previously approved for BLM use (Clopyralid and Tebuthiuron) that do not have site specific NEPA for use in the WRRA. This would further limit treatment options in the WRRA.

While short-term impacts from herbicide treatments would be less as a result of fewer chemicals, long-term impacts would be greater from fire, increased competition with native vegetation, and decreased soil stability as a result of increases in non-native/invasive annuals that do not have root structures capable of stabilizing soils.

Environmental Consequences of Alternative C – No Herbicide Use: The no herbicide use alternative would result in the fewest acres being treated of any alternative due to increased costs and labor involved with manual and biological controls. Many of the weeds that occur within in the WRFO are not effectively treated with manual and biological controls. Species like cheatgrass, Russian knapweed, and leafy spurge along with others would likely continue to increase without the use of herbicides. As a result, positive impacts to soils due to weed treatments would be dramatically reduced under this alternative.

Biological controls could be used on some species of noxious weeds, but they are only available for select species. Biological controls generally work slowly and do not eradicate species but generally weaken a species over time to limit their competitive advantage. As a result of the decrease in treated acres short-term impacts to soils would be limited, but long term impacts on soil erosion, soil chemical properties, and fire would be increased to an even greater degree than in alternative B.

Environmental Consequences of Alternative D – No Aerial Herbicide Application: Under alternative D, no aerial application of herbicides would occur within the WRRA. This would decrease the number of potential acres treated within the WRRA by 1,000 acres. Alternative D does allow for the use of the four newly approved herbicides, but without aerial application, using imazapic to treat large acres infested by cheatgrass would be limited. More weeds would be treated than in alternative C, but the ability to treat really large or rural infestations would also be decreased.

Treatment of weeds that would have otherwise been treated by aerial methods may still be treated to some extent using ground-based methods. The use of ground equipment would increase the amount of soil compaction and damage to soil crusts. However, there would be a decrease in effects to non-target species as a result of wind drift and the associated loss of vegetative cover that protects soils.

Mitigation: See appendices B, C, D for best management practices, standard operating procedures, and mitigation measures for herbicide application

Finding on the Public Land Health Standard for upland soils: Currently, certain areas within the WRRA are not meeting public land health standards for soil generally as a result of cheatgrass. Cheatgrass is an annual species that does not have root structures capable of stabilizing soils. Using appropriate SOP's and mitigation measures set-forth in this EA should result in no further negative impacts to plant and animal communities and the use of herbicides

such as imazapic on cheatgrass could in the long-term enhance the ability of soils to meet public land health standards.

WASTES, HAZARDOUS OR SOLID

Affected Environment: The Resource Conservation and Recovery Act of 1976 and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 are laws that regulate hazardous waste that endangers public health or the environment. The alternatives propose the use of herbicides, some of which may not be applied, may become outdated, and may require disposal in Class I dumps. Every effort is made to avoid this action. Empty containers will be triple rinsed and disposed of in approved dumps.

Environmental Consequences of Alternative A - Proposed Action: The storage and transportation of herbicides could result in spills, however proper handling and a commitment to contain and cleanup any spills immediately is likely to minimize this risk to human health. The WRFO has a storage containment facility for herbicides that is specifically designed to remove the risk during storage. Transportation and use of all herbicides will be according to the manufactures specifications and the PEIS standard practices. The use of herbicides by workers and members of the public living or engaging in activities near treatment areas may along with other sources of chemical contaminants increase susceptibility and/or risk to combined impacts from applied herbicides and other pesticides and herbicides. Overspray or direct contact with herbicides may result in human health impacts depending on the chemicals used. Standard operating procedures are likely to reduce these risks for normal use and eliminate some of the possibilities of unintentional exposures.

The PEIS conducted a human health and risk assessment that looked at the cumulative and aggregate risk from all potential exposure pathways for different receptors. Fluridone and imazapic do not pose a risk to occupational or public receptors when applied at the typical application rate and there is a low risk at the maximum application rate. The aquatic herbicides of diquat and diflufenzopyr may pose a low or moderate risk for normal uses; however diquat can cause a high risk to occupational receptors under an accidental release scenario and potential risk to humans under various exposure pathways.

Of the four new herbicides, three of the four (all but diquat) appear to be relatively harmless to human health. It is recommended in the PEIS that diquat be used in very limited scenarios at the typical application rate (BLM, 2007a, Alternative B, page 4-195). This alternative would have the greatest overall risk to human health due to the use of diquat.

Environmental Consequences of Alternative B - No Action Alternative: None of the new chemicals including diquat would be approved for use. Site and project specific NEPA could still be allowed for the use of these chemicals.

Environmental Consequences of Alternative C – No Herbicide Use: This alternative would eliminate human health impacts due to herbicide applications on public lands.

Environmental Consequences of Alternative D – No Aerial Herbicide Application: Overall impacts would likely be similar to Alternative A.

Mitigation: Do not use diquat if there is another treatment or control method available. Only use diquat in very limited scenarios such as when only this herbicide would work, with very targeted populations, and at only the typical application rate.

WATER QUALITY, SURFACE AND GROUND (includes a finding on Standard 5)

Affected Environment: A small portion of the WRRA is outside the White River Basin on the Northern and Southern edge of the boundaries. Most of the southern area outside of the White River Basin drains into the Lower Colorado River and the portions in the northern part of the area outside WRRA drains into the Yampa River. The White River drains into the Green River and then the Colorado River. Major perennial tributaries to the White River include the North and South Forks of the White River, Flag Creek, Piceance Creek, Yellow Creek, and Douglas Creek. There are also a lot of intermittent to ephemeral systems that drain much of the WRRA. Stock ponds are located throughout the WRRA and there is an instream reservoir on the White River just to the east of the town of Rangely. Shallow groundwater mostly occurs in riparian areas adjacent to perennial and intermittent streams. There are also numerous springs that occur and are important sources of surface water, most of these springs are contact springs are especially prevalent in relation to outcrops of the Parachute Group of the Green River formation.

Environmental Consequences of Alternative A - Proposed Action: Proposed herbicide treatments would have the potential to adversely impact water resources. Standard operating procedures for Water Resources would be followed as listed on page 4-25 of the PEIS. Also individual chemical requirements will be adopted from the PEIS. Site specific planning would consider climate, soil type, shallow groundwater, surface waters, and vegetation type when developing herbicide treatment programs. Chemicals that could be used in riparian and aquatic habitats are 2, 4-D, glyphosate, imazapyr, and triclopyr, diquat and fluridone, the rest of the chemicals are designed to be used on terrestrial sites. The new chemicals considered in this analysis are diquat, diflufenzopyr, fluridone and imazapic.

If aquatic plants are treated directly, water quality may be impacted by rapid decomposition of treated plants and potential destabilizing soils until they are colonized with native vegetation. Water quality changes due to decomposition of treated plants are more likely in small isolated water bodies, where soil destabilization is likely to result in adverse impacts if it occurs in riparian areas adjacent to flowing water.

Runoff and leaching would occur during herbicide application depending on the type of treatment, storm-flow events and soil properties. To result in impacts from leaching or runoff herbicides need to be relatively persistent. Misapplication and spills may also result in greater runoff and/or leaching when they occur.

Diquat is ineffective in turbid waters and must be adsorbed to solid surfaces on plants to be effective. Aquatic half-lives of 1-2 days have been reported as a result of sorption onto particulates and sediments (BLM, 2007a). This chemical has a moderate potential to leash into the groundwater and a high potential to be transported in surface water runoff.

Fluridone can be applied to ponds, lakes and reservoirs, but has limited use in flowing water since it works by maintaining contact for over several weeks. Fluridone degrades due to photolysis and has limited volatilization in an aquatic application. Fluridone has a low potential to leach to groundwater and as a moderate potential to be transported in groundwater.

The terrestrial use of diflufenzopyr and imazapic could result in temporary leaching and/or runoff impacts. The half-life for diflufenzopyr in water can be 20 to 26 days depending on the dissolved oxygen content of the water, where imazapic is 1 to 2 days. Since photolysis and biodegradation can be important processes to degrade these herbicides if the herbicide is in groundwater the persistence would increase. Little is known about imazapic occurrence, fate or persistence (BLM, 1997a)

Environmental Consequences of Alternative B - No Action Alternative: The use of triclopyr, diquat and fluridone would only occur under area and project specific projects and other chemicals are more likely to continue to be used in place of these three chemicals that may not be as effective. The proliferation invasive vegetation in and adjacent to surface waters may degrade water quality directly and may also degrade aquatic habitats indirectly by crowding out native plants.

Environmental Consequences of Alternative C – No Herbicide Use: Assuming weed treatments would be predominantly manual treatments in and around water bodies under this alternative and combined manual and herbicide treatments would not be allowed. It is likely that adverse impacts from vehicles use in treatment areas would increase due to the higher frequency of treatments that would be necessary to be effective and limiting the use of herbicide treatments. For example, a typical treatment for tamarisk is to cut the plant down to the stump and apply a topical herbicide to impede growth from the stump. If the herbicide treatment is not allowed the tamarisk would need to be mechanically treated every few years instead of potential just once with some clean-up later.

Environmental Consequences of Alternative D – No Aerial Herbicide Application: Aerial herbicide application may result in a greater chance of direct application to surface waters due to the larger treatment areas and drift.

Mitigation: No additional mitigation is identified for the proposed action other than the need for providing area and project specific information to be provided in the pesticide use proposal (PUP) and/or documentation of NEPA adequacy (DNA) for the project. These area and project specific herbicide treatment plans should consider climate, soil type, shallow groundwater, surface waters, and vegetation type during the development of application techniques according to Standard Operating Procedures in the PEIS and chemical specific recommendations.

Finding on the Public Land Health Standard for water quality: No impacts beyond what are described in the PEIS are expected and no impacts have been identified that would likely change or exceed water quality classifications in the WRRA.

WETLANDS AND RIPARIAN ZONES (includes a finding on Standard 2)

Affected Environment: The WRRA contains a number of riparian zones. Appendix G shows the high priority riparian habitats, Functioning Condition, acres and ecological condition. Twenty eight riparian areas are identified containing 719 acres of riparian habitat.

Riparian communities are particularly vulnerable to colonization and spread of noxious weeds and other invasive species. Riparian areas typically attract a variety of uses such as recreation, wildlife, and livestock grazing. All of these uses can cause disturbance to native vegetation and introduce the seeds of noxious weeds. Once noxious weeds are established in riparian areas, their seeds can be easily transported by water, resulting in spread to new areas. Prevalent riparian weeds in the WRRA include Russian knapweed, Canada thistle, and houndstongue.

General Effects: Effects to riparian vegetation will be similar to those effects on upland vegetation. Herbicide use has the potential to negatively affect non-target species through off-site drift, run-off, and accidental spills or direct spraying. Herbicides that come into contact with non-target plants could cause mortality, reduced plant vigor, reduced reproductive output, and abnormal growth. The risk of off-site drift increases with smaller buffer zones or based on application height (boom truck vs. aerial). Application rate also plays a role in affects to non-target species.

Biological controls could affect non-target plant species from either grazing/browsing or trampling. Domesticated livestock generally choose vegetation that is more palatable which could change species composition over time. Trampling could also lead to a breakdown in soil crusts and increased erosion due to a loss of vegetative cover. Biological controls such as insects and pathogens do not generally affect non-target species because they are host specific. Some insects and pathogens have been known to attack non-target species, but all insects and pathogens used by WRFO will be tested to make sure they are host specific prior to release.

Manual methods generally have little to no effect on non-target species. Manual operations generally target specific plants therefore disturbance to non-target plants is rare. Soil disturbance from the removal of weeds or from trampling could occur as a result of manual weed removal. Soil disturbance from the re-vegetation of treated areas could also occur and create a pathway for more weeds to establish if re-vegetation efforts are not successful.

All weed removal strategies could impact plant composition. Successful removal of weeds would reduce competition with native species allowing for more native plant growth and reproduction. Severely degraded riparian communities could be greatly improved through weed control efforts. These areas are generally dominated by salt cedar and Russian olive along with other noxious weeds that do not meet Colorado standards for public land health. Healthy riparian communities generally consist of an appropriate mix of native or desirable introduced

species, diverse vegetation age-class, and plant species that indicate the maintenance of riparian moisture characteristics.

Environmental Consequences of Alternative A - Proposed Action: The proposed action would approve the treatment of 5,000 acres annually along with the use of the 18 herbicides approved in the 2007 PEIS. Alternative A is intended to gradually reduce existing infestations as well as more effectively control new infestations that may arise. However, the additional acreage treated aerially would generally not include riparian or wetland areas due to the risk of drift onto non-target tree and shrub canopies or into associated aquatic sites. Treatment methods under the Proposed Action would include the following:

Manual Treatment: Hand treatments would remove the overstory and would cause little soil disturbance or erosion. In most cases, unwanted vegetation near a wetland or riparian area could be removed without disturbing more desirable species. Manual treatments, which tend to be more selective and involve smaller treatment areas than other methods, would be less likely to affect wetland and riparian areas than the other methods.

Biological Treatment: Biological controls would include the use of domestic livestock to graze on noxious weeds. Livestock effects on riparian systems would depend on time, duration, and intensity of grazing. Potential effects to riparian areas as a result of grazing stream channel/wetland morphology alteration, and loss of native wetland or riparian vegetation.

Improper grazing management can have a considerable effect on vegetation vigor and biomass, and species diversity. The potential loss of vegetation as a function of improper grazing management can lead to further loss of aquatic habitat as channels widen and water depths become shallower.

Biological treatments would also involve the release of organisms intended to weaken or kill vegetation. Vegetation would remain in place, resulting in little soil disturbance in the treatment area. If treated successfully, the plant community near or within the wetland or riparian area should improve. Insects have been used effectively for biological control. For example, *Diorhabda elongata deserticola*, a leaf beetle from central Asia, has been used as a biological control agent for salt-cedar. This insect can defoliate large areas of salt-cedar. The use of Weevils on spotted knapweed will also be used to limit seed production and limit nutrient uptake of plants. These insects are useful to manage large infestations that are hard to access using other ground based alternatives.

Environmental Consequences of Alternative B - No Action Alternative: The no action alternative would not allow the WRFO to use the four new herbicides approved in the 2007 PEIS. These herbicides include Diquat and Fluridone which are approved for aquatic use. Imazapic would also not be used and is a useful tool for managing cheatgrass.

Environmental Consequences of Alternative C – No Herbicide Use: Under the no herbicide use alternative, treatments in riparian areas would be limited to manual and biological controls. The use of *Diorhabda elongata deserticola*, a leaf beetle from central Asia, has been

used as a biological control agent for salt-cedar, but there are currently no biological controls for Russian-Olive (*Elaeagnus angustifolia*) along with other riparian weeds.

Manual treatments would also not be effective on many riparian species because they re-sprout from rhizomes or roots (Canada thistle, Russian-olive, and Tamarisk). Without the use of herbicides, management of noxious weeds within riparian areas would likely continue to spread.

Environmental Consequences of Alternative D – No Aerial Herbicide Application: Alternative D is similar to Alternative A in that it would allow use of the four newly approved herbicides, including imazapic for cheatgrass and fluridone for aquatic weeds, but differs by not allowing aerial application. However, most riparian areas would be treated using ground methods under Alternative A to avoid direct spray onto tree and shrub canopies or associated aquatic sites. Although inadvertent drift onto riparian vegetation could occur under Alternative A due to drift from aerial applications in nearby upland areas, the protective SOPs and mitigation measures listed in Appendices C and D would minimize that risk. WRFO's inability under this alternative to aerially treat infestations that are too large, remote, or rugged for ground methods would increase the potential for continued invasion of riparian corridors by weeds. This could require treatment of riparian areas that previously did not contain significant weeds or retreatment of riparian areas from which weeds had previously been eradicated.

Mitigation: SOP's (Appendix C) and Mitigation Measures (Appendix D) shall be followed to minimize impacts to riparian areas.

Finding on the Public Land Health Standard for riparian systems: Using appropriate SOP's and mitigation measures set-forth in this EA should result in no negative impacts to riparian area and in the long-term enhance the ability of riparian areas to meet public land health standards.

VEGETATION (includes a finding on Standard 3)

Affected Environment: The WRRA comprises fourteen vegetation community types outlined in table 5 below. Pinyon-Juniper (*Pinus edulus, Juniperus osteosperma, J. scopulorum*) woodlands are the dominate vegetation type occupying approximately 46% of the resource area. The understory of pinyon-juniper woodlands generally consist of big sagebrush (*Artemisia spp.*), rabbit brush (*Chrysothamnus spp.*), mountain mahogany (*Cercocarpus montanus*), and antelope bitterbrush (*Purshia tridentata*). Depending on substrate, aspect, and elevation, associated grasses consist of bluebunch wheatgrass (*Pseudoroegneria spicata*), galleta grass (*Pleuraphis jamesii*), Indian ricegrass (*Achnatherum hymenoides*), needle-and-thread (*Hesperostipa comata*), salina wildrye (*Leymus salinus*), and the native bluegrasses *Poa secunda* and *P. fendleriana*.

Sagebrush shrublands make up approximately 21% of the resource area and includes basin big sagebrush (*A. tridentate* ssp. *tridentata*), Wyoming sagebrush (*Artemisia t.*ssp. *wyomingensis*), mountain big sagebrush (*A. t.* var. *pauciflora*). Associated native perennial grasses commonly include galleta grass, Indian ricegrass, western wheatgrass (*Pascopyrum smithii*), prairie

junegrass (*Koeleria macrantha)*, needle and thread (*Hesperostipa comate*) and bottlebrush squirreltail (*Elymus elymoides*).

Table 5 Plant Community Breakdown in the WRFO*

Community Type	Acres	% of WRRA
UPLAND SHRUB AND GRASSLANDS		
Grassland	74,577	5.1%
Sagebrush	307,066	21.1%
Mountain Shrub	161,799	11.1%
Greasewood	5,324	0.4%
Salt desert shrub	63,700	4.4%
RIPARIAN WOODLAND AND SHRUBLANDS		
Riparian/wetland	968	0.1%
UPLAND FOREST AND WOODLANDS		
Pinyon/Juniper	670,340	46.1%
Aspen	7,377	0.5%
Douglas-fir	24,125	1.7%
Spruce-fir	6,452	0.4%
Lodgepole	738	0.1%
BARREN LANDS		
Barren Land	67,652	4.7%
Rock Outcrop	54,688	3.8%
Surface water/unknown	9,199	0.6%

*Taken from the 1997 White River Field Office Resource Management Plan (RMP)

Mountain shrub vegetation is a major component of the middle elevations of the WRFO. These shrublands include a mixture of serviceberry (*Amelanchier alnifolia*), snowberry *Symphoricarpos* spp.), Gambel oak (*Quercus gambelii*), chokecherry (*Prunus virginiana*), squaw apple (*Peraphyllum ramosissimum*), mountain-mahogany, and antelope bitterbrush. These communities are generally located between the lower elevation pinyon-juniper woodlands and the higher elevation aspen and mixed conifer communities.

Coniferous forests (Douglas-fir, Spruce-fire, and Lodgepole) generally occur at higher elevations within the resource area. Depending on aspect, elevation, and substrate, the following species may be present: Douglas-fir (*Pseudotsuga menziesii*), Engelmann spruce (*Picea engelmanii*), subalpine fir (*Abies lasiocarpa*), and limber pine (*Pinus flexilis*)—the last species only on exposed, windswept ridges. Aspen woodlands are often times mixed in with coniferous forests or big sagebrush often times along drainages or other areas with higher moisture. Aspen woodlands have understories that consist of Mountain Brome (*Bromus marginatus*), slender wheatgrass (*Elymus trachycaulus*), snowberry (*Symphoricarpos albus*), serviceberry

(*Amelanchier alnifolia*), Colorado blue wildrye (*Elymus glaucus*), chokecherry (*Prunus virginiana*), and elk sedge (*Carex geyeri*).

Grasslands consist of perennial grasses, native perennial forbs as well as low growing shrubs. At low to middle elevations, needle-and-thread grass, bluebunch wheatgrass, and western wheatgrass (*Pascopyrum smithii*) are often dominant. At higher elevations, subalpine grasslands are dominated by Thurber's fescue (*Festuca thurberi*), Columbia needlegrass (*Achnatherum nelsonii*), and Letterman's needlegrass (*A. lettermanii*).

Salt-desert shrublands occur in the lower elevations of the western portion of the WRFO, at elevations below 6,000 feet and on saline soils. These areas are dominated by saltbushes such as shadscale (*Atriplex confertifolia*), fourwing saltbush (*A. canescens*), and Gardner's saltbush (*A. gardneri*). Other common shrubs include greasewood (*Sarcobatus vermiculatus*), Wyoming big sagebrush, and rabbitbrush. Prevalent grasses include galleta (*Pleuraphis jamesii*) and bottlebrush squirreltail (*Elymus elymoides*).

Riparian communities are generally located along perennial streams and rivers as well as along intermittent streams, ponds, spring, and seeps. Dominant riparian species may include narrowleaf cottonwood (*Populus angustifolia*), plains cottonwood (*P. deltoides*), boxelder (*Negundo aceroides*), willows (*Salix* spp.), sedges (*Carex* spp.), rushes (*Juncus* spp.), and a variety of riparian forbs. Associated species commonly include quaking aspen and blue spruce (*Picea pungens*). Shrubs in addition to willow species may include water birch (*Betula occidentalis*), thinleaf alder (*Alnus tenuifolia*), chokecherry, hawthorns (*Crataegus* spp.), redtwig dogwood (*Cornus sericea*), and silver buffaloberry (*Shepherdia argentea*).

Unvegetated areas of the resource area include barren lands, rock outcrops, or talus/scree slopes. Typically steep slopes, aspect, and soil conditions are the factors that keep vegetation from establishing in these areas.

Some vegetative communities are more susceptible to weed invasion than others. Salt desert shrublands as well as some sagebrush vegetation communities on the western portion of the WRFO have understories that are highly degraded and infested with cheatgrass and other early seral annuals generally as a result of past or in some cases current grazing management. Ground disturbing activities in any vegetation community have the potential to create a pathway for non-native/noxious weed species to establish.

General Effects: Herbicide use has the potential to negatively affect non-target species through off-site drift, run-off, and accidental spills or direct spraying. Herbicides that come into contact with non-target plants could cause mortality, reduced plant vigor, reduced reproductive output, and abnormal growth. The risk of off-site drift increases with smaller buffer zones or based on application height (boom truck vs. aerial). Application rate also plays a role in affects to non-target species.

Biological controls could affect non-target plant species from either grazing/browsing or trampling. Domesticated livestock generally chooses vegetation that is more palatable which could change species composition over time. Trampling could also lead to a breakdown in soil

crusts and increased erosion due to a loss of vegetative cover. Biological controls such as insects and pathogens do not generally affect non-target species because they are host specific. Some insects and pathogens have been known to attack non-target species, but all insects and pathogens used by WRFO will be tested to make sure they are host specific prior to release.

Manual methods generally have little to no effect on non-target species. Manual operations generally target specific plants therefore disturbance to non-target plants is rare. Soil disturbance from the removal of weeds or from trampling could occur as a result of manual weed removal. Soil disturbance from the re-vegetation of treated areas could also occur creating a pathway for more weeds to establish if re-vegetation efforts are not successful.

All weed removal strategies could impact plant composition. Successful removal of weeds would reduce competition with native species allowing for more native plant growth and reproduction. Severely degraded vegetation communities like that which occur on the western portion of the WRFO could be greatly improved through weed control efforts. These areas are generally dominated by cheatgrass and other early seral annual species that do not meet Colorado standards for public land health. Healthy plant communities generally consist of a healthy plant community of native species, diverse age-class, and spatial distribution across the landscape with a density and frequency to ensure healthy reproduction.

Environmental Consequences of the Proposed Action: This alternative would result in up to 5,000 acres being treated in the WRRA with up 1,000 acres being treated aerially. Four new herbicides approved in the 2007 PEIS would also be authorized under this alternative. This alternative would have some impact on non-target vegetation due to the large number of acres that could be treated and there would be an increased risk of off-site drift as a result of aerial application.

Successful removal/control of noxious weeds would result in healthier vegetative communities with increased plant vigor, cover, and reproduction. Healthy vegetative communities comprised of high species diversity, mixed age class structures, and appropriate plant litter accumulates across the landscape will improve grazing for both wildlife and livestock as well as improve soil stability.

Impacts from herbicide exposure to non-target plants would not be substantially different than under the other alternatives. The WRFO would design herbicide treatments to avoid substantial risks to non-target plants through the use of protective SOPs and mitigation measures (Appendices C and D).

Environmental Consequences of the No Action Alternative: This alternative would not be substantially different than the proposed action. Currently WRFO utilizes manual, biological and herbicide treatments to manage noxious weeds in the WRRA. Under this alternative however, WRFO would not be able to utilize the four new herbicides approved in the 2007 PEIS. Among these herbicides is imazapic which has been shown to be effective at treating cheatgrass and other annual invasive species.

Overdrive would also not be authorized for use in the WRRA. Overdrive (Dicamba+ Diflufenzopyr) has been shown to be effective at treating broad-leaf noxious weeds that occur in the resource area.

Negative impacts to vegetation would be lower than under the Proposed Action because of the fewer acres treated. Conversely, long-term benefits to plant communities would be less under this alternative. Noxious and invasive weeds would continue to spread, increasing damage to native plant communities and inhibiting ecosystem functions.

Environmental Consequences of No Herbicide Use: This alternative would avoid the risks of adverse impacts to non-target plants from herbicide use. Although non-target species could still be affected by manual and biological controls, the negative impacts to non-target plants would likely be less severe and much more limited. Positive benefits to the ecosystem may be less than under the Proposed Action because herbicide use is the only effective treatment for many noxious weeds in the WRRA and treatment with manual or biological controls may be impracticable due to cost, time, and accessibility. Weeds would increase at a faster rate under this alternative, outcompeting desirable species for resources and degrading native plant communities to a much greater extent than under the other alternatives.

Environmental Consequences of No Aerial Herbicide Application: This alternative is the same as the proposed action but would exclude the use of aerial application. This alternative would reduce impacts to non-target vegetation due to off-site drift from the aircraft. However this alternative would reduce the number of treated acres. Aerial application of herbicides is often the most cost-effective and efficient method to treat rural or large infestations that are not feasible to treat using ground-based methods.

Mitigation: Under all alternatives, the WRFO would follow SOPs presented in the ROD of the PEIS (Appendix C) to ensure that risks to human health and the environment from weed treatments are kept to a minimum. In addition, the WRFO would implement measures to mitigate potential adverse environmental effects as a result of weed treatments (Appendix D).

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Wildlife, Aquatic and Wildlife, Terrestrial): Currently, certain areas within the WRRA are not meeting public land health standards generally as a result of cheatgrass. Using appropriate SOP's and mitigation measures set-forth in this EA should result in no further negative impacts to plant and animal communities and the use of herbicides such as imazapic on cheatgrass could in the long-term enhance the ability of vegetative communities to meet public land health standards.

INVASIVE, NON-NATIVE SPECIES

Affected Environment: Colorado noxious weeds known to occur within the WRRA are noted in table 1 along with known locations of infestation. The three categories (A, B, and C) indicated in Table 1 correspond to three lists of species as classified by the State of Colorado. The three lists are based on the following management objectives: List A – designated for

statewide eradication; List B – managed for containment; and List C –not designated for control because of wide distribution.

There are many other invasive, non-native plants known to occur in the WRRA – for example, Russian thistle (*Salsola* spp.), kochia (*Kochia* spp.), and annual mustards. These species are controlled by oil and gas operators and other project proponents in conjunction with their ground-disturbing activities and subsequent reclamation but are not actively controlled outside these situations.

Of the 14 classified vegetative communities in the WRRA (See table 5 in the vegetation section) some communities are more likely than others to contain infestations of noxious weeds. The west end of the resource area along red wash, wolf creek, the Rangely basin, and Mellen hill have been seriously degraded by widespread infestations of cheatgrass and other non-natives due to historic, and in some cases current livestock grazing. Other infestations of noxious weeds occur throughout the resource area and are likely caused by oil and gas development, OHV use, livestock grazing, and other types of surface disturbing activities.

In general, vegetation treatments have the potential to affect most plant species in much the same way: All are intended to cause mortality or injury to target plants, which may vary in intensity and extent. Herbicides offer an effective and often resource-efficient means of treating and managing undesirable vegetation. Manual methods are often more time and labor intensive, and can create soil disturbance which can lead to additional weed establishment. Biological control provides an affordable method to control larger weed infestations that are not cost-effectively or feasibly controlled by other methods. However, biological control by domestic animals could introduce weed disseminules (seeds or fruits) to a site, attached to an animal's fur or deposited in its feces.

Eradicating and/or controlling weed infestations benefits native plant communities by decreasing the growth, seed production, and vigor of undesirable species, will thereby releasing native species from much of this competition. However, if too little vegetation remains following treatment, other weeds may invade the area. To minimize this potential, areas with a minor component of desirable species or that must be treated with a non-selective herbicide to control the targeted species may be re-vegetated following treatment. Seeding or interseeding these types of areas can hasten the establishment of desirable native species and help prevent colonization by weeds. Revegetation can also disturb the soil and create conditions favorable for weeds if the seeded species do not become established. Monitoring of re-vegetated areas is critical to ensure that the area is recovering as intended or, if not, provide a basis for additional weed control and/or seeding.

General Impacts of Weed Treatments: In general, all weed treatments are intended to cause injury and/or mortality to vegetation. Chemical treatments offer an effective and resource efficient means of controlling weed species. The use of non-selective herbicides or broadcast spraying can result in effects to non-target vegetation. Manual treatment methods are often times effective especially in areas where you want to minimize effects to non-target vegetation. However, manual treatments are generally more labor and time intensive than other treatment options. Biological controls provide a cost-effective method for treating large infestations of

weeds that would not be effectively treated using other methods. The use of domesticated livestock as a biological control does have the potential to introduce weed disseminules to a site that are attached to an animal's fur or deposited in the animal feces.

Eradicating and/or controlling weed infestations benefits native plant communities by decreasing the growth, seed production, and vigor of undesirable species releasing native vegetation from competition. However, if too little vegetation remains following treatment, other weeds may invade the area. To minimize this potential, areas with a minor component of desirable species or that must be treated be re-vegetated following treatment if necessary. Seeding or interseeding these types of areas can hasten the establishment of desirable native species and help prevent colonization by weeds.

Revegetation techniques can also disturb soils and create favorable conditions for weed establishment if seeded species do not establish. Re-vegetated areas will be monitored to ensure the area is recovering as intended or, if not, provide a basis for additional weed control and/or seeding.

Environmental Consequences of the Proposed Action: Under the proposed action, the WRFO would be allowed to treat approximately 5,000 weed infested acres per year using chemical, manual and biological controls. Up to 1,000 acres would be treated using aerial herbicide application. The WRFO would be authorized to use continue the use of 14 herbicides approved in the 1991vegetation EIS as well as four newly approved active ingredients in the 2007 PEIS (See appendix A for a complete list of approved active ingredients).

The proposed action would also allow the WRFO to treat weeds aerially. Aerial treatments are a cost effective way to treat large infestation in remote/rugged terrain that is unfeasible to treat by ground methods. The use of biological controls would also be authorized when necessary to aid in weed management.

The proposed action provides the most comprehensive plan for managing noxious weeds by the WRFO. This plan will allow for early detection and rapid response to new weed infestations, as well as a full range a treatment options for existing weed infestation. Overall, this IWMP provides a coordinated active approach to weed management for the WRFO.

Environmental Consequences of the No Action Alternative (Continuation of Current *Management):* Under this alternative, the WRFO would not be authorized to use the four new herbicides approved in the 2007 PEIS. This would include Imazapic and Overdrive. Imazapic is an effective tool for the management non-native annual species such as cheatgrass (*Bromus tectorum*) as well as other broad-leaf weed species. Overdrive (diflufenzopyr + diquat) has been shown to be effective at treating a variety of broad-leaf weed species that occur within the WRRA.

The WRFO also lacks site-specific NEPA analysis for many other active ingredients such as clopyralid and tebuthiuron. Under the no action alternative, treatment options would be limited in the WRRA.

Environmental Consequences of No Herbicide Use: This alternative would result in the least acres treated annually of any alternative because of the increased labor, time, and cost associated with manual and biological control options. Noxious weeds would spread at a faster rate than under other alternatives. Many of the noxious weeds in the WRRA, such as cheatgrass, are effectively controlled only with herbicides. Manual treatments would be practicable only for small weed populations or individual plants due to limited resources. Some perennial weeds such as Russian knapweed and Canada thistle could actually increase following manual treatment due to growth of new plants from rhizomes and root fragments left in the soil. Manual treatment of Russian-olive and tamarisk would also be relatively ineffective without chemical treatment to kill the stump and roots and to prevent re-sprouting. Biological controls could be used to treat infestations too large for manual control. However, few biocontrols agents are currently available, and these generally work slowly by weakening the target species, thereby reducing its competitiveness over time rather than eradicating it.

Environmental Consequences of No Aerial Herbicide Application: Aerial herbicide application allows for the treatment of large and/or remote weed infestations. Currently, WRFO is involved with multiple projects that involve aerial application of herbicides. Leafy Spurge (*Euphorbia esula*) is a high priority weed species that occurs within the WRRA. Currently, the WRFO participates in a cooperative project with Rio Blanco County, the Colorado Division of Wildlife (CDOW) and multiple private land owners to aerially treat large infestations of leafy spurge aerially. The WRFO also does aerial herbicide treatments while performing burned area rehabilitation projects as well as multiple cheatgrass projects within the WRRA.

Under the no aerial herbicide application alternative, the WRFO would no longer be able to participate in such projects. These projects have been effective at controlling the spread of noxious weeds and aiding in successful wildfire rehabilitation. Without the use of aerial herbicide application, only smaller infestations accessible to ground crews would be treated. This would allow cheatgrass and leafy spurge to expand in the WRFO.

Mitigation: See appendices C and D for standard operating procedure and mitigation measures associated with invasive/non-native weeds.

SPECIAL STATUS PLANT SPECIES (Includes a finding on Land Health Standard 4)

Affected Environment: The WRFO provides habitats for two Threatened plant species listed under the Endangered Species Act. The Field Office also provides habitats for one Candidate plant species, and twelve BLM Sensitive plant species. Collectively these species are referred to as special status plant species. (Table 6) One additional Threatened species, Ute ladies'-tresses is known from Dinosaur National Monument. It has not been found on BLM lands, although habitats have been suspected to occur in the WRRA. The majority of WRFO special status plant species are badland or rock outcrop soil associates, and the majority are considered "oil shale endemics" or edaphic (soil-related) endemic species.

Table 6 WRFO Special Status Plant Species

Common Name	Scientific Name	Status
Dudley Bluffs bladderpod	Physaria congesta	Threatened

Table 6 WRFO Special Status Plant Species

Common Name	Scientific Name	Status
Dudley Bluffs twinpod	Physaria obcordata	Threatened
Ute Ladies'-tresses	Spiranthes diluvialis	Threatened
White River beardtongue	Penstemon scariosus var. albifluvis	Candidate
Narrow-stem gilia	Aliciella stenothrysa	BLM Sensitive
Duchesne milkvetch	Astragalus duchesnensis	BLM Sensitive
Debris milkvetch	Astragalus detritalis	BLM Sensitive
Tufted cryptanth	Cryptantha caespitosa	BLM Sensitive
Rollins' cryptanth	Cryptantha rollinsii	BLM Sensitive
Ephedra buckwheat	Eriogonum ephedroides	BLM Sensitive
Cathedral Bluffs dwarf gentian	Gentianella tortuosa	BLM Sensitive
Piceance bladderpod	Lesquerella parviflora	BLM Sensitive
Flaming Gorge evening primrose	Oenothera acutissima	BLM Sensitive
Colorado feverfew	Parthenium ligulatum	BLM Sensitive
Graham's beardtongue	Penstemon grahamii	BLM Sensitive
Cathedral Bluff meadow rue	Thalictrum heliophilum	BLM Sensitive

Ute Ladies'-Tresses (*Spiranthes diluvialis*), Status: Threatened - Several of the largest known populations of Ute ladies'-Tresses are found within Dinosaur National Monument, along the *Gates of Lodore* portions of the Green River and in smaller habitats found closer to BLM controlled lands in the southern portions of the Monument. The Monument is encompassed by the WRFO boundaries; however, the proposed action would only apply to BLM controlled lands. The species is known from a wide range of riparian-related plant communities, however, it is less common in shrub or tree dominated habitats. Populations are widely scattered across 8 western states, at elevations between approximately 4300' and 7000'. The presence of Ute ladies'-tresses has been suspected to occur in the WRRA, especially in riparian-related habitats adjacent to the White River (Fertig, 2005). No populations, however, have been identified to date.

In 2009, the WRFO conducted a terrestrial orchid habitat survey along the White River from Rangely, Colorado downstream to a take-out near the Colorado-Utah border. It was noted that BLM lands along this portion of the White River are almost entirely vegetated by tamarisk/Russian olive monocultures. If understory was present, it was composed of thick, early seral native and non-native grass species. These areas were devoid of light penetration at the soil level. Highly manipulated environments, such as irrigated hay meadows, moderately grazed pastures with river access, areas of increased sediment deposits and intact floodplains with mid-seral, light-penetrating vegetation, were primarily exhibited on private lands. These latter environments were considered more likely to contain suitable habitats. These environments also qualify the Ute ladies'-tresses habitats as a terrestrial plant species, rather than true aquatic (emergent or sub-emergent) habitats.

Dudley Bluffs bladderpod *(Physaria congesta*), Status: Threatened - The Dudley Bluffs bladderpod grows on barren white shale outcrops on tongues of the Green River Formation where it has been exposed along down-cut drainages or windswept ridges. It often grows on level surfaces at the points of ridges or in pinyon/juniper savannah areas where outcrops of the white shale geology has been exposed. These areas are found above the steep sideslopes containing Dudley Bluffs twinpod in the Dudley Bluffs and Ryan Gulch ACEC's, and are also found in exclusive habitats in the Duck Creek ACEC and nearby drainages. Small, newly discovered populations of Dudley Bluffs bladderpod also occur in the Dudley Gulch area where shallow

layers of the Uinta Formation are present on the surface of Green River tongue substrates. The elevation range for Dudley Bluffs bladderpod habitats is 6,140 to 6,644 feet.

The known populations of Dudley Bluffs bladderpod include seven occurrences consisting of more than 60 distinct mapped polygons. The species occurs on an estimated 930 acres on BLM, State, and private lands in the northern Piceance Basin in Rio Blanco County within a 10 mile by 10 mile area. (Figure 1) The estimated total number of known Dudley Bluffs bladderpod plants is around 546,000 (CNHP 2009). Although population boundaries do show precipitation response changes, among other effects, and small populations continue to be identified, the species range has not increased since the 1990 federal listing.

Two noxious and/or invasive species occur within, or directly adjacent to Dudley Bluffs bladderpod habitats; Downy brome (*Bromus tectorum* or other annual non-native ssp.), and halogeton (*Halogeton glomeratus*). Downy brome densities *within* most Dudley Bluffs bladderpod populations are estimated (ocular) to be less than 1% of the total species present. Downy brome and halogeton are generally found on the periphery of the populations where the deeper alluvial soils begin to give way to open shale slopes. Individual bladderpod plants along the periphery are somewhat less abundant, in general, in areas with and without halogeton. As the halogeton declines to non-existent and shale barren soils become less organic, Dudley Bluffs bladderpod plants become usually increase in density.

Dudley Bluffs twinpod (*Physaria obcordata*), Status: Threatened - The Dudley Bluffs twinpod also grows on barren white shale outcrops on tongues of the Green River Formation where it is exposed along down-cut drainages, sometimes occurring below, or interspersed with Dudley Bluffs bladderpod habitats. The twinpod occurs primarily on the Thirteenmile Creek Tongue but it also occurs without adjacent bladderpod habitats on the Parachute Creek Member of the Green River Formation on Calamity Ridge, and in small isolated locations on older Green River tongues. The Dudley Bluffs twinpod occurs almost solely on steep sideslopes however it has also been found in the drainages below side-slope populations where soil and substrates have eroded and deposited soils in drainage locations. The elevation range for the Dudley Bluffs twinpod is 5,960 to 7,440 feet.

The known populations of the Dudley Bluffs twinpod include approximately 10 occurrences comprised of at least 40 distinctly mapped polygons. The plants occur on an estimated 318 acres on BLM, State, and private lands in the northern Piceance Basin in Rio Blanco County; within a 20 mile by 30 mile area (Figure 1). Approximately 88% of the total occupied *Physaria congesta* and *Physaria obcordata* habitat occurs on public lands managed by the BLM. (USFWS 2009) The estimated total number of Dudley Bluffs twinpod plants is around 35,000 (CNHP 2009). Although population boundaries do show precipitation response changes, among other effects, and small populations continue to be identified, the species range has not increased since the 1990 federal listing.

Two noxious and/or invasive species are currently known from within or directly adjacent to Dudley Bluffs twinpod habitats; Downy brome (*Bromus tectorum* or other annual non-native ssp.), and halogeton (*Halogeton glomeratus*). As with other shale barren species, annual brome densities within most Dudley Bluffs twinpod populations are estimated (ocular) to be less than

1% of the total species present. Downy brome and halogeton are found on the periphery of the occurrence where the deeper alluvial soils begin to rise onto the open shale sideslopes. Individual twinpod plants along the periphery are somewhat less abundant, in general, in areas with and without halogeton. As the halogeton declines to non-existent and shale barren soils become less organic, Dudley Bluffs twinpod plants usually increase in density. However, where the twinpod plants and soils have washed into channels and alluvial habitats, the area is often heavily infested with cheatgrass and halogeton in the Basin Big sagebrush understory.

White River beardtongue (*Penstemon scariosus* var. *albifluvis*), Status: Candidate - White River beardtongue is restricted to calcareous soils derived from oil shale barrens of the Green River Formation in the Uinta Basin of northeastern Utah and adjacent Colorado. A small portion of this Basin is found on the far western edge of the WRRA. Elevations for the species range from 5,000 to 7,800 feet. The White River beardtongue is known from five locations on the WRFO. Three of these populations occur in the Raven Ridge ACEC. Two populations have been found south of the White River; one is located approximately 11 miles south of the White River on the Utah/Colorado border and the other is located approximately 3 miles east of the Utah/Colorado border slightly south of the White River (Figure 2). The White River beardtongue occupies less than 50 total acres in the WRRA. The beardtongue is found on extremely steep slopes of the Parachute Creek Formation where loosely deposited soils form on narrow benches that occur in horizontal bands between white shale rock outcrops. The plants are found protruding from the benches with a small suite of other shale-barren species.

Slope steepness would make most White River beardtongue areas inaccessible for IWMP treatments. Two noxious and/or invasive species are currently known from within or directly adjacent to its habitats; Downy brome (*Bromus tectorum* or other annual non-native ssp.), and halogeton (*Halogeton glomeratus*). As with Dudley Bluffs bladderpod and twinpod habitats, downy brome densities within White River beardtongue were estimated (ocular) to be less than 1% of the total species present. Halogeton was found only on the periphery of the occurrence where the deeper loam soils present under pinyon/juniper stands are present above the open shale slopes. White River beardtongue individuals along the periphery are notably less abundant, in general, in areas with and without halogeton. As the halogeton declines to non-existent and shale barren soils become less organic, beardtongue plant densities become greater.

WRFO BLM Sensitive Plant Species: The affected environments for the twelve BLM sensitive species are similar to the White River beardtongue habitats in that most are badland or rock outcrop soil associates. Many are also considered “oil shale endemics” or edaphic (soil-related) endemic species. Although Graham’s beardtongue and White River beardtongue occupy some of the steepest habitats available in the WRRA, the Piceance bladderpod, and the Cathedral Bluff meadowrue, occupy similarly steep habitats; however, the latter two species’ populations are geographically separated from the beardtongue habitats by several miles and slight elevation differences. Other endemics that may be found on sloping or gentle shale breaks include Rollin’s cryptanth, Ephedra buckwheat, tufted cryptanth, Colorado feverfew, and narrow-stem gilia. The Debris milkvetch is found in open areas in sparse pinyon/juniper woodlands with a black sagebrush component, and the species also has soil affiliations that also include shale mulch or pebble component in the top layer. Utah gentian occurs in grass and forblands on the Cathedral Bluffs ridgeline in the WRRA. The gentian also prefers open areas dominated by

forbs and subshrubs where a shallow, shale mulch is present on the surface and topsoil depths are shallow. The Flaming Gorge evening primrose is found in sandstone habitats in rolling Mountain Big sagebrush meadows within the administrative boundary of Dinosaur National Monument, on BLM-controlled lands. It prefers shallow sandstone swales where it occupies the fine soils that settle in the cracks of the flat, exposed rocks.

During the planning period of this document, the Debris milkvetch is the most likely BLM sensitive species to be involved in the IWMP program. Coalbed methane energy development is occurring in and among the sensitive milkvetch populations in Fletcher Gulch, and the area is experiencing road construction and disturbance areas that are currently involved in noxious weed proliferation and treatment. The environmental consequences and mitigation that apply to the White River beardtongue will apply to the Debris milkvetch and the other BLM upland sensitive species, as the noxious weed species involved, and their treatments, are anticipated to be similar.

Special Status Plant Species Pollinators Field research by Tepedino (2009) provided information that the Dudley Bluffs twinpod is an obligate outcrosser (plants require pollen from other plants in order to successfully reproduce) that requires pollinators. This study focused on the twinpod; however some pollinators were collected for the Dudley Bluffs bladderpod as well. Primary pollinators are ground-nesting native bees in the families *Andrenidae* and *Halictidae*. Most species that frequented Dudley bluffs twinpod flowers are generalists, which also visit a variety of other flower types. "No bee is likely to travel more than one km from the nesting site to visit Dudley bluffs twinpod flowers and most are likely to fly distances that are significantly less than one km."(Tepedino 2009).

Information on Ute Ladies'-tresses indicates that long-tongued bumblebees (*Bombus morrisoni* and *B. fervidu*s) are the primary pollinators. (Sipes, Tepedino, 1995) It is unlikely that bumblebees would visit Ute Ladies'-tresses without a [another] pollen source nearby, because the only reward for the bumblebee visit is nectar, not pollen [from this orchid]. (Sipes, Tepedino, 1995)

Research for the White River beardtongue pollinators indicates that primary flower visitors, and likely pollinators, were several species of native twig- and ground-nesting bees in the families *Apidae, Halictidae* and *Megachilidae*. No differences were found in fruit or seed production between open-pollinated controls and hand-outcrossed flowers, suggesting that pollinator visits were sufficient to maximize sexual reproduction. Management plans to conserve White River beardtongue must recognize that full reproductive success of this rare plant taxon relies upon a suite of pollinating bees and that the species richness of bee visitors should be maintained. (Lewinsohn, Tepedino, 2007)

Environmental Consequences of Alternative A - Proposed Action: The outcome of the interagency consultation for the PEIS and PER via the PBA (BLM 2007c) was concurrence by the USFWS with BLM's determination of "*May Affect, Not Likely to Adversely Affect*" determination for threatened, endangered, or proposed species as a result of proposed action weed treatments. The WRFO also prepared a field office level biological assessment (BA) to evaluate likely impacts to federally listed or proposed threatened or endangered species (BLM 2010). The BLM received concurrence for a "*May Affect, Not Likely to Adversely Affect*"

determination for Ute Ladies'-tresses, Dudley Bluffs twinpod, and Dudley Bluffs bladderpod on February 18, 2010 from the USFWS. (Grand Junction, CO) This determination was based on the WRFO BLM's implementation of the proposed mitigation measures, BMPs, SOPs, and buffer distances in Table 7 for Threatened plant species and pollinator habitats. The concurrence also included stipulations for additional USFWS consultation and NEPA analysis if noxious weed treatments are conducted within (includes periphery) Threatened plant species habitats or if herbicide use is planned at buffer distances closer than those proposed in Table 7.

In general, vegetation treatments have the potential to affect most plant species in much the same way; all are intended to cause mortality or injury to target plants, which may vary in intensity and extent. Species with the lowest numbers or most limited distribution are the most sensitive to impacts. Proposed SOPs, BMPs, buffer distances, and mitigation is expected to avoid or minimize potential adverse impacts to special status plants species. However, if the measures are not properly implemented, the following environmental consequences could occur.

General Special Status Plant Species Direct Effects: If herbicide treatments were to occur in special status plant habitats, plants could be crushed by trucks and/or ATVs during ground applications, causing injury or mortality. The Ecological Risk Assessments (ERA) incorporated into the PEIS and PBA predicted the potential for special status plants to suffer negative effects as a result of exposure from BLM-approved herbicides. Modes of exposure include direct spray of plants, accidental spills, off-site drift, surface runoff, and wind transport of soils from treatment sites. Possible negative effects could include one or more of the following: mortality, loss of photosynthetic foliage, reduced vigor, abnormal growth, or reduced reproductive output. The buffer recommendations for special status plant species found in Table 7 are a direct result of these assessments. ERA's specific to special status plant species can be found in the PEIS document. (BLM 2007a)

Biological control by selective grazing with domestic livestock could cause mortality and injury to special status plants through consumption and trampling. Biological control agents such as insects and pathogens do not typically have an effect on non-target plant species or habitats, but some have been known to attack species in addition to the target plant. According to the PEIS, "as a general rule, it is assumed that bio-control agents that attack target species in the same genus as a special status plants would have a negative effect on that plant species, unless extensive research has shown otherwise" (BLM 2007a).

In general, the adverse impacts on special status plants of manual weed treatments would be minimal because of both the low level of environmental impact of this method and the limited area in which manual methods are feasible. A long-term beneficial effect to special status plant species would also be expected to result from manual treatments via removal of undesirable competing vegetation. This could increase the health or vigor of existing special status plant species populations or increase habitat suitability of unoccupied sites. Soil disturbance and risks of erosion would be minimal with manual methods due to the limited number of plants to be killed or removed. Special status plant species could, however, be directly killed or injured if accidentally removed during a treatment or if tread upon by workers treating a site. In addition, given the fragile soils on which most WRFO rare plant species occur, repeated treatments or high levels of pedestrian traffic could impact these habitats.

Revegetation could increase desirable vegetation around special status plants, creating more competition and limiting resources available for noxious weeds. It could also create a beneficial effect to special status plants by restoring the site with native vegetation that was present before weeds dominated the area.

General Special Status Plant Species Indirect Effects: Weed treatments would alter species composition of the treated community. In most situations, elimination or reduction of non-native species would be likely to improve habitat quality for special status plant species. However, such gains could be more than offset if conservation measures to avoid or minimize impacts to the special status plant species are not properly implemented.

Biological control using domestic grazers could lead to soil compaction from soil trampling, increased soil erosion from loss of plant cover, and loss of biological soil crusts which have an important role in hydrology and nutrient cycling. Grazing could produce undesirable herbivory directly on special status plant species. Bio-control agents such as insects and pathogens would be expected to have long-term positive effects on special status species plants by controlling undesirable vegetation in occupied or potential habitats.

Residual soil contamination, soil build-up of inert ingredients and/or herbicides and unknown soil effects of herbicide mixtures used for treatments can effectively "sterilize" soils if continued and long-term treatments are applied without field monitoring of naturally occurring or manipulated re-vegetation status at treatment sites. This effect could decrease the quality and quantity of native vegetation to re-inhabit sites which could, indirectly, affect special status plant populations via loss of habitats.

General Pollinator effects: The activity period of bees may render their populations vulnerable to herbicide spraying by reducing the amount of flowering plant pollen available to provision their nests. (Sipes, Tepedino, 1995) Grazing could produce undesirable herbivory directly on flowering species needed to sustain pollinators. Bio-control could also produce plant mortality on species used for pollinator foraging. IWMP treatments, however, could also be expected to produce additional habitats for native flowering plants used by special status plant species pollinators in areas where weedy species such as cheatgrass are currently outcompeting native vegetation in monocultural stands.

WRFO Special Status Species Specific Effects: Small stands of halogeton and mixed density stands of annual bromes (cheatgrass) are commonly observed along the edges of White River beardtongue and BLM Sensitive species populations, as described in the affected environment. As discussed previously, densities of both noxious weed species quickly decline from over 100% percent canopy cover to less than 1% total species density for bromes, and are usually nonexistent for halogeton beyond the edges of the populations. Therefore, unless annual brome densities reach light, nutrient or significant habitat competition beyond the edges of these populations, IWMP treatments are not advised and mitigation has not been developed in this assessment for treatments beyond the periphery of White River beardtongue and BLM Sensitive species populations.

For White River beardtongue and BLM sensitive plant species planned for peripheral treatment, as advised under Alternatives A and D, pedestrian effects such as compaction and breakdown of soil crusts in fragile soils are a possible direct effect of treatment. The removal of noxious weeds from the accessible perimeters of the populations, however, generally involves areas where steep shale slopes mix with less steep, organic loam soils. This additional organic content should provide the ability for soils to be more resilient to pedestrian traffic during IWMP and re-vegetation treatments.

No effect to Ute ladies'-tresses potential habitats would be expected or is analyzed in this EA with respect to IWMP treatments of Russian olive and tamarisk. Pre-survey, conservation measures, BMP's, SOP's, and related standards should only apply to IWMP treatments on WRFO riparian habitats that contain potential habitats such as those described in the effected environment, and areas of open, herbaceous, riparian vegetation devoid of noxious shrub or tree-dominated overstory. These habitats are most likely to be found along the White River; however, they may occur in smaller perennial or ephemeral streams on the WRFO. Herbaceous noxious weeds found on the WRFO that could occur in orchid habitats would include Canada thistle, Leafy spurge, Poison hemlock, Yellow toadflax, Field bindweed, and knapweed species. If pre-survey revealed Ute ladies'-tresses in the WRRA, the IWMP planned treatment should cease until additional survey, NEPA and consultation were conducted to protect the threatened orchid's habitat.

Primary pollinators for the special status plant species considered in this EA are similar in that they are often pollinated by members of the bee (*Apidae)* family. Therefore, pollinator habitats for these species are considered, for this analysis, to have similar potential impacts from chemical applications under the IWMP treatment in the proposed action. Appendix C contains SOPs specific for pollinators that will apply under the IWMP. These address treatment timing, treating areas in staggered 'patches', herbicide use rates and buffer zones. Noxious weed species found in pollinator habitats in the WRFO, without IWMP treatment, would diminish plant community species richness and diversity in areas where they out-compete native herbaceous forbs. Therefore, IWMP treatments in pollinator habitats of special status species plants, if applied according to the Appendix C guidelines, would strive to protect pollinator habitats while recovering native plant community diversity and increasing pollen and nectar sources.

Cumulative effects of the proposed action: Cumulative effects include impacts of future State, tribal, local, or private actions that are reasonably certain to occur in the action area. Future Federal actions unrelated to the IWMP Plan are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA.

Counties will continue to treat noxious weeds on private lands, and private landowners will continue to treat weeds both for agricultural purposes and because they are required by the State to control noxious weeds on their property. The Colorado Department of Transportation (CDOT) will continue to treat weeds along major thoroughfares. Chemical, manual, mechanical, and biological controls are currently employed by these entities.

Environmental Consequences of Alternative B - No Action Alternative: The potential harm from the continued spread of noxious and invasive weeds, especially with respect to

cheatgrass understory domination of large drainage areas adjacent special status species populations could be the primary consequence of the no action alternative. This could result because the use of imazapic to control cheatgrass within the given mitigation measures in the SOP's, BMP's, and Table 7 buffers would be relegated to individual decisions which would likely result in continued treatment delay. Direct and indirect effects of the proposed action on special status plant species is presented in Alternative A above and these buffers, BMP's, and SOP's would apply under alternative B as they do in Alternative A. Another difference between Alternatives A and B lies in the exclusion of bio-control and mechanical treatments. These options would only be available if analyzed in separate NEPA document. The number of acres treated would be expected to be lower based on the inability to use a broader range of options for management direction.

Environmental Consequences of Alternative C – No Herbicide Use: Potential direct and indirect effects to Ute Ladies'-tresses habitat areas could be decreased under a no herbicide alternative, however, long-term benefits to native plant communities would likely be much lower than under the proposed action alternative. Noxious and invasive weeds would continue to spread, thereby increasing the current conversion of this orchid's habitats to noxious weed-dominated systems. Although tamarisk beetles are aiding the effort to remove tamarisk from potential orchid habitats, other noxious weeds such as Russian olive, Canada thistle, Leafy spurge, Poison hemlock, Yellow toadflax, Field bindweed, and knapweed species may or may not have biological and manual alternatives with the desired effectiveness rates. For many noxious weed species, a combination of biological, manual and chemical treatments can provide the most effective means of control for the threatened orchid's noxious competitors.

The potential harm from the continued spread of noxious and invasive weeds, and possibly especially those near special status species populations would be the primary consequence of a no herbicide alternative. Potential direct and indirect effects of applying the proposed action to Dudley Bluffs bladderpod and Dudley Bluffs twinpod, White River beardtongue and the BLM sensitive species are presented in Alternative A above. The no herbicide alternative would avoid the potential risks and the adverse impacts to non-target plants and soils from herbicide use. Although non-target species could still be affected by manual and biological controls, the negative impacts to non-target plants would likely be less severe and much more limited.

Positive benefits to the ecosystem may be less than under the Proposed Action because herbicide use is the only effective treatment for many noxious weeds in the WRRA, especially cheatgrass, and halogeton, and treatment with manual or biological controls may be impracticable due to cost, time, and accessibility. Weeds would be expected to increase at a faster rate under this alternative, outcompeting desirable species for resources and degrading native plant communities to a much greater extent than under the other alternatives.

Environmental Consequences of Alternative D – No Aerial Herbicide Application: The buffer distances for aerial application provided in Table 7, were developed for the herbicides summarized and are conservative estimates for aerial spraying based on the multiple ERAs cited in the PBA (BLM 2007c). If no buffer distance is provided in Table 7, the herbicide is not approved for aerial application. The Table 7 buffer distances represent the first modeled distances at which no risks were predicted. Additional precautions during spot treatments within

buffer zones will be considered during the PUP process and should be included as mitigation measures in the associated NEPA documents. To prevent the risks and the adverse impacts to non-target plants and soils from aerial herbicide use, implementation of use rates and buffer distances should not exceed the parameters given in Table 7.

Aerial spraying involves the use of low-flying aircraft, and therefore precise geographical limits of application can be missed or exceeded using GPS and/or traditional visual flight location methods. In addition, the potential for drift can become greater in flight due to wind speed differences at minor altitudes changes, and mid-flight wind gusts. Overspray areas have been visualized readily in recent years in the WRRA with private non-BLM contractors.

This alternative, however, would omit the variations associated with aircraft application that could lead to drift, over-flight and missed applications on special status plant populations. It would also, however, limit the WRFO's ability to treat large or remote infestations for which ground application methods are less effective or infeasible. Consequently, the total treatment acreage would not exceed 4,000 acres per year, compared to 5,000 acres for Alternative A. Possible benefits of not using aerial application, in some cases, could be offset by the risk of physical damage by equipment used for ground-based application and, in some situations, by a possibly less effective treatment using ground methods

Mitigation: The SOPs, BMP's, buffer distances, and measures in the appendices were taken from the PEIS and the accompanying PBA, (BLM 2007a, c) and modified as appropriate to reflect species and conditions specific to the WRFO. The following guidance must be considered in <u>all management plans</u> in which herbicide treatments are proposed to minimize or avoid risks to special status plant species. The exact conservation measures to be included in management plans will depend on the herbicide that would be used, the desired mode of application, and the conditions of the site. Given the potential for offsite drift and surface runoff, populations of special status plant species on lands not administered by the BLM would need to be considered if they are located near proposed herbicide treatment sites.

Threatened *Plant species:*

- During the annual planning for weed treatments, the WRFO will identify areas where treatment is most needed, based on the priorities described in Tables 4a-c, above. No treatments should be planned *in* any habitat known or reasonably likely to contain *Threatened* plant species. Note: If *Threatened* plant species are located, and if the WRFO continues to desire peripheral weed treatments for *Threatened* status plant species habitats, pre-survey with additional NEPA preparation and consultation will apply to all habitat (occupied, suitable and potential) types per the February, 2010 biological opinion for *Threatened* plant species.

- Additional NEPA and consultation with the USFWS will be required if any noxious treatments are planned *within* the herbicide buffer zones described in Table 7, per the February, 2010 biological opinion for *Threatened* plant species. Biological and mechanical treatments are authorized without further NEPA and USFWS consultation if they are associated with an IWMP treatment using herbicide per the same buffer distances from Table

7, and will apply to occupied, suitable and potential habitats for *Threatened* plant species. (This distance is subject to change based on current recovery plan guidelines for *Threatened* plant species on the WRFO. Please consult the most current USFWS Dudley Bluffs twinpod and bladderpod recovery plan.)

- If biological and mechanical treatments will occur *without* herbicide application near *Threatened* plant species habitats, additional NEPA and USFWS involvement will be determined on a case-by-case basis based on buffer distances and expected impacts.

- Aerial herbicide application will only be used for herbicides in Table 7 that indicate an aerial application buffer distance. The aerial buffers and use rates may be used for White River *Threatened* plant species per the February, 2010 biological opinion. If IWMP treatments are planned that will involve aerial applications closer than Table 7 buffer distances to *Threatened* plant species occupied, suitable and potential habitats, additional consultation and NEPA analysis will be required.

- Highly manipulated environments, such as irrigated hay meadows, moderately grazed pastures with river access, areas of increased sediment deposits, intact floodplain areas, and areas of open, herbaceous, riparian vegetation devoid of noxious shrub-dominated overstory, will be pre-surveyed for terrestrial orchids during their blooming season (late July) prior to IWMP treatments. Standard Table 7 buffers and all BMP's, SOP's and mitigation for terrestrial species will apply to Ute Ladies'-Tresses suitable habitats, if located.

Candidate *Plant Species and* ***BLM Sensitive*** *Plant Species:*

- Under no circumstances will herbicide treatments will be conducted in areas where any Candidate and BLM Sensitive species may be subject to direct spray during treatments or as a result of drift.

  – Surveys will be conducted in potential habitats for White River beardtongue and all other BLM sensitive species prior to IWMP implementation, if potential, suitable or occupied habitats are suspected or known.

  – Suitable buffer zones from Table 7, SOP's, BMP's and mitigation measures in the Appendices of this assessment will be implemented for both occupied and suitable habitats of BLM sensitive plant species to avoid negative effects from aerial drift, runoff, wind erosion and other potential impacts during and following treatments.

  – Applicators will be required to review, understand, and conform to the "Environmental Hazards" section on all herbicide labels. (This section warns of known pesticide risks and provides practical ways to avoid harm to organisms or the environment.)

  – Primary herbicides for eradication of noxious weeds and invasive species such as cheatgrass and/or halogeton near White River beardtongue and BLM sensitive species will consist of glyphosate (to within 50') or imazapic (to within 25') per Table 7. (Low concentrations of both formulations are known to produce good mortality for both of

these annual weed species.) The lowest effective concentration rates should always be used when treating noxious weeds near these special status plant species.

– All other herbicides used near White River beardtongue and BLM sensitive plant species will be used in conformance with buffer distances provided in Table 7.

- Use of biological control for noxious weed treatments will not occur if the agent(s) have demonstrated the ability to attack other species within the same genus as listed plant species.

- If peripheral IWMP treatments are planned within White River beardtongue and BLM Sensitive plant species occupied habitats, pre-survey and flagging of individual plants will occur. This should be followed by manual (hand pulling) removal of noxious weeds around individual plants. Follow-up via spot application should then occur between manual removal areas using low concentrations of Glyphosate.

- If peripheral IWMP treatments occur within White River beardtongue and BLM Sensitive plant species occupied habitats, pre and post-treatment photo plots or another acceptable method will be used to evaluate treatment effectiveness and soil-related responses. If soil compaction, undue biocrust removal, soil sterility, or other problems such as rare plant mortality are noted, additional NEPA analysis will be required for subsequent special status plant treatments in these areas.

- If more aggressive noxious weed removal is required beyond the periphery of White River beardtongue or BLM Sensitive plant species habitats, separate NEPA action will be required.

- In all IWMP herbicide treatment circumstances, the buffer distances presented in Table 7 will be used. If treatment is desired at distances closer to White River beardtongue and BLM sensitive plant species habitats, separate NEPA action will be required.

- Aerial herbicide application will only be used for herbicides in Table 7 that indicate an aerial application buffer distance. The aerial buffers and use rates may be used for White River beardtongue, and BLM Sensitive. If IWMP treatments are planned that will involve aerial applications closer than Table 7 buffer distances to occupied and suitable BLM sensitive and Candidate plant species, additional NEPA analysis will be required.

Table 7. Herbicide Buffer Distances from Terrestrial Special Status Plant Species [1, 2]

Active Ingredient	Buffer Width	Method(s) to Which Applied
2,4-D	0.5 mile	All
Bromacil	1,200 feet	All
Chlorsulfuron	1,200 feet	Ground
	1,500 feet	Aerial
Clopyralid	900 feet	Ground, typical rate
	0.5 mile	Ground, maximum rate; aerial

Table 7. Herbicide Buffer Distances from Terrestrial Special Status Plant Species [1, 2]

Active Ingredient	Buffer Width	Method(s) to Which Applied
Dicamba	1,050 feet	Ground
Diflufenzopyr	100 feet	Low boom, typical rate
	500 feet	Low boom, maximum rate; high boom
	900 feet	Aerial
Diquat	900 feet	Ground, typical rate
	1,000 feet	Ground, maximum rate
	1,200 feet	Aerial
Diuron	1,100 feet	All
Fluridone	0.5 mile	All
Glyphosate	50 feet	Ground, typical rate
	300 feet	Ground, maximum rate; aerial
Hexazinone	300 feet	Ground, typical rate
	900 feet	Ground, maximum rate
Imazapic	25 feet	Ground, typical or maximum rates
	300 feet	Aerial, typical rate
	900 feet	Aerial, maximum rate
Imazapyr	900 feet	Ground or aerial, typical rate
	0.5 mile	Ground or aerial, maximum rate
Metsulfuron Methyl	900 feet	Ground or aerial, typical rate
	0.5 mile	Ground or aerial, maximum rate
Overdrive®	100 feet	Low boom, typical rate
	900 feet	Low boom, maximum rate; high boom
Picloram	0.5 mile	All
Sulfometuron Methyl	1,500 feet	All
Tebuthiuron	25 feet	Low boom, typical rate
	50 feet	Low boom, maximum rate; high boom, typical rate
	900 feet	High boom, maximum rate
Triclopyr	300 feet	Ground, typical rate
	500 feet	Aerial, typical rate
	0.5 mile	Ground or aerial, maximum rate

[1] Source: BLM 2007a
[2] See Appendix C for information related to aquatic species and other specific situations (e.g., areas vulnerable to wind erosion of treated soil.

In addition to the selection of specific locations, herbicides, application methods, application rates, and buffer distances for specific sites during the annual treatment planning, the WRFO will also consider measures to prevent the spread of weeds in the peripheral areas near White River beardtongue and BLM Sensitive plant species, in conjunction with weed treatments and all IWMP projects resulting in ground disturbance. These measures include the following:

- Seed cleared areas that are prone to invasion by downy brome or other noxious weeds with an appropriate seed mixture to reduce the probability of noxious weeds or other undesirable plants becoming established on the site.

- Where seeding is warranted, seed bares areas (whether from ground disturbance or removal of weeds) as soon as appropriate after treatment, considering the time of year and any waiting period following use of a specific herbicide.

- Use only native species when re-vegetating bares areas within 200 meters occupied or suitable habitat and use only species that are compatible with the specific habitats for White River beardtongue and WRFO BLM Sensitive plant species.

- Use only native seed certified free of noxious weed seeds within 200 meters of occupied or suitable species habitats.

- Use only certified weed-free straw and hay bales for mulch or erosion control within 200 meters of occupied or suitable White River beardtongue and BLM sensitive species habitat.

- Wash vehicles and heavy equipment used during weed treatment activities prior to arriving at a new location to avoid the transfer of noxious weeds.

- No drilling, discing, or other use of equipment will occur within any special status plant species habitats without further NEPA evaluation.

- The WRFO may develop and implement additional conservation measures, as needed, during project-level planning, NEPA documentation, and ESA Section 7 consultation.

Finding on the Public Land Health Standard for Threatened & Endangered species: The Public Land Health Standards recognize the potential for progressive deterioration of habitats attributable to the proliferation of noxious weeds. The proposed action complements management that minimizes noxious and undesirable weed expression in plant communities, and, as mitigated, has BLM programmatic level safeguards that should protect special status plant species from harmful chemical exposure and other IWMP treatment impacts. Alternatives B, C, and D could promote incremental increases in acreages supporting noxious weed proliferation, and over time, the increasingly large landscape involvement could be increased. Therefore, the proposed action most closely meets the requirements as outlined in BLM Land Health Standard# 4.

THREATENED, ENDANGERED, AND SENSITIVE ANIMAL SPECIES (includes a finding on Standard 4)

Affected Environment: The White River Resource Area provides habitat for numerous special status species including those currently listed under the Endangered Species Act, listed as *Endangered* or *Threatened* by the State of Colorado, and those listed as BLM Sensitive Species.

Table 8 identifies the special status species managed by the WRFO and their current status. The greater sage-grouse, northern leopard frog, and white-tailed prairie dog are BLM sensitive species that are currently undergoing review by the U.S. Fish & Wildlife Service to determine if listing under the ESA is warranted or not.

Section 7 Consultation was conducted with the USFWS for all listed species where WRFO had made an effects determination of "may affect but not likely to adversely affect" or "no jeopardy" (for black-footed ferrets). Detailed analysis and effects determinations (including rational for "no effect" determinations) can be found in the BA developed specifically for the WRFO IWMP (BLM 2010). Conservation measures developed during the course of the consultation were included in the proposed action (Appendix E & F).

Table 8. Special Status Species within the White River Field Office

Common Name	Scientific Name	Status
Black-footed Ferret	Mustela nigripes	Endangered
Colorado Pikeminnow	Ptychocheilus lucius	Endangered
Bonytail	Gila elegans	Endangered
Razorback Sucker	Xyrauchen texanus	Endangered
Humpback Chub	Gila cypha	Endangered
Lynx	Lynx canadensis	Threatened
Greenback Cutthroat Trout	Oncorhynchus clarki stomias	Threatened
Boreal Toad	Bufo boreas boreas	State Endangered, BLM Sensitive
Burrowing Owl	Athene cunicularia	State Threatened, BLM Sensitive
River Otter	Lontra canadensis	State Threatened
Bald Eagle	Haliaeetus leucocephalus	BLM Sensitive
American White Pelican	Pelecanus erythrorhynchos	BLM Sensitive
Brewer's Sparrow	Spizella breweri	BLM Sensitive
Bluehead Sucker	Catostomus discobolus	BLM Sensitive
Colorado River Cutthroat Trout	Oncoryhynchus clarki pleuriticus	BLM Sensitive
Columbian Sharp-tailed Grouse	Tympanuchus phasianellus columbian	BLM Sensitive
Ferruginous Hawk	Buteo regalis	BLM Sensitive
Flannelmouth Sucker	Catostomus latipinnis	BLM Sensitive
Fringed Myotis	Myotis thysanodes	BLM Sensitive
Great Basin Spadefoot	Spea intermontana	BLM Sensitive
Greater Sage-grouse	Centrocercus urophasianus	BLM Sensitive
Long-billed Curlew	Numenius americanus	BLM Sensitive
Spotted Bat	Euderma maculatum	BLM Sensitive
Mountain Plover	Charadrius montanus	BLM Sensitive
Mountain Sucker	Catostomas platyrhynchus	BLM Sensitive
Northern Goshawk	Accipter gentilis	BLM Sensitive

Table 8. Special Status Species within the White River Field Office

Common Name	Scientific Name	Status
Roundtail Chub	Gila robusta	BLM Sensitive
Townsend's Big-eared Bat	Corynorhinus townsendii	BLM Sensitive
White-faced Ibis	Plegadis chihi	BLM Sensitive
American peregrine falcon	Falco peregrinus anatum	BLM Sensitive
Northern Leopard Frog	Rana pipiens	BLM Sensitive
White-tailed Prairie Dog	Cynomys leucurus	BLM Sensitive

Riparian and Wetland Habitats - All perennial and intermittent stream systems within the Resource Area eventually contribute to the endangered Colorado River fisheries (i.e. bonytail, humpback chub, razorback sucker, and Colorado pikeminnow) in the Colorado, White, Green, and Yampa Rivers. Designated critical habitat for these species occurs along the northwest border of the WRRA in the Yampa River and the Green River (Maddux et al. 1994). The critical habitat associated with the rivers is directly adjacent to Dinosaur National Monument, with the closest BLM parcel being approximately 2.2 km (~1.4 miles) away. The White River between Rio Blanco Lake and the Utah state line is also designated critical habitat for the Colorado pikeminnow, although present occupation is confined to the reach below Taylor Draw dam.

The historic range of greenback cutthroat trout included the South Platte and Arkansas River basins in Colorado and a few tributaries of the South Platte River in Wyoming (BLM 2007c). However, recent genetic tests indicate there are populations of cutthroat trout outside of the historic range of greenbacks which may be the greenback subspecies. There are no known populations of greenback cutthroat trout within the WRRA. However, based on the genetic tests, it is believed that there are populations of greenback cutthroat trout along the southern border of the WRRA in Carr Creek and Roan Creek (Jay Thompson, BLM COSO, personal communication). A small portion of the Carr Creek and Roan Creek watersheds (i.e. 195 acres and 116 acres, respectively) occur within the WRRA. The Carr Creek watershed includes portions of T4S, R100W, Sections 31-33 and the Roan Creek watershed includes portions of T5S, R100W, Sections 7 and 15 and T5S, R101W, Section 24.

There are a number of fish that are listed by BLM as sensitive species that occupy the following systems (and their tributaries): White River, Bitter Creek, Piceance Creek, Crooked Wash, Big Beaver Creek, Trapper's Creek, East Douglas Creek, Black Sulphur Creek, Fawn Creek, and Yellow Creek.

Northern leopard frogs, although localized, are relatively common and well distributed along portions of Piceance Creek, Yellow Creek, Crooked Wash, and the lower White River. Leopard frogs are also found widely in upland stock ponds. Great basin spadefoot toads likely occur throughout the WRRA in suitable upland habitats (pinyon-juniper woodlands, sagebrush, and semi-desert shrublands) and breed in temporary pools (e.g. Cottonwood Creek pond).

Riparian and wetland habitats above 8,000 feet possess general potential for occupation by boreal toads. However, there are no known historic or recent indications (e.g., 1996 Natural

Heritage Program inventory on the Roan Plateau) that boreal toads occupied such habitats on the Piceance Creek/Douglas Creek watershed divides or on the Roan Plateau.

The White River corridor serves as an activity hub for nesting and wintering populations of bald eagles. A number of nest and winter roost sites are associated with the river's cottonwood galleries.

River otters are believed to have been extirpated from Colorado and have been introduced into the Green River (in Utah) and the Colorado River (in Rocky Mountain National Park). Since then, they have moved around the state and are known to occur in the Yampa River. There have also been unconfirmed sightings of otters in the White River.

There are no known breeding records for American white pelicans or white-faced ibis within the WRRA. Pelicans are common on Rio Blanco Lake and Kenney Reservoir. White-faced ibis are common in irrigated hay meadows and wetlands throughout the resource area. However, it is believed that all the pelicans and ibis present in the resource area are summer transients and not breeding pairs.

Prairie Dog Colonies and Associated Species - White-tailed prairie dogs are broadly distributed at lower elevations along the lower half of the White River valley, primarily in xeric salt-desert communities. Prairie dogs are often considered a keystone species because they alter the landscape to such an extent that they make available unique habitat for a variety of other wildlife. Black-footed ferrets, burrowing owls, and ferruginous hawks are all strongly associated with prairie dog colonies. Black-footed ferrets are currently listed as endangered under the Endangered Species Act and were extirpated from the state of Colorado. Captive-bred ferrets have been released into the Coyote Basin Management Area (CBMA) and the Wolf Creek Management Area (WCMA). Within the WRFO, the Northwestern Colorado/Northeastern Utah Experimental Population Area (ExPA) includes everything west of Colorado State Highway 13 in Moffat and Rio Blanco counties (Leachman and Zablan 1998) and potential ferret habitat is considered to be any prairie dog colony within that area.

Over the past few years, small numbers of long-billed curlew have appeared late in spring throughout the Resource Area, but notably in prairie dog complexes such as Wolf Creek and Coyote Basin. Although these salt desert communities are at least superficially suited as nesting habitat and there have been documented nests within the Little Snake Resource Area, there has been no indication of nesting within the White River Resource Area to date.

There are no known records of breeding mountain plovers within the WRRA. However, plovers have been observed north of the White River along the Utah border and may use grassland sites or prairie dog colonies in that area.

Sagebrush and Mountain Shrub Habitats - Of the six populations of greater sage-grouse within Colorado, the Meeker-White River Population (MWR), the Parachute-Piceance-Roan Population (PPR), and the Northwest Colorado Population (NWCO) all occur within the White River Resource Area. Sage-grouse rely on sagebrush habitats throughout the year but also utilize wet meadows in late summer.

Brewer's sparrows are common and widely distributed in sagebrush habitats (from salt-desert shrub to mountain big sagebrush) across the resource area.

There is limited Columbian sharp-tailed grouse habitat on BLM lands within the WRRA. Sharp-tailed grouse typically use higher elevation grassland habitats that are interspersed with mountain shrub communities (i.e. serviceberry, chokecherry, oakbrush, etc). Within the WRRA, the general location of sharp-tailed grouse range is from the eastern Danforth Hills and Thornburgh Mountain south to the Oak Ridge State Wildlife Area.

Cliffs and Rock Outcrops - Although the distribution and ecology of Townsend's big-eared bats and fringed myotis are poorly understood, limited collections have documented their presence from western Colorado's semi-desert shrublands, woodlands, and canyonlands. These bats use caves, mines, bridges, unoccupied buildings, rocky outcrops, and trees for roost sites. Roost sites for spotted bats are typically restricted to canyon lands and they are known to roost within Dinosaur National Monument and forage on adjacent BLM lands. Both bat species may forage in sagebrush or pinyon-juniper habitats.

Peregrine falcons are rare within the WRRA but have occurred in the Piceance Basin. Nests are located on cliffs and foraging frequently occurs in pinyon-juniper woodlands.

Forest Habitats - Northern goshawks breed in large, contiguous blocks of forest habitat. They may nest in aspen or conifers (e.g. Douglas fir or pinyon pines). Although they are not typically associated with pinyon-juniper woodlands, nests have been found in Piceance Basin's mature pinyon-juniper woodlands as low as 6,500 ft.

Lynx habitat on BLM lands is limited (less than 2,000 acres of suitable habitat) and occurs at the far eastern edge of the WRRA near the boundary of the White River National Forest and the Flat Tops Wilderness. Lynx occur in sub-alpine forest and in riparian shrub communities (e.g. willow, alder). Within the WRRA, habitat classified as denning, winter, or "other" within the Lynx Analysis Units is considered potential Canada lynx habitat.

Environmental Consequences of Alternative A – Proposed Action: None of the special status species within WRRA are known to use weed species and it is assumed that intact native ecosystems provide the best habitat. Special status species can be negatively impacted by the proliferation of weed species in a variety of ways including large-scale habitat conversion (e.g. cheatgrass altering fire return intervals in sagebrush communities) or changes in hydrology and stream morphology (e.g. tamarisk creating defined channels and minimizing overland flooding of low lying areas). The proposed IWMP includes manual removal, biological control, and chemical control as weed treatment methods.

Manual Removal: Manual removal of weeds is not expected to notably disrupt special status mammals, fish, or amphibians. Birds may be impacted if the level of human activity associated with manual removal of weeds results in nest abandonment. More information regarding birds and manual removal treatments can be found in the Migratory Bird Section.

Sage-grouse are ground nesting birds and disturbance (from manual, biological control, or chemical treatment activities) to nesting hens and young broods should be avoided. To minimize disturbance to nesting sage-grouse, treatments shall not occur from April 15th through July 7th. Whether or not to impose such a timing restriction on individual projects will be evaluated based on the type of activity (e.g. method of control, access, duration of activity), the condition of the treatment area in respect to nesting and brood-rearing habitat, and whether or not conducting the treatment outside of this time period will result in a failure to meet weed management objectives.

Biological Control: There are two different biological control treatments using insects that are currently included in the proposed action. The first is for treatment of a spotted knapweed infestation in the Dry Thirteen Mile Creek area of Piceance. There are no special status species known to occur at this site and knapweed is not known to provide habitat or forage for these species, thus use of biological control on knapweed is not expected to influence special status species.

The second treatment proposal is to introduce the tamarisk leaf beetle within the 100-year floodplain of the White River in the Big Trujillo area to treat large tamarisk infestations along the river (and beetles are expected to naturally expand from the release site along the river corridor). Tamarisk leaf beetles have already been introduced within the WRRA (Matthew Dupire, BLM WRFO, personal communication). The Tamarisk Coalition released beetles on private property in the East Douglas watershed. The BLM WRFO released beetles in 2006 near the confluence of East Douglas and Douglas Creeks. It is estimated that beetles have defoliated approximately 5 acres in the Douglas Creek area on BLM. Tamarisk treatments would be most likely to influence special status fish species.

Up to 40% mortality of tamarisk has been reported 5 years after a release (Hultine et al. 2009). While even repeated defoliations over several years may not be enough to kill the plants, substantial decreases in plant vigor resulted in an estimated 75% reduction in groundwater loss due to evapotranspiration at one site (Dudley 2005). Additionally, reductions in canopy cover due to defoliation aided the growth of replacement vegetation. There is some concern, however, that unless there is active restoration plans to reestablish native vegetation (e.g. cottonwoods and willows); treated areas may become infested with other weed species such as Russian olives, cheatgrass, perennial pepperweed, Russian knapweed, and thistles (Hultine et al. 2009). (The WRFO has already experienced similar issues with treatment programs targeting Russian olives along the river. Once the olives were removed, there was an increase in hoary cress, knapweed, and toadflax at the site.) Potential negative impacts associated with the proposed biological treatment would be an increase in other weed species which would likely require the use of more herbicide in close proximity to the river. However, such weed treatments would be bound by the conditions set forth in the IWMP and thus would be designed to minimize potential risks to fish. If there is a delay between tamarisk mortality and the reestablishment of other vegetation, there could also be increased bank erosion and sedimentation (Hultine et al. 2009). Potential long-term benefits associated with large-scale tamarisk removal would be the return of native vegetation and increased water availability. Tamarisk has been implicated in altering stream morphology and inhibiting overland flooding (Hultine et al. 2009). It is possible that tamarisk removal would influence hydrologic processes and result in increased flooding of lowland habitats, which are important components of critical habitat for pikeminnow.

To minimize risks to Colorado pikeminnow habitat, the following conservation measures will be included in the IWMP:

- Known infestations of weeds shall be treated at the release site prior to the release of any tamarisk leaf beetles.

- Revegetation of the site with native vegetation (including cottonwoods and willows) shall occur as soon as practical after the release of tamarisk leaf beetles (i.e. as soon as there is a high enough mortality or decline in tamarisk to make conditions suitable to plantings).

- Annual monitoring and treatment of weed infestations will be conducted at the release site (or any other site experiencing substantial tamarisk mortality due to the beetles moving off-site).

Chemical Control: It is assumed that special status species would react in a similar fashion as other birds (see Migratory Bird Section), fish and amphibians (see Aquatic Wildlife Section), or mammals (see Terrestrial Wildlife Section).

Exposure to Chemicals: The greatest concern for avian special status species and for bat special status species is due to consumption of food items that have been contaminated by 2,4-D. There is a high risk to birds associated with consuming contaminated insects, fish, or vegetation (Table 10b). Herbaceous forbs and insects are a critical component of the diet of sage-grouse hens and chicks. Brewer's sparrows and burrowing owls are largely insectivores. Bald eagles and pelicans eat fish. There is also a high risk associated with consumption of contaminated insects by small mammals (e.g. bats) at the maximum application rate (Table 13b). Since 2,4-D poses a high risk to Brewer's sparrows, bald eagles, sage-grouse, burrowing owls, fringed myotis, Townsend's big-eared bats, and pelicans, it is recommended that its use be restricted within suitable habitats for these species. Other herbicides that are not as toxic to these species could be used to treat most of the weeds (except for leafy spurge and toadflax) that can be treated using 2,4-D. Site specific proposals will be evaluated based on the application method (i.e. spot spray or broadcast), condition of the treatment area in respect habitat requirements, and whether or not there are other effective treatment methods for the target weed. It should not be used as a matter of convenience or habit when there are other treatment methods available and site specific proposals should document the reason why the use of 2,4-D is critical to achieving objectives.

The greatest concern to special status fish species comes from accidental spills of glyphosate, imazapyr, picloram, triclopyr BEE, or direct spray of diuron. Terrestrial herbicides (e.g. picloram and diuron) should not pose a risk to fish so long as all of the SOPs are followed including buffers limiting application around aquatic habitats. For most of the proposed herbicides, off-site drift and surface run-off did not result in negative effects to either fish or aquatic invertebrates (Table 12a and 12b). The PEIS recommended minimum buffer distances to minimize risk to fish and aquatic organisms from off-site drift of diuron (BLM 2007a, p4-98), even though the risk assessment specifically for off-site drift and surface run-off of diuron anticipates no risk. This may be in response to the fact that diuron is highly toxic to aquatic invertebrates; aquatic plants, and fish (and has the potential to bioaccumulate).

Many of the proposed herbicides have not been evaluated in regards to toxicity to amphibians. Of those that have been evaluated, the risks range from no risk to moderate risk. Use of the POEA surfactant should not be used as it causes high mortality levels in both tadpoles and terrestrial juvenile frogs (See Aquatic Wildlife Section).

There are no known toxicity studies specific to ferrets or lynx and it is assumed that both species would be affected in the same manner as other mammals. For most exposure scenarios that were evaluated in the PEIS, there was no risk to mammals due to direct spray or ingestion of contaminated food items (Tables 13a and 13b). There was a low risk to mammals due to direct spray (100% absorption) of glyphosate, hexazinone, or triclopyr at the typical application rate, or imazapyr or metsulfuron at the maximum application rate, or clopyralid and picloram at any application rate. The highest risk to mammals was a moderate risk associated with direct spray of glyphosate, hexazinone, or triclopyr at the maximum application rate or 2,4-D at any application rate. Ferrets are nocturnal animals that spend the daylight hours underground in prairie dog burrows thus it is highly unlikely that ferrets would ever be directly exposed to herbicide application (e.g. aerial applications). It is practically inconceivable that that lynx would be directly exposed to herbicides applied as spot spray treatments. For ground broadcast applications, it is assumed that lynx would temporarily move out of the area during the application process and thus it is unlikely that they would be directly exposed to chemicals. It is more likely that they would be directly exposed to herbicides during an aerial broadcast application. To minimize the risk of direct exposure to chemicals, the WRFO will not use aerial broadcast as an application method within lynx habitat. Thus, it is unlikely that lynx would ever be directly exposed to any of the herbicides.

However, it is possible that both ferrets and lynx would be exposed to herbicide through ingestion of contaminated food items (i.e. prairie dogs and snowshoe hares, respectively). Ferrets and lynx may also be indirectly affected by herbicide treatments if herbicides were to negatively impact prairie dogs and hares to the extent that it reduced the available prey base. Prairie dogs may be directly exposed if the herbicide were applied aerially since they occur in many of the places in the WRFO where there are expansive stands of cheatgrass and thus occur in locations were larger scale treatments may be employed. Snowshoe hares may be exposed to herbicides directly during broadcast applications (ground). Both prairie dogs, snowshoe hares, and other possible prey species may also be exposed due to ingestion of contaminated vegetation. Most of the proposed herbicides pose no risk to small mammalian herbivores due to consumption of contaminated vegetation. There is a low risk associated diquat or diuron at the typical application rate or bromacil, dicamba, or tebuthiuron applied at the maximum application rate. The highest risk was a moderate risk associated with consumption of vegetation contaminated by diquat and diuron applied at the maximum application rates (Table 13a). Most of the proposed herbicides pose no risk to mammalian carnivores that may consume contaminated prey. There is a low risk associated with consumption of contaminated prey from applications of dicamba, diuron, and 2,4-D at any application rate and from application of bromacil and triclopyr at the maximum application rate (Tables 13a and 13b).

Broadcast application (including aerial application) of a very low rate of glyphosate would be used in ferret habitat to combat cheatgrass infestations. Broadcast application rates would be

limited to 0.375 lbs of acid equivalent (AE) per acre. (The typical application rate is 2 lbs AE/acre and the maximum application rate is 7 lbs AE/acre.) It is possible that prairie dogs could be directly exposed to herbicide if the project involved aerial broadcast application. At the typical application rate of glyphosate, direct spray (100% absorption) poses a low risk to small animals. However, the proposed broadcast application would be less than 1/6th of the typical rate would not be likely to adversely affect ferrets due to a decreased prey base. There is no risk associated with application of glyphosate due to chronic consumption of contaminated vegetation or due to consumption of contaminated prey.

Alteration of Habitat Conditions: Spot spray treatments or broadcast application of selective herbicides would have negligible influence on habitat for special status species since it would target only weed species. Removal of these isolated or small populations of weeds would be beneficial in the long term as it would prevent the area from becoming a dense stand of noxious or invasive species. Large infestations in areas with minimal desirable species may be treated with a broadcast application (ground or aerial) of a non-selective herbicide followed by seeding. It is expected that these areas provide limited benefit to special status wildlife species since they are often almost a monoculture of weeds (e.g. large areas of cheatgrass, leafy spurge, or yellow toadflax). Tebuthiuron (e.g. Spike 20P) is an herbicide for woody vegetation (i.e. trees and shrubs) that can be used (according to the label) to treat big sagebrush, juniper, and pinyon pine. These species are highly valuable in terms of nesting and foraging habitat for Brewer's sparrows, sage-grouse, and goshawks. Treatments specifically targeting big sagebrush, juniper, pinyon pine, or any other native shrub or tree should not be considered weed treatments, per se, and should be analyzed in a separate NEPA document. To prevent accidental harm to native woody vegetation over an unacceptably large area, tebuthiuron should not be aerially broadcast. Likewise, care should be taken when treatments include riparian vegetation which is a critical habitat component for all special status aquatic wildlife species. Efforts should be taken to avoid or minimize involvement and damage to woody riparian shrubs and trees by using manual control, minimizing the wetting of desirable plant foliage with herbicide, and using less persistent herbicides beneath or within 25 feet (7.6 m) of desirable plant canopies.

Bare ground treatments typically use chemicals such Round Up (glyphosate), Krovar (bromacil and diuron), Sahara (diuron and imazapyr) and Karmex DF (diuron) to achieve long-term results. The proposed treatments would be confined to fenced industrial facility yards and the immediate vicinity of oil and gas production and transportation equipment that has been maintained in a heavily disturbed and non-vegetated state. Diuron shall not be used within the buffers mentioned above for special status aquatic wildlife. If a proposed bare ground treatment occurs within the buffers, alternative chemicals (e.g. glyphosate) or treatment methods (e.g. gravel) should be used.

In addition to guidelines found in the BMPs, SOPs, and Mitigation Measures (Appendices B, C, and D), the WRFO has incorporated the following conservation measures to help minimize risks to special status species (see Appendices E and F):

- Do not use diquat, fluridone, terrestrial formulations of glyphosate, or triclopyr BEE to treat aquatic vegetation within the 100-year floodplain of the White River, within the

Carr Creek and Roan Creek watersheds, or within riparian systems that support special status aquatic wildlife.

Do not use glyphosate formulations that include R-11 or POEA surfactant.

- Follow all instructions and SOPs to avoid spill and direct spray scenarios into aquatic habitats. Special care should be followed when transporting and applying 2,4-D, bromacil, clopyralid, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, tebuthiuron, and triclopyr.

- Do not broadcast spray diuron, terrestrial formulations of glyphosate, picloram, or triclopyr BEE in upland habitats adjacent to the 100-year floodplain of the White River or riparian systems that support special status aquatic wildlife, or within the Carr Creek and Roan Creek watersheds under conditions that would likely result in off-site drift.

- Do not apply bromacil, diuron, tebuthiuron, or triclopyr BEE in upland habitats within ½ mile upslope of the 100-year floodplain of the White River, riparian systems that support aquatic wildlife, or within the Carr Creek and Roan Creek watersheds under conditions that would likely result in surface runoff.

- For aquatic habitats that support special status aquatic wildlife, maintain the following minimum buffers for broadcast applications of diuron:
    - Typical Rate, High Boom (50 inches): 100 ft Minimum Buffer
    - Maximum Rate, Low Boom (20 inches): 100 ft Minimum Buffer
    - Maximum Rate, High Boom: 900 ft Minimum Buffer

- Buffer strips will be provided for streams and riparian areas when using terrestrial herbicides. A minimum buffer strip of 25 ft (7.6m) will be provided for vehicle applications (e.g. ATV sprayers). Within 25 ft (7.6m) of water, herbicides will be applied using a backpack sprayer. Herbicides that pose a moderate to high risk to fish (e.g. bromacil, diquat, diuron, terrestrial formulations of glyphosate, imazapyr, picloram, and triclopyr BEE at any application rate or 2,4-D and triclopyr TEA at maximum application rates) will not be used within 10 ft (3m) of water.

- When possible (i.e. when compatible with specific chemical formulations or tank mixes), Agri-Dex shall be the preferred surfactant to use within 10 ft (3m) of riparian areas that support special status fisheries or critical habitat.

- Where feasible, avoid use of the following herbicides in black-footed ferret or Canada lynx habitat: bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, and triclopyr.

- Do not broadcast spray herbicides in Canada lynx habitat.

- Do not broadcast spray clopyralid, diuron, hexazinone, picloram, or triclopyr in black-footed ferret habitat or in areas adjacent to black-footed ferret or Canada lynx habitat under conditions when spray drift onto the habitat is likely.

- Do not broadcast spray glyphosate in areas adjacent to Canada lynx habitat under conditions when spray drift onto the habitat is likely.

- If broadcast spraying bromacil, diquat, imazapyr, or metsulfuron methyl in or near black-footed ferret habitat, apply at the typical, rather than the maximum, application rate.

- If conducting manual spot applications of glyphosate, hexazinone, or triclopyr to vegetation in black-footed ferret or Canada lynx habitat, utilize the typical, rather than the maximum, application rate.

- Do not broadcast spray 2,4-D in black-footed ferret or Canada lynx habitat or within ¼ mile of black-footed ferret or Canada lynx habitat. Spot spray application of 2,4-D in black-footed ferret or Canada lynx habitat would be permitted. Use of a carrier dye would be required to ensure herbicide was only applied to target weed species.

- Do not broadcast spray glyphosate at rates higher than 0.375 lbs of acid equivalent per conditions when spray drift onto the habitat is likely.

- Broadcast application of glyphosate, bromacil, diuron, and imazapyr would be permitted for bare ground treatments within black-footed ferret or Canada lynx habitat. No aerial application would be used for bare ground treatments.

- For bare ground treatments, the area to be treated will be limited to a distance of up to 10 feet (3m) from the edge of well heads, meter houses, tanks, etc. Equipment enclosed in fences would be protected from the encroachment of vegetation out to the fence.

Environmental Consequences of Alternative B – No Action (Continue Present Management): Alternatives A and B are very similar. The only difference is that under Alternative B, the BLM WRFO would not be permitted to use the herbicides difluenzopyr, diquat, fluridone, and imazapic. In general, denial of the use of these herbicides would result in a decreased opportunity for special status wildlife to be exposed to chemicals or for harmful effects on desirable plant species on which they depend. In practical terms, denial of the use of difluenzopyr, diquat, and fluridone would not noticeable change implementation of the IWMP since they are either redundant or not used in the WRRA. Difluenzopyr targets weed species such as thistles, knapweeds, and burdock. These weed species can be effectively treated using picloram or 2,4-D. Diquat and fluridone target aquatic weed species such as hydrilla and Eurasian watermilfoil, which do not occur within WRRA.

Denial of the use of imazapic would, however, substantially change the implementation of the IWMP since it targets cheatgrass. Cheatgrass is found throughout the WRRA with very large infestations occurring in salt desert shrub, sagebrush, and pinyon-juniper habitats between

Colorado State Highways 64 and 40. These habitats support a variety of special status species including greater sage-grouse, Brewer's sparrows, ferruginous hawks, burrowing owl, black-footed ferrets, and white-tailed prairie dogs. Cheatgrass degrades these areas by suppressing native herbaceous vegetation and also by altering the fire return interval. Alteration of fire intervals is especially problematic for species that rely on sagebrush such as sage-grouse and Brewer's sparrows. Imazapic has a low toxicity to birds and mammals and effective use of it as part of a program to improve habitat conditions would be beneficial. Imazapic is not an aquatic-approved herbicide and would not be used near suitable habitat for special status fish or amphibian species.

Conservation measures listed in above in the analysis for Alternative A would apply to Alternative B, where applicable.

Environmental Consequences of Alternative C – No Herbicide Use: If the WRFO did not use herbicides, then there would still be the options of manual treatments or biological control treatments in the IWMP. Manual treatments are labor intensive and will require repeated efforts for species that are able to re-sprout from cut roots and for species with a large seed bank. Only limited areas would be able to be treated every year and it is expected that weed infestations would continue to spread across the WRRA. Biological control treatments, particularly using insects, typically do not eradicate weed species but are used to bring the infestations down to a level (in terms of density or distribution) that are more manageable and can then be treated using manual or chemical methods. Overall, it is expected that any benefit that special status wildlife species may experience from not being exposed to chemicals would be negated by the expansion of weed species and degraded habitat conditions.

Environmental Consequences of Alternative D – No Aerial Application of Herbicide: Denial of the use of aerial herbicide application would preclude the treatment of up to 600 acres of large infestations (e.g. leafy spurge and cheatgrass) annually. Without the option to aerially broadcast herbicide, it is likely that weed infestations would continue to expand. Outside of the effects associated with the actual herbicide, aerial broadcast methods would have minimal influence on special status wildlife since it would be a brief disturbance (compared to manual treatments or ground broadcast treatments). No ground disturbance would occur so there would be no potential for inadvertent destruction of ground nests (e.g. sage-grouse nests) by foot or vehicle traffic. The greatest concern due to aerial application of herbicides would be the destruction of desirable species that provide valuable habitat. Tebuthiuron should not be used aerially to prevent loss of important shrub and tree habitats which would negatively impact critical habitat for species such as greater sage-grouse, Brewer's sparrows, and northern goshawk. Aerial application of non-selective herbicides is limited to weed infestations in which minimal desirable plant species remain. Weed monocultures do not provide suitable habitat for special status wildlife species. A blanket denial of aerial application as a broadcast method for herbicide treatments would not benefit special status wildlife species and would likely result in more acres of habitat being degraded by weed expansion.

Conservation measures listed above in the analysis for Alternative A would apply to Alternative D, where applicable.

Mitigation: Measures to reduce risks to special status wildlife species and their habitats have been integrated into the proposed action.

Finding on the Public Land Health Standard for Threatened & Endangered species: Most populations of special status wildlife species within the White River Resource Area currently meet the Public Land Health Standards. Notable exceptions include white-tailed prairie dogs, black-footed ferrets, ferruginous hawks, and greater sage-grouse. Declines in prairie dogs and ferrets are not believed to be attributable to authorized land uses, but to diseases (i.e. plague) that are beyond the scope of this action. Reasons for declines in ferruginous hawk populations have not yet been determined. Reasons for declines in sage-grouse populations are complex and range-wide, but include degraded rangelands impacted by cheatgrass and altered fire return intervals. The Public Land Health Standard for Threatened & Endangered Species recognizes the potential for progressive deterioration of rangeland and aquatic habitats attributable to the proliferation of noxious weeds. The proposed action complements management that minimizes noxious and undesirable weed expression in the overall plant community and, as mitigated, has appropriate safeguards that would effectively avoid those influences chemical exposure may have on individual animals or habitat conditions. Conversely, Alternatives B, C, and D would promote incremental increases in acreage supporting weed monocultures, and over time, increasingly large landscape parcels would fail to meet this standard.

MIGRATORY BIRDS

Affected Environment: The WRRA includes over 1,455,900 BLM-managed surface acres and spans a variety of elevations (less than 5,400 ft to over 8,750 ft) and vegetation communities. As such, it provides habitat for a diverse suite of migratory songbirds. Most songbirds return to summer breeding ranges in April, begin nesting in earnest in late May or early June, and have fledged young by mid-August.

Salt desert communities composed of fourwing saltbush, shadscale, Wyoming big sagebrush, and greasewood are found at lower elevations. Representative species for these areas include Brewer's sparrow (*Spizella breweri*), sage sparrow (*Amphispiza belli*), vesper sparrow (*Pooecetes gramineus*), horned lark (*Eremophila alpestris*), and loggerhead shrike (*Lanius ludovicianus)*. These areas may also contains colonies of white-tailed prairie dogs (*Cynomys leucurus*), which provide habitat for burrowing owls (*Athene cunicularia*) and ferruginous hawks (*Buteo regalis*).

Pinyon-juniper woodlands are widely distributed across Resource Area and representative species for these areas include gray flycatcher (*Empidonax wrightii*), pinyon jay (*Gymnorhinus cyanocephalus*), juniper titmouse (*Baeolophus ridgwayi*), and black-throated gray warbler (*Dendroica nigrescens*). Gray vireo (*Vireo vicinior*), a rather narrowly distributed species in northwest Colorado, appears at least sparingly in juniper habitats.

Extensive shrublands dominate the higher elevations. Most shrubs in these areas are either big sagebrush or deciduous mountain shrubs such as antelope bitterbrush and Utah serviceberry.

Representative species for these areas include Brewer's sparrow, sage thrasher (*Oreoscoptes montanus*), green-tailed towhee (*Pipilo chlorurus*), and western meadowlarks (*Sturnella neglecta).*

Aspen stands provide nesting habitat for species such as broad-tailed hummingbirds (*Selasphorus platycercus*), yellow-rumped warblers (*Dendroica coronata*), warbling vireos (*Vireo gilvus*) and red-tailed hawks (*Buteo jamaicensis).* Rock outcrops and cliffs provide nesting habitat for species such as golden eagles (*Aquila chrysaetos*), rock wrens (*Salpinctes obsoletus*), peregrine falcons (*Falco peregrinus*), and white-throated swifts (*Aeronautes saxatalis).*

There are no highly specialized or narrowly endemic species known to inhabit the Resource Area. However, the U.S. Fish and Wildlife Service (USFWS) recognize several species as being "birds of conservation concern" (Table 9). The BCC list identifies birds that, without conservation actions, may become candidates for listing under the Endangered Species Act (USFWS 2008). Burrowing owls, bald eagles, Brewer's sparrows, and ferruginous hawks are also special status species and are specifically addressed in the Threatened, Endangered, and Sensitive Animal Species section.

Table 9. Birds of Conservation Concern by Habitat Association

Nesting Habitat	Common Name	Scientific Name
Salt Desert Shrublands	Burrowing Owl	Athene cunicularia
	Loggerhead Shrike	Lanius ludovicianus
	Sage Sparrow	Amphispiza belli
	Ferruginous Hawk	Buteo regalis
Sagebrush	Brewer's Sparrow	Spizella breweri
	Sage Thrasher	Oreoscoptes montanus
Pinyon-Juniper Woodlands	Gray Vireo	Vireo vicinior
	Pinyon Jay	Gymnorhinus cyanocephalus
	Juniper Titmouse	Baeolophus ridgwayi
Mountain Shrub	Virginia's Warbler	Vermivora virginiae
Aspen / Coniferous Forest	Flammulated Owl	Otus flammeolus
	Olive-sided Flycatcher	Contopus cooperi
	Cassin's Finch	Carpodacus cassinii
Riparian	Willow Flycatcher	Empidonax trailii
	Bald Eagle	Haliaeetus leucocephalus
	Veery	Catharus fuscescens
Cliff / Open Country	Golden Eagle	Aquila chrysaetos
	Peregrine Falcon	Falco peregrinus
	Prairie Falcon	Falco mexicanus

Environmental Consequences of Alternative A – Proposed Action: While some birds will utilize invasive species as nesting habitat (e.g. willow flycatchers nesting in tamarisk), it is generally assumed that intact native ecosystems provide the best habitat for birds. Migratory birds can be negatively impacted by the proliferation of weed species through lowered food availability (e.g. changes in insect communities and abundance), removal of appropriate nest sites (e.g. tamarisk replacing cottonwood trees), or large-scale habitat conversion (e.g. cheatgrass altering fire return intervals in sagebrush communities). The proposed IWMP includes manual removal, biological control, and chemical control as weed treatment methods.

Manual Removal: Migratory birds may be impacted by manual removal activities if nests are destroyed during removal (e.g. cutting down tamarisk or Russian olive trees) or if the level of human activity associated with manual removal of weeds results in nest abandonment. Manual removal of weeds is labor intensive. If weeds are either dispersed or easy to remove, then personnel should be able to cover large areas of habitat during the breeding season (i.e. April through mid-August). However, any disturbance around nests would be of short duration and brief periods of disturbance are not expected to adversely influence an individual nesting effort. Manual removal of weeds is most likely to negatively influence breeding success in areas of dense weeds that are difficult to remove since personnel would spend a large amount of time in a small area. However, such localized control activities are viewed as a desirable trade-off in preventing further seed dissemination and continued expansion of weed-dominated sites. Unlike most songbirds, raptor nests tend to be conspicuous and the WRFO maintains a database of active nest locations. In the event raptor nest activity is discovered within treatment areas, restrictions on activities around the nest site would be applied until nest functions are complete.

Biological Control: There are two different biological control treatments using insects that are currently included in the proposed action. The first is for treatment of a spotted knapweed infestation in the Dry Thirteen Mile Creek area of Piceance. Knapweed is not known to provide nesting habitat or to be a forage plant for migratory birds, thus use of biological control on knapweed is not expected to influence migratory birds.

The other proposed biological control treatment is to use the tamarisk leaf beetle to control tamarisk infestations along the White River. Many species of migratory birds will use tamarisk as migratory stopover habitat and as nesting habitat. Indeed, more species can often be found in mixed areas (e.g. cottonwood overstory with a tamarisk understory) than in pure native or pure tamarisk stands (Hultine et. al 2009). Large-scale removal of tamarisk in these areas would likely influence the birds that have become accustomed to using them for foraging and nesting. However, in the long-term, restoration of native ecosystems should not negatively influence local migratory bird populations since tamarisk infestations are a relatively recent occurrence on the landscape and these species evolved with native vegetation. The greatest threat to migratory birds that use these riparian areas would be if tamarisk removal was successful but reestablishment of native woody species (e.g. cottonwoods and willows) was not. Native or introduced herbaceous plants would not provide the same foraging or nesting habitat as woody species. To minimize impacts to migratory birds that rely on these areas, it is critical that cottonwoods and willows be re-established at sites (e.g. using plantings) where tamarisk removal is successful.

Prescribed grazing may also be used a biological control method. However, a site-specific Environmental Assessment will be conducted for prescribed grazing treatments.

Chemical Control: In terms of disturbance to nest sites due to human activity, the impacts of chemical control methods are similar to those of manual control methods with more disturbance time in any given area associated with manual application of chemicals (e.g. wiping chemicals on individual plants) or spot-spray treatments in dense weed infestations. Chemical weed control can otherwise influence migratory birds due to exposure to hazardous chemicals (e.g. direct exposure or ingestion of contaminated food items) or alteration of habitat conditions (e.g. non-selective herbicides killing desirable plant species).

Exposure to Chemicals: Most of the herbicides approved for use by the BLM pose either no risk or low risk to migratory birds due to loss of invertebrate prey or consumption of contaminated food items (Tables 10a and 10b). It is assumed that volant birds would move out of the area during herbicide application and the only individuals that may receive direct exposure to herbicides during broadcast applications would be young that have not yet fledged. Indirect impacts to insectivores due to loss of prey species are not anticipated. Most herbicides pose little to no risk to insects. Moderate risks to insects are associated with use of diuron, glyphosate, hexazinone, and triclopyr at the maximum application rates and with the use of 2,4-D at any application rate. Likewise, consumption of contaminated food items generally pose little to no risk to birds. Moderate risks are associated with consumption of insects that have been contaminated by dicamba, diquat, glyphosate, and triclopyr at the maximum application rate or hexazinone at any application rate. Moderate risks are also associated with consumption of vegetation that has been contaminated by 2,4-D at typical application rates or by diuron, hexazinone, or triclopyr at maximum application rates. The greatest risk to migratory birds from chemical exposure comes from consumption of vegetation that has been contaminated by diquat or 2,4-D at maximum application rates or from consumption of insects contaminated by 2,4-D (at any application rate). Consumption of contaminated fish (at any application rate of 2,4-D) also poses a high risk to piscivorous birds (e.g. belted kingfisher, *Ceryle alcyon*). One of the standard operating procedures for the WRFO is to “apply the least amount of herbicide needed to achieve the desired result” (See SOP Appendix). Consumption of contaminated vegetation due to application of typical rates of diquat poses only a low risk to migratory birds and thus use of diquat is not anticipated to result in substantial negative impacts to migratory bird populations. However, the use of 2,4-D does cause concern. The majority of the “birds of conservation concern” in the WRRA (with the exception of the raptors and Cassin’s finch) consume insects as a staple of their diet or feed their young primarily insects (Ehrlich et al. 1988). Since 2,4-D at any application rate poses a high risk to avian insectivores across a wide variety of habitat types, it is recommended that its use be restricted within the WRRA to the greatest extent practicable. Other herbicides that are not as toxic to migratory birds could be used to treat most of the weeds (except for leafy spurge and toadflax) that can be treated using 2,4-D. Site specific proposals shall be evaluated based on the application method (i.e. spot spray or broadcast), condition of the treatment area in respect to foraging and nesting habitat, and whether or not there are other effective treatment methods for the target weed. It should not be used as a matter of convenience or habit when there are other treatment methods available and site specific proposals should document the reason why the use of 2,4-D is critical to achieving objectives.

Alteration of Habitat Conditions: Chemical control can be applied as a spot treatment or as broadcast application of either selective or non-selective herbicides. Typically, chemicals would be used to achieve weed removal with the goal of restoring native plant communities (hereafter referred to as "weed treatments"). However, chemicals are also used to kill all existing vegetation and promote bare ground around production facilities (hereafter referred to as "bare ground treatments").

Spot spray treatments or broadcast application of selective herbicides would have negligible influence on habitat for migratory birds since it would target only weed species. Removal of these isolated or small populations of weeds would be beneficial in the long term as it would prevent the area from becoming a dense stand of noxious or invasive species. Large infestations in areas with minimal desirable species may be treated with a broadcast application (ground or aerial) of a non-selective herbicide followed by seeding. It is expected that these areas provide limited benefit to migratory birds since they are often almost a monoculture of weeds (e.g. large areas of cheatgrass, leafy spurge, or yellow toadflax). Some migratory birds such as willow flycatchers (*Empidonax traillii*) and blue-gray gnatcatchers (*Polioptila caerulea*) nest in tamarisk and Russian olives. If possible, delaying treatment of these weeds until after the nesting period (i.e. after mid-August) would prevent destruction of nests. If treatments are effective, then there may be a reduction in potential nesting habitat in the interim period after weeds are removed and native vegetation reestablishes. However, treatments would not be on such a scale to influence local populations of migratory birds and would be beneficial in the long-term as native plant communities are restored to the area. Tebuthiuron (e.g. Spike 20P) is an herbicide for woody vegetation (i.e. trees and shrubs) that can be used (according to the label) to treat big sagebrush, juniper, and pinyon pine. These species are highly valuable in terms of nesting and foraging habitat for migratory birds, including several species listed as "birds of conservation concern". Treatments specifically targeting big sagebrush, juniper, pinyon pine, or any other native shrub or tree should not be considered weed treatments, per se, and should be analyzed in a separate NEPA document. To prevent accidental harm to native woody vegetation over an unacceptably large area, tebuthiuron should not be aerially broadcast.

Bare ground treatments typically use chemicals such Round Up (glyphosate), Krovar (bromacil and diuron), Sahara (diuron and imazapyr) and Karmex DF (diuron) to achieve long-term results. The proposed treatments would be confined to fenced industrial facility yards and the immediate vicinity of oil and gas production and transportation equipment that has been maintained in a heavily disturbed and non-vegetated state and provide no practical cover or forage component for migratory bird use. Short duration and localized herbicide application activities during early to mid-summer would have no further influence on nearby nesting habitats than periodic well and pipeline inspection and maintenance activities. These episodes would have no reasonable probability of adversely affecting local reproductive efforts or recruitment.

Environmental Consequences of Alternative B – No Action (Continue Present Management): Alternatives A and B are very similar. The only difference is that under Alternative B, the WRFO would not be permitted to use the herbicides difluenzopyr, diquat, fluridone, and imazapic. In general, denial of the use of these herbicides would result in a decreased opportunity for migratory birds to be exposed to chemicals or for harmful effects on desirable plant species on which they depend. In practical terms, denial of the use of

difluenzopyr, diquat, and fluridone would not noticeable change implementation of the IWMP since they are either redundant or not used in the WRRA (See Threatened, Endangered, and Sensitive Animal Species section).

Denial of the use of imazapic would, however, substantially change the implementation of the IWMP since it targets cheatgrass. Cheatgrass is found throughout the WRRA with very large infestations occurring in salt desert shrub, sagebrush, and pinyon-juniper habitats between Colorado State Highways 64 and 40. These habitats support a variety of migratory birds including several species that are listed as "birds of conservation concern". Cheatgrass degrades these areas by suppressing native herbaceous vegetation and also by altering the fire return interval. Imazapic has a low toxicity to birds and effective use of it as part of a program to improve habitat conditions for migratory birds would be beneficial.

Environmental Consequences of Alternative C – No Herbicide Use: If the WRFO did not use herbicides, then there would still be the options of manual treatments or biological control treatments in the IWMP. Manual treatments are labor intensive and will require repeated efforts for species that are able to re-sprout from cut roots and for species with a large seed bank. Only limited areas would be able to be treated every year and it is expected that weed infestations would continue to spread across the WRRA. Biological control treatments, particularly using insects, typically do not eradicate weed species but are used to bring the infestations down to a level (in terms of density or distribution) that are more manageable and can then be treated using manual or chemical methods. Biological control of tamarisk is a good example of using one tactic on a single weed species that requires concurrent treatment of other weed species (typically using chemicals) in order for restoration of native plant communities to be effective. Overall, it is expected that any benefit migratory birds may experience from not being exposed to chemicals would be negated by the expansion of weed species and degraded habitat conditions.

Environmental Consequences of Alternative D – No Aerial Application of Herbicide: Denial of the use of aerial herbicide application would preclude the treatment of up to 600 acres of large infestations (e.g. leafy spurge and cheatgrass) annually. Without the option to aerially broadcast herbicide, it is likely that weed infestations would continue to expand. Outside of the effects associated with the actual herbicide, aerial broadcast methods would have minimal influence on migratory birds since it would be a brief disturbance (compared to manual treatments or ground broadcast treatments). No ground disturbance would occur so there would be no potential for inadvertent destruction of ground nests by foot or vehicle traffic. The greatest concern for migratory birds due to aerial application of herbicides would be the destruction of desirable species that provide valuable nesting and foraging habitat. Tebuthiuron should not be used aerially to prevent loss of important shrub and tree habitats. Aerial application of non-selective herbicides is limited to weed infestations in which minimal desirable plant species remain. In general, weed monocultures do not provide suitable nesting or foraging habitat for birds (with the exception of tamarisk and Russian olive). Denial of aerial application as a broadcast method for herbicide treatments would not benefit migratory birds and would likely result in more acres of habitat being degraded by weed expansion.

Mitigation: Measures to reduce risks to migratory birds and their habitats have been integrated into the proposed action.

Table 10a. Risk Categories Used to Describe BLM-evaluated Herbicide Effects on Non Special Status Wildlife According to Exposure Scenario – Adapted from Table 4-22 of the PEIS (BLM 2007a) for Scenarios Relevant to Migratory Birds

Application Scenario	BROM[1]		CHLOR		DICAM		DIFLU		DIQUAT		DIURON		FLUR		IMAZ		OVER		SULFM		TEBU	
	T[2]	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M
Direct Spray of an Insect – 100% Absorption	L[3]	L	0	0	0	L	0	0	L	L	L	M	0	0	0	0	0	0	0	0	0	0
Consumption of Contaminated Prey by an Avian Insectivore[4]	0	0	0	0	L	M	0	0	0	M	0	L	0	0	0	0	0	0	0	0	0	L
Consumption of Contaminated Vegetation by an Avian Herbivore[4]	0	L	0	0	0	0	0	0	L	H	0	M	0	0	0	0	0	0	0	0	0	0

[1]BROM = Bromacil; CHLOR = Chlorosulfuron; DICAM = Dicamba; DIFLU = Difluenzopyr; FLUR = Fluridone; IMAZ = Imazapic; OVER = Overdrive®; SULFM = Sulfometuron methyl; and TEBU = Tebuthiuron
[2]T = Typical application rate; M = Maximum application rate
[3]Risk categories: 0 = No Risk, L = Low Risk, M = Moderate Risk, H = High Risk
[4]Ingestion of contaminated food items includes acute and/or chronic effects with the highest risk category being reported.

Table 10b. Risk Categories Used to Describe Forest Service-evaluated Herbicide Effects on Wildlife According to Exposure Scenario – Adapted from Table 4-23 of the PEIS (BLM 2007a) for Scenarios Relevant to Migratory Birds

Application Scenario	2,4-D		Clopyralid		Glyphosate		Hexazinone		Imazapyr		Metsulfuron		Picloram		Triclopyr	
	Typ[1]	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max
Direct Spray of an Insect – 100% Absorption	M[2]	M	0	L	L	M	L	M	0	L	0	0	0	L	L	M
Consumption of Contaminated Insects by a Small Bird (Acute)	H	H	0	L	L	M	M	M	L	L	0	0	0	0	L	M
Consumption of Contaminated Vegetation by a Large Bird[3]	M	H	0	L	L	L	L	M	0	L	0	0	0	L	L	M

[1]Typ = Typical application rate; Max = Maximum application rate
[2]Risk categories: 0 = No Risk, L = Low Risk, M = Moderate Risk, H = High Risk
[3]Ingestion of contaminated food items includes acute and/or chronic effects with the highest risk category being reported.

WILDLIFE, AQUATIC (includes a finding on Standard 3)

Affected Environment: Streams that support aquatic habitats are distributed across the Resource Area. Essentially all perennial and some of the larger intermittent streams support simple invertebrate-based aquatic communities, but in the context of herbicide application, of most concern are those that directly or indirectly support vertebrates. In addition to the White River, the Yampa River, and the Green River, there are numerous smaller systems that support vertebrate aquatic wildlife (Table 11).

Table 11. Riparian Systems Known to Support Vertebrate Aquatic Wildlife by Geographic Reference Area (GRA).

GRA Name	Drainage Name
Douglas GRA	Douglas Creek
	West Creek
	West Douglas Creek
	East Douglas Creek
	West Evacuation Creek
	Bitter Creek
	Spring Creek
Crooked Wash GRA	Deep Channel Creek
	Tschuddi Gulch
	Scenery Gulch
	Crooked Wash
	Black's Gulch
Danforth Hills GRA	Flag Creek & tributaries
	Wilson Creek & tributaries
	Good Spring Creek & tributaries
	Big Beaver Creek
	Fawn Creek Reservoir

GRA Name	Drainage Name
Piceance GRA	Cow Creek & tributaries
	Fawn Creek & tributaries
	Dry Fork & tributaries
	Willow Creek & tributaries
	Hunter Creek & tributaries
	Clear Creek
	Ryan Gulch
	Stake Springs Draw
	Duck Creek & tributaries
	Piceance Creek
	Black Sulphur Creek
	Trapper Creek
	Yellow Creek
Blue Mountain GRA	Meadow Creek
	Divide Creek Reservoir
	Peterson Draw Reservoir

Coldwater fish species occurring within the WRFO include species such as brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta),* mountain whitefish (*Prosopium williamsoni*), mottled sculpin (*Cottus bairdi*), and speckled dace (*Rhinichthysosculus*). Warmwater fish include species such as carp (*Cyprinus carpio*), channel catfish (*Ictalurus punctatus*), and white sucker (*Catostomus commersonii).* Colorado pikeminnow, razorback sucker, bonytail, humpback chub, greenback cutthroat trout, Colorado River cutthroat trout, roundtail chub, bluehead sucker, flannelmouth sucker, and mountain sucker are special status species and are discussed in the Threatened, Endangered, and Sensitive Animal Species Section.

Amphibians occurring within the WRFO include Woodhouse's toad (*Bufo woodhousii),* the western chorus frog (*Pseudacris triseriata),* and tiger salamanders (*Ambystoma tigrinum).* Boreal

toads, Great Basin spadefoot, and northern leopard frogs are special status species and are discussed in the Threatened, Endangered, and Sensitive Animal Species Section.

Environmental Consequences of Alternative A – Proposed Action: The only herbicides with aquatic formulations are 2,4-D, diquat, fluridone, glyphosate, imazapyr, and triclopyr. These formulations may be applied to submerged or emergent vegetation, depending on label restrictions. Aquatic wildlife species could be exposed to either terrestrial or aquatic herbicides if chemicals were to enter aquatic habitats as the result of direct application (including accidental sprays and spills), by off-site drift, or by surface run-off. Fish and adult frogs may also be affected by reduced prey availability (of small fish or invertebrates) or by ingestion of contaminated prey.

Fish: Toxicity studies are generalized based on a representative ecological receptor and it is assumed that all fish species will be affected in a similar manner. Not all of the application scenarios were evaluated under the Ecological Risk Assessments for all of the herbicides (Tables 12a and 12b), thus it is uncertain the impacts that these chemicals would have on fish species.

For direct spray or accidental spill scenarios, most of the proposed herbicides had no effects or posed a low risk to fish in stream habitats. For direct spray on a stream, there were moderate risks from bromacil or diquat and a high risk from diuron (Table 12a). For accidental spills, there was a moderate risk from imazapyr at the typical application rate and from 2,4-D or triclopyr TEA at the maximum application rates. There was a high risk from accidental spill scenarios involving glyphosate or picloram at any application rate and from imazapyr and triclopyr (TEA and BEE) at the maximum application rate (Table 12b).

For most of the proposed herbicides, off-site drift and surface run-off did not result in negative effects to either fish or aquatic invertebrates (Table 12a). The PEIS recommended minimum buffer distances to minimize risk to fish and aquatic organisms from off-site drift of diuron (BLM 2007a, p4-98), even though the risk assessment specifically for off-site drift and surface run-off of diuron anticipates no risk. This may be in response to the fact that diuron is highly toxic to aquatic invertebrates; aquatic plants, and fish (and has the potential to bioaccumulate).

Amphibians: It is generally assumed that fish and amphibians respond similarly to toxic chemicals (Tatum 2004), however that may not always be the case. For example, diuron is considered highly toxic to fish but only slightly toxic to amphibians (BLM 2007a). Toxicity information is not as available for amphibians as it is for fish and many of the proposed herbicides have not been specifically evaluated in regards to amphibians (including chlorosulfuron, diflufenzopyr, fluridone, imazapic, clopyralid, hexazinone, imazapyr, metsulfuron methyl, and picloram) (BLM 2007a). Bromacil, diuron, dicamba, tebuthiuron, and 2,4-D are considered to be non-toxic or only slightly toxic (BLM 2007a, Reylea 2005a). Diquat and sulfometuron methyl are moderately toxic to amphibians (BLM 2007a). Glyphosate alone is considered to be slightly to moderately toxic except when it includes Polyethoxylated tallowamine (POEA) surfactant. POEA surfactant is considered to be highly toxic to amphibians. Only 2% of tadpoles and 21% of juvenile (terrestrial) frogs survived exposure to glyphosate with POEA surfactant (Rylea 2005b). When possible, herbicides that have not been evaluated in regards to toxicity to amphibians should not be used in known occupied habitats.

The PEIS recommends not using POEA as a surfactant (BLM 2007a). The WRFO has not used POEA surfactant recently and will not use it as a surfactant.

In addition to guidelines found in the BMPs, SOPs, and Mitigation Measures (Appendices B,C, and D), the WRFO would incorporate the following conservation measures to help minimize risks to vertebrate aquatic wildlife species (see Appendices E and F):

- Do not use glyphosate formulations that include R-11 or POEA surfactant.

- Follow all instructions and SOPs to avoid spill and direct spray scenarios into aquatic habitats. Special care should be followed when transporting and applying 2,4-D, bromacil, clopyralid, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, tebuthiuron, and triclopyr.

- For riparian systems that support vertebrate aquatic wildlife, maintain the following minimum buffers for broadcast applications of diuron:
    - Typical Rate, High Boom (50 inches): 100 ft Minimum Buffer
    - Maximum Rate, Low Boom (20 inches): 100 ft Minimum Buffer
    - Maximum Rate, High Boom: 900 ft Minimum Buffer

- Buffer strips will be provided for streams and riparian areas when using terrestrial herbicides. A minimum buffer strip of 25 ft (7.6m) will be provided for vehicle applications (e.g. ATV sprayers). Within 25 ft (7.6m) of water, herbicides will be applied using a backpack sprayer. Herbicides that pose a moderate to high risk to fish (e.g. bromacil, diquat, diuron, terrestrial formulations of glyphosate, imazapyr, picloram, and triclopyr BEE at any application rate or 2,4-D and triclopyr TEA at maximum application rates) will not be used within 10 ft (3m) of water.

- Where feasible, do not use herbicides that have not been specifically evaluated for amphibians (i.e. chlorosulfuron, difluenzopyr, fluridone, imazapic, clopyralid, hexazinone, imazapyr, metsulfuron methyl, and picloram) in occupied habitat.

Environmental Consequences of Alternative B – No Action (Continue Present Management): Environmental consequences for aquatic wildlife would similar to those of other wildlife species (See Threatened, Endangered, and Sensitive Wildlife Species Section). Control of cheatgrass would aid in maintaining quality riparian habitat since there would be less risk of increased sedimentation due to upland erosion. Imazapic is not an aquatic-approved herbicide and would not be used near suitable habitat for aquatic wildlife species.

Environmental Consequences of Alternative C – No Herbicide Use: Environmental consequences for aquatic wildlife would be similar to those of other wildlife species (e.g. See Threatened, Endangered, and Sensitive Wildlife Species Section). In general, weed control without herbicides is not expected to be as effective across the landscape and would result in expansion of weeds.

Environmental Consequences of Alternative D – No Aerial Application of Herbicide: Aerial application of herbicides would most likely influence aquatic wildlife due to drift. BMPs, SOPs, and label restrictions should be sufficient to minimize drift of herbicides onto non-target riparian areas.

Mitigation: Measures to reduce risks to aquatic wildlife species and their habitats have been integrated into the proposed action.

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Vegetation, Terrestrial Wildlife): Whether or not aquatic habitat conditions within the Resource Area are meeting or moving toward meeting Standard 3 varies depending on the system. The proposed action would complement efforts to meet this standard by minimizing the occupation of upland areas by noxious weeds and by reducing the adverse influences degraded upland conditions have on riparian and channel functions. Safeguards incorporated within the proposed action would prevent aquatic organisms and riparian vegetation from being exposed to harmful levels of chemical.

Table 12a. Risk Categories Used to Describe BLM-evaluated Herbicide Effects on Special Status Fish & Aquatic Invertebrates According to Exposure Scenario – Adapted from Table 4-20 of the PEIS (BLM 2007a) for Scenarios Relevant to Fish

Application Scenario	BROM[1]		CHLOR		DICAM		DIFLU		DIQUAT		DIURON		FLUR		IMAZ		OVER		SULFM		TEBU	
	T[2]	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M
Direct Spray to Stream - Fish	M[3]	M	0	0	0	0	0	0	M	M	H	H	0	L	0	0	0	0	0	0	0	0
Direct Spray to Stream - Aquatic Invertebrates	0	L	0	0	0	0	0	0	H	H	M	H	0	L	0	0	0	0	0	0	L	M
Off-Site Drift or Surface Runoff to Stream - Fish & Aquatic Invertebrates	0	0	0	0	0	0	0	0	NE	NE	0	0	NE	NE	0	0	0	0	0	0	0	0

[1]BROM = Bromacil; CHLOR = Chlorosulfuron; DICAM = Dicamba; DIFLU = Difluenzopyr; FLUR = Fluridone; IMAZ = Imazapic; OVER = Overdrive®; SULFM = Sulfometuron methyl; and TEBU = Tebuthiuron
[2]T = Typical application rate; M = Maximum application rate
[3]Risk categories: 0 = No Risk, L = Low Risk, M = Moderate Risk, H = High Risk, NE = Not Evaluated

Table 12b. Risk Categories Used to Describe Forest Service-evaluated Herbicide Effects on Fish & Aquatic Invertebrates According to Exposure Scenario – Adapted from Table 4-18 of the PEIS (BLM 2007a) for Scenarios Relevant to Fish

Application Scenario	2,4-D		Clopyralid		Glyphosate[3]		Hexazinone		Imazapyr		Metsulfuron		Picloram		Triclopyr[4]	
	Typ[1]	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max
Fish (Sensitive Species/Coldwater Species) - Accidental Spill	L[2]	M	L	L	H	H	NE	NE	M	H	0	L	H	H	L/H	M/H
Fish (Tolerant Species/Warm water Species) - Accidental Spill	NE	NE	0	0	H	H	NE	NE	0	L	0	0	L	L	NE	NE
Aquatic Invertebrates - Accidental Spill	L	M	L	M	M	H	NE	NE	0	L	0	0	L	Max	L/M	H/H
Chronic Exposure - Fish & Aquatic Invertebrates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[1]Typ = Typical application rate; Max = Maximum application rate
[2]Risk categories: 0 = No Risk, L = Low Risk, M = Moderate Risk, H = High Risk, NE = Not Evaluated
[3]Risk levels for the more toxic glyphosate formulation.
[4]First value is for triclopyr acid formulation (TEA) and the second value is for triclopyr butoxythel formulation (BEE).

WILDLIFE, TERRESTRIAL (includes a finding on Standard 3)

Affected Environment: The WRFO supports a diverse assemblage of terrestrial wildlife species. There are no highly specialized or narrowly endemic species known to inhabit the Resource Area. A wide variety of mammals are managed as game species. Big game species include elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), pronghorn (Antilocapra americana), black bear (*Ursus americanus*), and mountain lion (*Felis concolor*). Furbearers include species such as badger (*Taxidea taxus*) , coyote (*Canis latrans*), bobcat (*Lynx rufus*), and red fox (*Vulpes vulpes*). Small game mammals include species such as desert cottontail (*Sylvilagus audubonii*), mountain cottontail (*Slyvilagus nuttallii*), white-tailed jackrabbit (*Lepus townsendii*), and yellow-bellied marmots (*Marmota flaviventris*).
There are only a dozen reptile species (limited to lizards and snakes) occurring within the WRFO, including short-horned lizards (*Phrynosoma hernandesi*), sagebrush lizards (*Sceloporus graciosus*), western terrestrial garter snake (*Thamnophis elegans*), and western rattlesnake (*Crotalus viridis*).

Examples of bird communities and impacts to avian fauna were described previously in the Migratory Bird Section. Amphibians were discussed in the Aquatic Wildlife Section since larval forms are associated with aquatic habitats.

Environmental Consequences of Alternative A – Proposed Action: There are no terrestrial wildlife species (i.e. mammals or reptiles) that are known to use weed species as cover or forage to a substantial extent and it is generally assumed that intact native ecosystems provide the best habitat. The proposed IWMP includes manual removal, biological control, and chemical control as weed treatment methods.

Manual Removal: Manual removal of weed species is not anticipated to result in notable disturbance to terrestrial wildlife. Larger, more mobile species would likely leave the area during treatment activities, however most treatments are not conducted at energetically critical times of the year and temporary displacements are viewed as a desirable trade-off in preventing further seed dissemination and continued expansion of weed-dominated sites.

Biological Control: There are two different biological control treatments using insects that are currently included in the proposed action. The first is for treatment of a spotted knapweed infestation in the Dry Thirteen Mile Creek area of Piceance. Knapweed is not known to provide important cover or forage for terrestrial wildlife species and the use of biological control is not expected to directly influence their populations. There is evidence that some species used for biological control (i.e. *Urophora affinis* and *U. quadrifaciata*) have effectively created a food subsidy for small mammals such as deer mice (*Peromyscus maniculatus*) and increased their abundance (Pearson and Callaway 2006). It is not known if there will be similar unintended impacts from the use of *Centaurea maculosa* or *Cyphcleonus achates*. It is possible that *Urophora* spp. is already present in the area (Wilson and Randall 2005) and thus any changes in small mammal abundance due to food subsidies have already occurred. Additionally, elevated deer mice populations are restored once the food subsidy is removed (i.e. once knapweed abundance is reduced so is the abundance of the bio-control insects) (Pearson and Fletcher

2008). Thus any changes in small mammal abundance (and associated changes in overall community dynamics) are expected to be localized and temporary.

The other proposed biological control treatment is to use the tamarisk leaf beetle to control tamarisk infestations along the White River. There are no terrestrial wildlife species that are known to use tamarisk to a substantial degree for either forage or cover. The greatest influence tamarisk removal would have on wildlife species would be on fish and migratory birds (See Threatened, Endangered, and Sensitive Animal Species Section and Migratory Birds Section).

Prescribed grazing may also be used a biological control method. However, a site-specific Environmental Assessment will be conducted for prescribed grazing treatments.

Chemical Control: Chemical weed control can otherwise influence terrestrial wildlife due to exposure to hazardous chemicals (e.g. direct exposure or ingestion of contaminated food items) or alteration of habitat conditions (e.g. non-selective herbicides killing desirable plant species).

Exposure to Chemicals: Most of the herbicides approved for use by the BLM pose either no risk or low risk to terrestrial wildlife (Tables 13a and 13b). There is a moderate risk to small mammals due to direct spray of triclopyr, glyphosate, or hexazinone at the maximum application rates or 2,4-D at any application rate. Consumption of contaminated food items also generally poses no or low risk. Consumption of vegetation that has been contaminated by diquat or diuron at maximum application rates poses a moderate risk to small mammalian herbivores. The standard operating procedures for the WRFO's weed management program is to use the least amount of chemical necessary. Unless absolutely critical, maximum application rates would not be used and terrestrial wildlife would likely only be at low risks to negative effects from herbicide applications. The exception would be the use of 2,4-D, for which there are moderate risks associated with any application rate (for direct spray). Other wildlife species are much more sensitive to 2,4-D and its use is to be restricted across the WRRA (see Migratory Bird Section and Threatened, Endangered, and Sensitive Animal Species Section). Thus, terrestrial wildlife are much less likely to be exposed to 2,4-D.

Alteration of Habitat Conditions: The WRFO uses chemical control for both weed treatments and bare ground treatments. Spot spray treatments or broadcast application of selective herbicides would have negligible influence on habitat for terrestrial wildlife since it would target only weed species. Removal of these isolated or small populations of weeds would be beneficial in the long term as it would prevent the area from becoming a dense stand of noxious or invasive species. Large infestations in areas with minimal desirable species may be treated with a broadcast application (ground or aerial) of a non-selective herbicide followed by seeding. It is expected that these areas provide limited benefit since they are often almost a monoculture of weeds (e.g. large areas of cheatgrass, leafy spurge, or yellow toadflax). Tebuthiuron (e.g. Spike 20P) is an herbicide for woody vegetation (i.e. trees and shrubs) that can be used (according to the label) to treat big sagebrush, juniper, and pinyon pine. These species are highly valuable habitat components for a variety of species (e.g. sagebrush voles (*Lemmiscus curtatus*), Merriam's shrew (*Sorex merriami*), pronghorn, and mule deer). Treatments specifically targeting big sagebrush, juniper, pinyon pine, or any other native shrub or tree should not be considered weed treatments, per se, and should be analyzed in a separate NEPA document. To prevent

accidental harm to native woody vegetation over an unacceptably large area, tebuthiuron should not be aerially broadcast.

Bare ground treatments would be confined to fenced industrial facility yards and the immediate vicinity of oil and gas production and transportation equipment that has been maintained in a heavily disturbed and non-vegetated state and provide no practical cover or forage component for terrestrial wildlife. Short duration and localized herbicide application activities would have no further influence on occupation of nearby habitats than periodic well and pipeline inspection and maintenance activities.

Environmental Consequences of Alternative B – No Action (Continue Present Management): Alternatives A and B are very similar. The only difference is that under Alternative B, the WRFO would not be permitted to use the herbicides difluenzopyr, diquat, fluridone, and imazapic. Denial of the use of difluenzopyr, diquat, and fluridone would not noticeably limit management options (See Migratory Bird Section). Denial of the use of imazapic would, however, substantially change the implementation of the IWMP since it targets cheatgrass. Cheatgrass is found throughout the WRRA with very large infestations occurring in salt desert shrub, sagebrush, and pinyon-juniper habitats between Colorado State Highways 64 and 40. Unabated, the continued proliferation of cheatgrass across the landscape would eventually necessitate broader scale herbicide application. The ultimate quality and utility of adjacent habitats would become increasingly compromised due to degradation of native plant composition. Imazapic is poses practically no risk to mammals (Table 13a) or birds (Table 10a) and denial of its use within the WRRA would ultimately harm terrestrial wildlife species due to habitat degradation from weed infestations.

Environmental Consequences of Alternative C – No Herbicide Use: Environmental consequences for terrestrial wildlife would be similar to those of other wildlife species (e.g. See Threatened, Endangered, and Sensitive Wildlife Species or Migratory Bird Sections). In general, weed control without herbicides is not expected to be as effective across the landscape and would result in expansion of weeds.

Environmental Consequences of Alternative D – No Aerial Application of Herbicide: Outside of the effects associated with the actual herbicide, aerial broadcast methods would have minimal influence on terrestrial wildlife since it would be a brief disturbance (compared to manual treatments or ground broadcast treatments). The greatest concern for terrestrial wildlife would be the destruction of desirable species that provide valuable nesting and foraging habitat. Tebuthiuron should not be used aerially to prevent loss of important shrub and tree habitats. Wholesale denial of aerial application as a broadcast method for herbicide treatments would not benefit terrestrial wildlife and would likely result in more acres of habitat being degraded by weed expansion.

Mitigation: Measures to reduce risks to aquatic wildlife species and their habitats have been integrated into the proposed action.

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Vegetation, Aquatic Wildlife): Currently, Standard 3 is being met broadly across the

WRRA. Resident wildlife populations are appropriate to the region and there are no known instances where population viability is in question. The extent and distribution of suitable habitat is generally stable and consistent with landscape capability. In cases where there is a failure to meet Public Land Health Standards it is often due to degraded range conditions where weed infestations have become the dominant component of the vegetation community. The proposed action complements management that minimizes noxious and undesirable weed expression in the overall plant community and, as mitigated, has appropriate safeguards that would effectively avoid those influences chemical exposure may have on individual animals or habitat conditions. Conversely, Alternatives B, C, and D would promote incremental increases in acreage supporting weed monocultures, and over time, increasingly large landscape parcels would fail to meet this standard.

Table 13a. Risk Categories Used to Describe BLM-evaluated Herbicide Effects on Non Special Status Wildlife According to Exposure Scenario – Adapted from Table 4-22 of the PEIS (BLM 2007a) for Scenarios Relevant to Mammals

Application Scenario	BROM[1]		CHLOR		DICAM		DIFLU		DIQUAT		DIURON		FLUR		IMAZ		OVER		SULFM		TEBU	
	T[2]	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M
Direct spray of a small mammal, 100% absorption	0[3]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ingestion of contaminated food items by a large mammalian herbivore[4]	0	L	0	0	0	L	0	0	L	M	L	M	0	0	0	0	0	0	0	0	0	L
Ingestion of contaminated food items by a large mammalian carnivore[4]	0	L	0	0	L	L	0	0	0	0	L	L	0	0	0	0	0	0	0	0	0	0
Consumption of contaminated food items by a small mammalian herbivore[4]	0	L	0	0	0	L	0	0	L	M	L	M	0	0	0	0	0	0	0	0	0	L

[1]BROM = Bromacil; CHLOR = Chlorosulfuron; DICAM = Dicamba; DIFLU = Difluenzopyr; FLUR = Fluridone; IMAZ = Imazapic; OVER = Overdrive®; SULFM = Sulfometuron methyl; and TEBU = Tebuthiuron
[2]T = Typical application rate; M = Maximum application rate, [3]Risk categories: 0 = No Risk, L = Low Risk, M = Moderate Risk, H = High Risk
[4]Ingestion of contaminated food items includes acute and/or chronic effects with the highest risk category being reported.

Table 13b. Risk Categories Used to Describe Forest Service-evaluated Herbicide Effects on Wildlife According to Exposure Scenario – Adapted from Table 4-23 of the PEIS (BLM 2007a) for Scenarios Relevant to Mammals

Application Scenario	2,4-D		Clopyralid		Glyphosate		Hexazinone		Imazapyr		Metsulfuron		Picloram		Triclopyr	
	Typ[1]	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max
Direct spray of a small animal, 100% absorption	M	M	L	L	L	M	L	M	0	L	0	L	L	L	L	M
Consumption of a contaminated small mammal by a predatory mammal	L	L	0	0	0	0	0	0	0	0	0	0	0	0	0	L
Consumption of contaminated insects by a small mammal	M	H	L	L	L	M	0	0	0	L	0	L	L	M	L	M
Consumption of contaminated vegetation by a large mammal[3]	M	M	L	L	L	M	L	M	0	L	0	L	L	M	L	M
Chronic consumption of contaminated vegetation by a small mammal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[1]Typ = Typical application rate; Max = Maximum application rate, [2]Risk categories: 0 = No Risk, L = Low Risk, M = Moderate Risk, H = High Risk
[3]Ingestion of contaminated food items includes acute and/or chronic effects with the highest risk category being reported

WILD HORSES

Affected Environment: Wild horses are managed, and are widely distributed throughout the year on the approximately 190,000 acres within portions of the project area(s). During the spring foaling season wild horse foals rely on mixed shrub communities for cover and protection. Grasses equate to as much as 90% of the wild horse diet. The exception to this is in the winter months, during period of heavy snow accumulation, when wild horses can rely primarily on browse plant species. Continued increases of invasive weed colonies degrade the plant communities relied upon by wild horses.

Environmental Consequences of Alternative A – Proposed Action: Reducing noxious weed communities while they are in certain areas would result in increased desirable forage and so would directly benefit the wild horse herd(s). Conscientious application of the herbicide analyzed in this EA is not expected to adversely impact the health of the wild horse herd(s), or the individual horse within the herd.

Environmental Consequences of Alternative B – No Action (Continue Present Management): The continued encroachment of invasive weed species would decrease the availability of desirable grass and browse plant species relied upon by the wild horse herd(s). Future control of weeds would require greater broad applications of herbicide which could result in the loss of cover for wild horse foals and decreased forage for the wild horse herd(s).

Environmental Consequences of Alternative C – No Herbicide Use: No herbicide use in the WRRA would likely create an increase in noxious weeds therefore decreasing forage for wild horses. Broad treatments would likely not occur so there would be no loss of cover for foals.

Environmental Consequences of Alternative D – No Aerial Application of Herbicide: No aerial application would limit broad treatments of noxious weeds. There would not be as many acres treated within the WRRA and there could be a potential loss in forage for wild horses. However, with no broad treatments of weeds, there would likely not be as much of a decrease in cover for horses and their foals

Mitigation: Follow the Record of Decision, September 2007, Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS) (BLM 2007a) mitigation measures for wild horses.

CULTURAL RESOURCES

Affected Environment: This analysis is for the entire resource area. There are currently over 6,000 known cultural resources in the area. These resources do not represent inventory data for the entire area but do suggest many more sites are possible. Additional inventory and analysis will certainly result in more site data being added to the data base.

It is generally believed that humans have occupied the new world for at least 12.000 years and possibly more. The earliest inhabitants appear to have made hunting of Pleistocene mega fauna a

major component of their subsistence strategy. The inhabitants utilized large, distinctive projectile points as their main hunting weapon. Currently there are no known sites recorded for the earlier Clovis hunters or the Folsom hunters. However, the large fluted projectile points found in isolation suggest that these early hunters may have indeed inhabited the area.

Around 6,000 years ago as the largest game animals died out a shift in subsistence occurred with a concurrent reduction of projectile point size. Referred to as the Archaic period this era shows a broadening of the subsistence strategy to include more vegetal material while pursuing large animals such as various species of bison, including now extinct species, along with deer, elk and probably big horn sheep. Many such sites have been recorded in the area, often buried to significant depth in the soil. The Kibridge-Yampa site appears to represent a site making the transition from a Paleo-Indian life style to archaic life style and currently is unique in the resource area.

Following the Archaic period is what is referred to as the Formative period which began to be distinguishable in the archaeological record around 300 BC. Hunting and gathering was still a major component of the subsistence strategy though there was, once again, a generalized reduction of point size and increased occurrences of stone grinding tools such as Manos and mutates occur along with an increasing diversity in stone tool forms and functions. During this period maize horticulture was tried with varied success. During some periods in some areas maize horticulture appears to have been successful. Generally the physical remains have many similarities with remains of the earlier period where seasonal rounds of hunting and gathering were common.

The Formative period is believed to have ended after the arrival of Uto-Aztecan speaking peoples migrating out of the southwestern deserts of what is now eastern California and western Arizona. The Proto-historic Period or era, characterized by the influx of Uto-Aztecan linguistic stocks, particularly Numic speakers, becomes apparent in the archaeological record during the period beginning about AD 1275 through 1375. By the fifteenth century Numic influences seem to dominate the archaeological record. The distinctions are based on the present of a unique type of ceramics, projectile points, and brush shelters. The general subsistence strategy is nearly identical to those used during the Archaic era and often only the presence of radiocarbon dates or distinctive projectile points are the only ways to distinguish sites from the two eras. By the early eighteenth century European manufactured goods begin to appear and gradually become more plentiful in the record aiding in the identification of Proto-historic sites.

Legal white settlement in the area did not occur until the nineteenth century in part due to treaties that allowed mining in the districts around Hahn's Peak. Farming and other supports type functions followed. In the Rio Blanco portion of the resource area settlement began in earnest after the removal of the Ute to reservations in 1881. Historic sites include homesteads, ranch steads with associated infrastructure such as irrigation canals and ditches and wagon roads. Fences, sometimes built using the locally available piñon and juniper are also located across the area.

Environmental Consequences of the Proposed Action: Impacts common to all alternatives: In all alternatives spraying, off road vehicular travel for pesticide applications,

cultivation and mechanical and hand grubbing on previous disturbance such a existing well pads, pipeline routes, road rights-of-way or fixed facilities such as compressor stations, block valves, grasshoppers, pig launchers/retrievers will not have any impacts on cultural resources. This is due to the previous inventory, identification, evaluation, and/or treatment of cultural resources prior to the disturbance. Potential impacts could occur if spray drifts off the treated/disturbed area onto adjacent cultural resources. If spray drift should occur the particular Ph of the chemical used and the adjuvant, if any, used will determine the nature and extent of any impacts to cultural resources. Generally, the more acidic the chemical the greater the potential for adverse impacts to cultural resources. The highly organic adjuvants such as kerosene or diesel will adversely impact artifacts by contamination of radiocarbon samples on materials where the chemicals make contact and are absorbed. Particularly alkaline or basic chemicals and breakdown byproducts have the potential to be particularly destructive of organic materials.

Environmental Consequences of Alternative A – Proposed Action: The addition of four new herbicides to the weed management program will introduce two new acidic compounds (Dicamba and Diflufenzopyr) and one corrosive compound (Diquat) into the environment. Spraying of these chemicals on disturbed areas will not impact cultural resources unless spray drifts off site. Application of these new chemicals to cultural materials will cause deterioration of those materials. Diquat may be particularly destructive on any artifacts made of metal such as cans, weapons and weapon components such as shell casings, primers, percussion caps, needles, flatware, cooking utensils, serving utensils due to the corrosive nature of the compound. Acidic chemicals can cause discoloration of organic and inorganic materials, accelerated rusting and corrosion of metal objects that they come in contact with. The extent of impact will depend on the concentrations of chemical that come in contact with cultural materials. In alkaline soils where artifacts are buried or partially buried the alkalinity of the soil would act to neutralize the acid and reduce adverse impacts.

Reduction of unwanted non-native species would help to control erosion and reduce loss of archaeological contexts and smaller artifacts which are very easily transported off site by overland water flows. Reduction of gully formation would also reduce loss of artifacts and archaeological contexts.

Currently biological control using insects is not known to threaten archaeological resources. Grazing on unwanted plant species has the potential to have the same impacts to resources, should they be present as general grazing does, especially in animal concentration areas if sites are present.

Environmental Consequences of the No Action Alternative (Continue Present Management): Alternative B is the No Action Alternative and as such there would be no change from the current condition and impacts related to weed management. There is a potential for increased impacts to cultural resources if infestations increase in aerial extent and cause an increase in erosion and loss of soils.

Environmental Consequences of Alternative C – No Herbicide Use: Not using herbicides would reduce or eliminate the potential chemical interactions between herbicides and archaeological artifacts. However, the potential for increased acres of non-native invasive plant

infestations could adversely impact cultural resources as soil cover is lost and erosion, both sheet erosion and gully formation, causes loss of smaller artifacts and soils and general archaeological contexts. Mechanical and manual eradication of invasive and undesirable plants has the potential to impact cultural resources as ground is excavated with the hoes or grubbing tools required to extract the roots of the plants to eliminate the potential for unwanted plant re-sprouting.

Environmental Consequences of Alternative D – No Aerial Application of Herbicide: Not aerial spraying herbicides would almost totally eliminate the problems with spray drift depositing chemicals on archaeological resources unless archaeological resources are located in the targeted weed areas. In areas where ground based spraying occurs impacts would be related to cross-country vehicle use by applicators as well as any chemical reactions due to acids or corrosive chemicals. However large aerial treatments might not be accomplished if aircraft cannot be used which could increase the potential for increased soil erosion causing loss of archaeological contexts and smaller artifacts.

Mitigation: regardless of the alternative chosen each Pesticide Use Proposal that is tiered to this document shall be reviewed on an individual basis, with applicable maps showing intended treatment areas, to determine if additional inventory or other mitigation measures are needed to protect cultural resources.

PALEONTOLOGY

Affected Environment: This analysis is for the entire WRRA. More than eighty percent of the area managed by the WRFO is underlain by sedimentary rocks that are known to produce scientifically important fossils from plants to dinosaurs to mammals and birds. Formations are from geologic eras including Jurassic, Cretaceous, and Tertiary. Fossils can be found exposed on the surface and are often exposed during excavations for development projects. Along drainage bottoms Quaternary alluviums are found which can produce late aged fossil material such as horse or bison (Armstrong and Wolny 1989) but these animals are not known from the WRFO at this time.

Environmental Consequences of the Proposed Action: Impacts common to all alternatives: Impacts common to all alternatives: In all alternatives spraying, off road vehicular travel for pesticide applications, cultivation and mechanical and hand grubbing on previous disturbance such a existing well pads, pipeline routes, road rights-of-way or fixed facilities such as compressor stations, block valves, grasshoppers, pig launchers/retrievers will not have any impacts on paleontological resources. This is due to the previous inventory, identification, evaluation, and/or treatment of paleontological resources prior to the disturbance. Potential impacts could occur if spray drifts off the treated/disturbed area onto adjacent paleontological resources. If spray drift should occur the particular Ph of the chemical used and the adjuvant, if any, used will determine the nature and extent of any impacts to paleontological resources. Generally, the more acidic the chemical the greater the potential for adverse impacts to paleontological resources. Acid would dissolve the matrix and expose fossils, particularly smaller ones, to accelerated erosion potential.

Environmental Consequences of Alternative A – Proposed Action: the addition of four new herbicides to the weed management program will introduce two new acidic compounds (Dicamba and Diflufenzopyr) and one corrosive compound (Diquat) into the environment. Spraying of these chemicals on disturbed areas will not impact cultural resources unless spray drifts off site. Application of these new chemicals to paleontological materials could potentially cause deterioration of those materials. The extent of impact will depend on the concentrations of chemical that come in contact with paleontological materials. In alkaline soils where fossils are buried or partially buried the alkalinity of the soil would act to neutralize the acid and reduce adverse impacts.

Reduction of unwanted non-native species would help to control erosion and reduce loss of paleontological contexts and smaller fossils which are very easily transported off site by overland water flows. Reduction of gully formation would also reduce loss of smaller fossils and paleontological contexts.

Currently biological control using insects is not known to threaten paleontological resources. Grazing on unwanted plant species has the potential to have the same impacts to paleontological resources, should they be present as general grazing does, especially in animal concentration areas if formations and fossils are exposed.

Environmental Consequences of Alternative B – No Action (Continue Present Management): Alternative B is the No Action Alternative and as such there would be no change from the current condition and impacts related to weed management. There is a potential for increased impacts to paleontological resources if infestations increase in aerial extent and cause an increase in erosion and loss of soils.

Environmental Consequences of Alternative C – No Herbicide Use: Not using herbicides would reduce or eliminate the potential chemical interactions between herbicides and fossils. However, the potential for increased acres of non-native invasive plant infestations could adversely impact paleontological resources as soil cover is lost and erosion, both sheet erosion and gully formation, causes loss of smaller fossils and soils and general paleontological contexts. Mechanical and manual eradication of invasive and undesirable plants has the potential to impact paleontological resources as ground is excavated with the hoes or grubbing tools required to extract the roots of the plants to eliminate the potential for unwanted plant re-sprouting.

Environmental Consequences of Alternative D – No Aerial Application of Herbicide: No Aerial Spraying: Not aerial spraying herbicides would almost totally eliminate the problems with spray drift depositing chemicals on paleontological resources unless paleontological resources are located in the targeted weed areas. In areas where ground based spraying occurs impacts would be related to cross-country vehicle use by applicators as well as any chemical reactions due to acids or corrosive chemicals. However large aerial treatments might not be accomplished if aircraft cannot be used which could increase the potential for increased soil erosion causing loss of paleontological contexts and smaller fossils.

Mitigation: regardless of the alternative chosen each Pesticide Use Proposal that is tiered to this document shall be reviewed on an individual basis, with applicable maps showing

intended treatment areas, to determine if additional inventory or other mitigation measures are needed to protect paleontological resources.

ELEMENTS NOT PRESENT OR NOT AFFECTED:

No flood plains, prime and unique farmlands, exist within the area affected by the proposed action. There are also no Native American religious or environmental justice concerns associated with the proposed action.

OTHER ELEMENTS: For the following elements, only those brought forward for analysis will be addressed further.

Table 14

Other Element	NA or Not Present	Applicable or Present, Not Brought Forward for Analysis	Applicable & Present and Brought Forward for Analysis
Visual Resources		X	
Fire Management			X
Forest Management			X
Hydrology/Water Rights		X	
Rangeland Management			X
Realty Authorizations		X	
Recreation		X	
Access and Transportation		X	
Geology and Minerals		X	
Areas of Critical Environmental Concern			X
Wilderness			X
Wild and Scenic Rivers	X		
Cadastral	X		
Socio-Economics		X	
Law Enforcement		X	

FIRE MANAGEMENT

Affected Environment: The objectives of fire management in the WRRA are to protect public health, safety, and property as well as to allow fire to carry out natural ecological functions. Resource benefit fires, which include both management and natural ignition sources, may be used to achieve land or resource management objectives.

Environmental Consequences of Alternative A - Proposed Action: This proposed action identifies new herbicides that have demonstrated a positive ability to help control the spread of weeds. The use of these herbicides will aid in fire management especially with cheat grass. Herbicide overspray, specifically through aerial application via fixed wing aircraft, will kill non-

targeted surrounding vegetation especially in the pinion pine and juniper vegetative community. Overspray will make more fuels readily available for wildland fire spread. The use of rotor-wing aircraft for aerial herbicide application for spot treatments of invasive and noxious species will minimize loss of vegetation due to over spray.

Environmental Consequences of Alternative B - No Action Alternative: Under this alternative, current weed management practices will continue with no change. The control or containment of cheat grass in and adjacent to fire scars will continue at its current rate. Cheat grass being an invasive annual grass with the ability to have multiple crops in one summer creates a fire receptive environment before and after what is typically the normal fire season. This invasive species is highly competitive and often pushes out native grass species. Increasing the fire return into an area makes it difficult for the native vegetative community to recover naturally.

Environmental Consequences of Alternative C – No Herbicide Use: The non-herbicide management of weeds will limit the WRFO's ability to contain and/or control cheat grass as it spreads into new disturbances easily. This will also increase the amount of personnel in the field to achieve this management goal which in turn will increase the probability of a human caused ignition in the wildland fuels. Fire return intervals will continue to progress as cheat grass continues to spread into fire scars and the adjacent areas.

Environmental Consequences of Alternative D – No Aerial Herbicide Application: No aerial application of herbicides will reduce the amount of chemical overspray and reduce the loss of vegetation that is available for wildland fire spread. The inability to utilize aircraft for application of herbicide will limit the amount of acres that may be treated in a year. Herbicides will still be applied via vehicle or by hand.

Mitigation: Individual PUP's will be evaluated for site specific conditions and mitigations if necessary.

FOREST MANAGEMENT:

Affected Environment: There is approximately 660,000 acres of forested and woodland areas within the WRRA. These areas are populated with Ponderosa Pine, Spruce/Fir, Aspen, Pinion Pine and Juniper. All of these sites currently have weeds located within the stands, whether it is noxious or invasive non-native.

Environmental Consequences of Alternative A - Proposed Action: Chemical overspray during the herbicide application process creates the greatest threat the forest and woodland communities. Direct contact with the stand canopy structure will cause some mortality. The greatest overspray would result from the use of fixed-wing aircraft to perform spot treats in remote forested or woodland sites. It is expected that there would be some loss to portions of the stands of trees through a spot application using rotor-wing aircraft and chemical application by hand. It is expected that the stand structure will recover. The increased invasion of cheat grass

into theses stands increase the threat of wildland fires and may result in the loss of an entire stand that may take 100 to 250 years to return.

Environmental Consequences of Alternative B - No Action Alternative: This alternative is the current practice the use of fixed wing aircraft to apply herbicide in forested and woodland areas has resulted in the loss of some trees. The WRFO has had limited success in containing or suppressing cheat grass with the current chemicals available and approved for use.

Environmental Consequences of Alternative C – No Herbicide Use: This would eliminate the loss of trees through overspray. The weeds will continue to invade the stands and change the vegetation under the canopy. With some fire prone species invading the stands, the stand risk to wildland fire would increase and the site may not return to its original condition. The uses of some biological controls are available for some species and may be effective but for those species where a biological control is not currently available, a manual treatment is the only other option. The reliance on manual treatments will limit the ability of the WRFO to the amount of areas that currently have a these listed weeds.

Environmental Consequences of Alternative D – No Aerial Herbicide Application: This alternative will also effectively eliminate the overspray of herbicides that would impact tree stands. This would limit the WRFO's ability to treat remote locations of weeds and also the amount of acres treated. This would also limit the amount acres treated in areas adjacent to the forested and woodland areas where weeds are present that could spread into the tree stands.

Mitigation: Individual PUP's will be analyzed separately for site specific mitigation to minimize effects to individual stands.

RANGELAND MANAGEMENT

Affected Environment: Approximately 1.4 million acres of public lands within the WRFO are currently permitted for livestock grazing. These 1.4 million acres is divided up into 155 grazing allotments plus the White River Trail used for trailing livestock. The livestock that grazes within the WRRA is mainly cattle along with some sheep and domestic horses. The majority of cattle grazing occur between the months of April and October with the majority of sheep grazing occurring during the winter months on the western portion of the resource area.

All treatments that successfully reduce the cover of noxious weeds on rangelands would benefit livestock by increasing the number of acres suitable for grazing and the quality of forage. Noxious weed infestations can greatly reduce the land's carrying capacity for domestic livestock, which tend to avoid most weeds (BLM 2009). Cattle, in particular, preferentially graze native plant species over weeds, which often have low palatability as a result of toxins, spines, and/or distasteful compounds (BLM 2009). Although goats and sheep are more likely to consume alien weeds than cattle, they also tend to select native or introduced forage species over weeds (BLM 2009). In addition, some noxious weeds (e.g., common tansy, houndstongue, Russian knapweed, and St. John's wort) are poisonous to livestock. The success of weed removal would determine the level of benefit of the treatments over the long term.

Treatments that control populations of non-native species on public lands would be expected to benefit native plant communities by reducing the importance of non-native species and aiding in the reestablishment of native species through natural recovery or post-treatment re-vegetation. The use of herbicides or other treatment methods to simply kill vegetation is often inadequate, especially for large infestations. Introducing and establishing competitive plants is also needed for successful management of weed infestations and the restoration of desirable plant communities (BLM 2009). The degree of benefit would depend on the success of these treatments over both the short and long term. Some treatments are very successful at removing weeds over the short term, but are not successful at promoting the establishment of native species in their place. In such cases, seeding of native plant species would be beneficial. Weeds may re-sprout or reseed quickly, outcompeting native species, and in some cases increasing in vigor as a result of treatments. The success of treatments would depend on numerous factors, and could require the use of a combination of methods to combat undesirable species.

Weed treatments do have the potential to cause disturbances to rangeland plant communities. Herbicide treatments often times have effects on target and non-target plant species. Often times reintroducing disturbance to plant communities provides opportunities for more weeds to establish and often times be more competitive/vigorous as a result of treatment activities. Treatments may require a temporary rest from grazing to allow plant communities ample opportunity to recover forcing livestock operators to find alternate areas to graze. Herbicides also have the potential to affect livestock health.

Cheatgrass **(***Bromus tectorum*) is prevalent throughout the WRRA. Livestock producers within the WRRA have began to rely on cheatgrass for early spring forage. The problem with cheatgrass is the narrow grazing window and the high variability of production from year to year. Monocultures of cheatgrass also do not meet Colorado public land health standards for vegetative communities, and herbicides can be effective at rehabilitating areas dominated by cheatgrass.

Environmental Consequences of Alternative A – Proposed Action: Under this alternative, the WRFO would be authorized to use all 18 herbicides currently approved by the BLM along with aerial application of herbicide. Four new herbicides were approved in the 2007 PEIS which include imazapic and overdrive (Diflufenzopyr and Dicamba). Imazapic has been shown to be effective on cheatgrass while overdrive is effective on multiple broadleaf and annual invasive species.

Positive and negative impacts to livestock grazing under the proposed chemical, manual, and biological weed treatments methods are summarized below:

Chemical Treatments-The effects of chemical treatments on livestock was investigated in the 2007 PEIS. The direct effects of herbicide use on livestock depend on the sensitivity of each species to the herbicide used. Indirect effects include positive or negative effects on each species as a result of changes in range conditions from the treatments.

Livestock has a greater chance of being negatively impacted if large areas of their range are treated. However, livestock can be removed from treatment areas prior to application or application can be planned for a time when livestock are not present, and adhering to the reentry interval as stated on the herbicide label. If livestock is removed from an area specifically to facilitate vegetation treatments, ranchers would be adversely affected as a result of the area being unavailable for grazing. Ranchers would then need to find alternate sources of forage for grazing animals or adjust ranching operations until the treatment area is reopened for grazing. The use of spot-spray techniques as directed on the label would reduce the effects on livestock.

In addition to grazing restrictions listed on herbicide labels, livestock owners may be required to remove livestock from treated areas for a certain amount of time prior to slaughter, and there are additional restriction for lactating dairy animals. A list of several other common effects of herbicide treatments are discussed in the BLM and USFS risk assessments (SERA 2005, ENSR 2005 a-j).

Herbicide treatments can also produce short-term and long-term benefits to livestock grazing. The direct and indirect impacts would largely depend on application techniques and whether the herbicides are applied in a rangeland environment. The greatest chances for negative impacts on livestock would be if 2,4-D, diuron, diquat, and bromacil are used extensively. Diquat is generally used strictly as an aquatic herbicide by BLM and Bromacil and Diuron are not generally used in rangeland situations. Successful herbicide treatments can improve vegetative composition, vigor and production which in turn lead to an increase in overall forage.

Manual Control-Manual treatments would have little to no effect on livestock operations. Manual control methods target specific species and there are almost no impacts to non-target vegetation. Manual treatments do cause soil disturbance and therefore may create a pathway for future weed establishment. Areas should be monitored to make sure there is no reoccurrence or increase in weed abundance.

Biological Control-The use of domesticate grazing animals to control noxious weeds could impact livestock operators. When managed improperly, these animals could compete for the same resources as livestock operators with grazing permits on public lands. It has been shown that through proper grazing strategies, the use of domestic sheep and or goats has been effective at managing leafy spurge (*Euphorbia esula*), and opening up areas for native grasses and forbs to re-establish thus creating more forage for permitted livestock.

Insects and pathogens released to control noxious weeds are not likely to affect livestock. These agents generally target specific undesirable species and allow an increase in desirable forage. It is possible that the introduction of these pathogens could require operators to rest a pasture for a short period while they become established.

Environmental Consequences of Alternative B – No Action (Continue Present Management): Under the no action alternative, weed management practices would not change within the WRFO. The four new herbicides approved in the 2007 PEIS would not be approved for use in the WRRA. Among these is imazapic which has been shown to be effective at treating

cheatgrass and other annual invasive species. The use of this herbicide would allow the WRFO to minimize spread of these species.

These four herbicides also have been shown to have low risks to livestock. Not being allowed to use these herbicides would increase the need for the WRFO to use herbicides classified as being more toxic to livestock such as 2,4-D.

The WRFO also does not have site specific NEPA for other herbicides such as clopyralid and tebuthiuron. Without authorization to use these herbicides would further limit the ability of WRFO to manage noxious and invasive weeds.

Environmental Consequences of Alternative C – No Herbicide Use: Under this alternative, affects to livestock from herbicide use would be eliminated. Impacts to livestock grazing would stem from manual and biological control methods.

Positive effects to rangelands would be limited with no herbicide use. Herbicides are often times the most effective and cost efficient way to manage noxious weeds. The WRFO not being authorized to use herbicides would dramatically reduce the number of acres treated for noxious weeds creating potential for weeds to expand within the resource area. Further expansion of weeds would increase the potential for livestock to ingest toxic plants as well as decrease rangeland production.

Environmental Consequences of Alternative D – No Aerial Application of Herbicide: Under the no aerial application alternative, acres treated within the WRRA would be significantly reduced. Aerial application is a cost effective method of treating large/rural infestations that are not feasible to treat using ground based methods. There is potential for an increase in effects to livestock due off-site drift, however the long-term benefits of being able to efficiently aerially apply herbicides over a larger area outweigh the negative impacts if proper re-vegetation practices are used.

Mitigation: The SOPs and mitigation measures designed to minimize impacts to livestock and ranching operations in the PER/ PEIS (BLM 2007a, b) have been adapted and included in Appendices E and F of this programmatic EA. No additional mitigation is suggested.

REALTY AUTHORIZATIONS

Affected Environment: The WRFO authorizes rights-of-way for pipelines, utilities, and facility sites throughout the resource area. The proposed use of herbicides for the treatment and control of noxious and invasive weeds could be applied to these rights-of-way.

Environmental Consequences of Alternative A - Proposed Action: Approval of additional herbicides to control weeds on disturbed rights-of-way would increase the effectiveness of reclamation and re-vegetation.

Environmental Consequences of Alternative B - No Action Alternative: Without an approved herbicide to control cheatgrass, it will continue to expand on the rights-of-way.

Environmental Consequences of Alternative C – No Herbicide Use: The weeds will continue to invade the authorized rights-of-way.

Environmental Consequences of Alternative D – No Aerial Herbicide Application: Without the ability to use aircraft for application of herbicide, there will be fewer acres, especially in remote and difficult to access locations, treated each year.

Mitigation: None

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

The WRFO 1997 RMP designated 17 Areas of Environmental Concern (ACEC) that contained important historic, cultural, scenic and natural values. This included many areas that have habitats for special status plant species on the WRFO. Although not all special status plant species are found within ACEC's, these designated areas play an important role in maintaining environmental quality to prevent undue degradation to the values that make the site or locale unique. For example, approximately 88% of the total occupied Dudley Bluffs bladderpod (*Physaria congesta)* and Dudley Bluffs twinpod (*Physaria obcordata)* habitats occur on public lands managed by the WRFO BLM. Of this percentage, four ACEC's (Duck Creek, Yanks Gulch, Dudley Bluffs, Ryan Gulch), contain approximately 54% of the total occupied Dudley Bluffs bladderpod and Dudley Bluffs twinpod habitats. Several special status plant species are found in the Raven Ridge ACEC and include Graham's penstemon, Narrow-stem gilia, Ephedra buckwheat, Rollins' cryptanth, Debris milkvetch, and Colorado feverfew. Approximately eight other ACEC's contain special status plant species, State of Colorado tracked species, or unique plant communities.

Although ACEC establishment provides stipulations and guidance for energy leasing and recreation use, the ACEC boundaries are largely artificial in terms of managing the application of an IWMP program for all known acres of special status plant species in the WRRA. Therefore, the *Affected Environment*, *Environmental Consequences, Mitigation,* and *Land Health Standard Finding* sections of the **SPECIAL STATUS PLANT SPECIES** section of this document will address direct and indirect effects to these plant species, whether they fall within or are external to an ACEC boundary. Other important historic, cultural, and natural resources found within ACEC's are also addressed in the respective resource sections of this EA.

WILDERNESS

Affected Environment: WRFO manages approx. 81,000 acres within six wilderness study areas (WSAs) under the Interim Management Policy and Guidelines for Lands under Wilderness Review (H-8550-1). Under this interim policy, vegetative manipulation by chemical, mechanical, or biological means is allowed within WSAs when there is no effective alternative

and when control of the noxious weed is necessary to maintain natural ecological balance within the WSA or portion of the WSA. In all cases where vegetative manipulation is proposed, the activity must not adversely impact wilderness values within any portion of the WSA. Noxious weeds may be controlled by grubbing or with chemicals when they threaten lands outside the WSA or are spreading within the WSA, provided the control can be affected without adverse impacts on wilderness values.

Environmental Consequences of Alternative A – Proposed Action: Controlling the weeds would maintain wilderness values by preventing these species from replacing native desirable plant species. By controlling or limiting the spread of noxious weeds, the natural ecosystem would be able to progress within the Wilderness Study Areas. To allow noxious weeds to spread would cause irrevocable change in the Wilderness character which is prohibited by the Wilderness Interim Management Plan.

Environmental Consequences of Alternative B – No Action (Continue Present Management): The no action alternative would allow degradation of wilderness values by allowing the toadflax to spread on suitable sites within WSAs.

Environmental Consequences of Alternative C – No Herbicide Use: This alternative could allow noxious weeds to spread and cause irrevocable change in the Wilderness character which is prohibited by the Wilderness Interim Management Plan.

Environmental Consequences of Alternative D – No Aerial Application of Herbicide: This would not have any effect on the WSAs because aerial application of herbicide is not allowed in WSAs and therefore would not be allowed in the proposed or no action alternatives as well.

Mitigation: The wilderness study areas weed control must meet the non impairment standards for noxious weed control. No motorized or mechanized travel is allowed within the boundaries of the Wilderness Study Areas.

CUMULATIVE IMPACTS SUMMARY:

Ground-disturbing activities will continue to increase in the WRFO area as oil and gas companies explore new areas, new rights-of-ways (ROWs) are permitted and new trails and user areas are developed. Vectors for weed dispersal such as vehicles, recreationists, livestock, and wildlife will continue to be present, spreading weed disseminules to new sites. Alternative A (Proposed Action), with its combination of aerial application and use of a new compound, imazapic, is the only alternative that would allow the WRFO to attack existing large or remote weed infestations—especially of cheatgrass. Weeds would be expected to continue to spread under the remaining alternatives, and especially under Alternative C due to the reliance solely on manual or biological controls.

The repeated use of herbicides in a given area could cause weeds to develop resistance to a particular active ingredient over time. This risk would be greatest under the Proposed Action and

would not exist under Alternative C. To reduce this risk, the WRFO would rotate herbicides when treating the same area repeatedly and would use non-chemical control methods when feasible.

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PERSONS / AGENCIES CONSULTED:

United State Fish and Wildlife Service (USFWS),
Colorado Division of Wildlife (CDOW), and
Rio Blanco County (RBC)

INTERDISCIPLINARY REVIEW:

Name	Title	Area of Responsibility
Bob Lange	Hydrologist	Air Quality, Wastes (Hazardous or Solids), Water Quality (Surface and Ground), Hydrology and Water Rights
Maggie Marston	Botanist	Areas of Critical Environmental Concern, Threatened and Endangered Plant Species
Michael Selle	Archeologist	Cultural Resources, Paleontological Resources
Matthew Dupire	Rangeland Management Specialist	Invasive, Non-Native Species, Vegetation, Rangeland Management, Wetlands and Riparian Zones, and Soils
Heather Sauls	Wildlife Biologist	Migratory Birds, Threatened, Endangered and Sensitive Animal Species, Terrestrial and Aquatic Wildlife
Andrew Burrows	Outdoor Recreation Planner	Wilderness, Access and Transportation, Recreation,
Jim Michels	Fuels Technician	Fire Management, Forest Management
Paul Daggett	Mining Engineer	Geology and Minerals
Stacey Burke	Realty Specialist	Realty Authorizations
Andrew Burrows	Outdoor Recreation Planner	Visual Resources
Melissa Kindall	Range Technician	Wild Horse Management

Finding of No Significant Impact/Decision Record (FONSI/DR)

DOI-BLM-CO-110-2010-0005-EA

FINDING OF NO SIGNIFICANT IMPACT (FONSI)/RATIONALE: The environmental assessment and analysis of the environmental effects of the proposed action have been reviewed. The approved mitigation measures (listed below) result in a Finding of No Significant Impact on the human environment. Therefore, an environmental impact statement is not necessary to further analyze the environmental effects of the proposed action.

DECISION/RATIONALE: It is my decision to implement alternative A (Proposed Action) as the integrated weed management plan (IWMP) for the White River Field Office (WRFO). The goal of the IWMP is to guide the management of noxious and other invasive weeds on Bureau of Land Management (BLM) lands administered by the WRFO. The intent of this plan is to provide a comprehensive range of management actions and a decision-making framework to allow resource managers to select actions or a combination of actions to meet the objectives of eradicating, significantly reducing, or containing existing weed infestations and preventing the spread of new infestations.

MITIGATION MEASURES:

General

1. The standard operating procedures, mitigation measures, and conservation measure provided in appendices C, D, E, and F of this document are included in the proposed action and shall be standard conditions of approval for any weed treatment activities within the WRFO.

2. Individual projects shall be evaluated and approved using a Pesticide Use Proposal (PUP) and a DNA outlining specific project details.

Wastes, Hazardous Or Solid

3. Do not use diquat if there is another treatment or control method available. Only use diquat in very limited scenarios such as when only this herbicide would work, with very targeted populations, and at only the typical application rate.

Special Status Plant Species

4. The SOPs, BMP's, buffer distances, and measures in the appendices were taken from the PEIS and the accompanying PBA, (BLM 2007a, c) and modified as appropriate to reflect species and conditions specific to the WRFO. The following guidance must be considered in all management plans in which herbicide treatments are proposed to minimize or avoid risks to special status plant species. The exact conservation measures to be included in

management plans will depend on the herbicide that would be used, the desired mode of application, and the conditions of the site. Given the potential for offsite drift and surface runoff, populations of special status plant species on lands not administered by the BLM would need to be considered if they are located near proposed herbicide treatment sites.

5. Use of biological control for noxious weed treatments will not occur if the agent(s) have demonstrated the ability to attack other plant species within the same genus as special status plant species.

Threatened Plant species:

6. During the annual planning for weed treatments, the WRFO will identify areas where treatment is most needed, based on the priorities described in Tables 4a-c, above. No treatments should be planned *in* any habitat known or reasonably likely to contain *Threatened* plant species. Note: If *Threatened* plant species are located, and if the WRFO continues to desire peripheral weed treatments for *Threatened* status plant species habitats, pre-survey with additional NEPA preparation and consultation will apply to all habitat (occupied, suitable and potential) types per the February, 2010 biological opinion for *Threatened* plant species.

7. Additional NEPA and consultation with the USFWS will be required if any noxious treatments are planned *within* the herbicide buffer zones described in Table 7, per the February, 2010 biological opinion for *Threatened* plant species. Biological and mechanical treatments are authorized without further NEPA and USFWS consultation if they are associated with an IWMP treatment using herbicide per the same buffer distances from Table 7, and will apply to occupied, suitable and potential habitats for *Threatened* plant species. (This distance is subject to change based on current recovery plan guidelines for *Threatened* plant species on the WRFO. Please consult the most current USFWS Dudley Bluffs twinpod and bladderpod recovery plan.)

8. If biological and mechanical treatments will occur *without* herbicide application near *Threatened* plant species habitats, additional NEPA and USFWS involvement will be determined on a case-by-case basis based on buffer distances and expected impacts.

9. Aerial herbicide application will only be used for herbicides in Table 7 that indicate an aerial application buffer distance. The aerial buffers and use rates may be used for White River *Threatened* plant species per the February, 2010 biological opinion. If IWMP treatments are planned that will involve aerial applications closer than Table 7 buffer distances to *Threatened* plant species occupied, suitable and potential habitats, additional consultation and NEPA analysis will be required.

10. Highly manipulated environments, such as irrigated hay meadows, moderately grazed pastures with river access, areas of increased sediment deposits, intact floodplain areas, and areas of open, herbaceous, riparian vegetation devoid of noxious shrub-dominated overstory, will be pre-surveyed for terrestrial orchids during their blooming season (late July) prior to IWMP treatments. Standard Table 7 buffers and all BMP's, SOP's and mitigation for terrestrial species will apply to Ute Ladies'-Tresses suitable habitats, if located.

Candidate Plant Species and BLM Sensitive Plant Species:

11. Under no circumstances will herbicide treatments will be conducted in areas where any Candidate and BLM Sensitive species may be subject to direct spray during treatments or as a result of drift.

12. Surveys will be conducted in potential habitats for White River beardtongue and all other BLM sensitive species prior to IWMP implementation, if potential, suitable or occupied habitats are suspected or known.

13. Suitable buffer zones from Table 7, SOP's, BMP's and mitigation measures in the Appendices of this assessment will be implemented for both occupied and suitable habitats of BLM sensitive plant species to avoid negative effects from aerial drift, runoff, wind erosion and other potential impacts during and following treatments.

14. Applicators will be required to review, understand, and conform to the "Environmental Hazards" section on all herbicide labels. (This section warns of known pesticide risks and provides practical ways to avoid harm to organisms or the environment.)

15. Primary herbicides for eradication of noxious weeds and invasive species such as cheatgrass and/or halogeton near White River beardtongue and BLM sensitive species will consist of glyphosate (to within 50') or imazapic (to within 25') per Table 7. (Low concentrations of both formulations are known to produce good mortality for both of these annual weed species.) The lowest effective concentration rates should always be used when treating noxious weeds near these special status plant species.

16. All other herbicides used near White River beardtongue and BLM sensitive plant species will be used in conformance with buffer distances provided in Table 7.

17. If peripheral IWMP treatments are planned within White River beardtongue and BLM Sensitive plant species occupied habitats, pre-survey and flagging of individual plants will occur. This should be followed by manual (hand pulling) removal of noxious weeds around individual plants. Follow-up via spot application should then occur between manual removal areas using low concentrations of Glyphosate.

18. If peripheral IWMP treatments occur within White River beardtongue and BLM Sensitive plant species occupied habitats, pre and post-treatment photo plots or another acceptable method will be used to evaluate treatment effectiveness and soil-related responses. If soil compaction, undue biocrust removal, soil sterility, or other problems such as rare plant mortality are noted, additional NEPA analysis will be required for subsequent special status plant treatments in these areas.

19. If more aggressive noxious weed removal is required beyond the periphery of White River beardtongue or BLM Sensitive plant species habitats, separate NEPA action will be required.

20. In all IWMP herbicide treatment circumstances, the buffer distances presented in Table 7 f treatment is desired at distances closer to White River beardtongue and BLM sensitive plant species habitats, separate NEPA action will be required.

21. Aerial herbicide application will only be used for herbicides in Table 7 that indicate an aerial application buffer distance. The aerial buffers and use rates may be used for White River beardtongue, and BLM Sensitive. If IWMP treatments are planned that will involve aerial applications closer than Table 7 buffer distances to occupied and suitable BLM sensitive and Candidate plant species, additional NEPA analysis will be required.

22. In addition to the selection of specific locations, herbicides, application methods, application rates, and buffer distances for specific sites during the annual treatment planning, the WRFO will also consider measures to prevent the spread of weeds in the peripheral areas near White River beardtongue and BLM Sensitive plant species, in conjunction with weed treatments and all IWMP projects resulting in ground disturbance. These measures include the following:

    - Seed cleared areas that are prone to invasion by downy brome or other noxious weeds with an appropriate seed mixture to reduce the probability of noxious weeds or other undesirable plants becoming established on the site.

    - Where seeding is warranted, seed bares areas (whether from ground disturbance or removal of weeds) as soon as appropriate after treatment, considering the time of year and any waiting period following use of a specific herbicide.

    - Use only native species when re-vegetating bares areas within 200 meters occupied or suitable habitat and use only species that are compatible with the specific habitats for White River beardtongue and WRFO BLM Sensitive plant species.

    - Use only native seed certified free of noxious weed seeds within 200 meters of occupied or suitable species habitats.

    - Use only certified weed-free straw and hay bales for mulch or erosion control within 200 meters of occupied or suitable White River beardtongue and BLM sensitive species habitat.

    - Wash vehicles and heavy equipment used during weed treatment activities prior to arriving at a new location to avoid the transfer of noxious weeds.

    - No drilling, discing, or other use of equipment will occur within any special status plant species habitats without further NEPA evaluation.

    - The WRFO may develop and implement additional conservation measures, as needed, during project-level planning, NEPA documentation, and ESA Section 7 consultation.

Wilderness Study Areas

23. The wilderness study areas weed control must meet the non impairment standards for noxious weed control. No motorized or mechanized travel is allowed within the boundaries of the Wilderness Study Areas.

COMPLIANCE/MONITORING: See Monitoring Section in the Proposed Action

NAME OF PREPARERS: Matthew Dupire and Boyd Logan

NAME OF ENVIRONMENTAL COORDINATOR: Caroline Hollowed

DATE: March 19, 2010

SIGNATURE OF AUTHORIZED OFFICIAL: for Field Manager

DATE SIGNED: 3/19/2010

ATTACHMENTS:

Appendix A - Herbicides and Adjuvants Approved for Use on BLM-Administered Lands in Colorado
Appendix B - Best Management Practices for Preventing Infestations of Noxious and Invasive Weeds
Appendix C - Standard Operating Procedures for Weed Treatments on BLM-Administered Lands in the WRFO
Appendix D - Mitigation Measures
Appendix E - General Conservation Measures for Wildlife and Special Status Plant Species
Appendix F - List of Riparian System in the WRRA along with Functional Classification Taken from the 1997 White River ROD/RMP
Figure 1 - Dudley Bluffs twinpod and Dudley Bluffs bladderpod Habitat Map
Figure 2 - White River penstemon Habitat Map

Appendix A

Herbicides and Adjuvants Approved for Use on BLM-Administered Lands in Colorado

Herbicides Approved for Use on BLM-Administered Lands in Colorado (Updated 9/28/07)[1]

Active Ingredient	Trade Name	Manufacturer	EPA Registration Number
Bromacil	Hyvar X	DuPont	352-287
	Hyvar XL	DuPont	352-346
Bromacil + Diuron	Kroval I DF	DuPont	352-505
	Weed Blast Res. Weed Cont.	Loveland Products Inc.	34704-576
	DiBro 2+2	Nufarm Americas Inc.	228-227
	DiBro 4+4	Nufarm Americas Inc.	228-235
	DiBro 4+2	Nufarm Americas Inc.	228-386
	Weed Blast 4G	SSI Maxim Co., Inc.	34913-19
Chlorsulfuron	Telar DF	DuPont	352-522
	Telar XP	DuPont	352-654
Clopyralid	Spur	Albaugh Inc.	42750-89
	Pyramid R&P	Albaugh Inc.	42750-94
	Clopyralid 3	Alligare, LLC	42750-94-81927
	Reclaim	Dow AgroSciences	62719-83
	Stinger	Dow AgroSciences	62719-73
	Transline	Dow AgroSciences	62719-259
	CleanSlate	Nufarm Americas Inc.	228-491
Clopyralid + 2,4-D	Curtail	Dow AgroSciences	62719-48
	Commando	Albaugh Inc.	42750-92
2,4-D	Agrisolution 2,4-D LV6	Agriliance, LLC	1381-101
	Agrisolution 2,4-D Amine 4	Agriliance, LLC	1381-103
	Agrisolution 2,4-D LV4	Agriliance, LLC	1381-102
	2,4-D Amine 4	Albaugh Inc./Agri Star	42750-19
	2,4-D LV 4	Albaugh Inc./Agri Star	42750-15
	Solve 2,4-D	Albaugh Inc./Agri Star	42750-22
	2,4-D LV 6	Albaugh Inc./Agri Star	42750-20
	Five Star	Albaugh Inc./Agri Star	42750-49
	D-638	Albaugh Inc./Agri Star	42750-36
	2,4-D LV6	Helena Chemical Co.	4275-20-5905
	2,4-D Amine	Helena Chemical Co.	5905-72
	Opti-Amine	Helena Chemical Co.	5905-501
	Barrage HF	Helena Chemical Co.	5905-529
	HardBall	Helena Chemical Co.	5905-549
	Unison	Helena Chemical Co.	5905-542
	Amine 4CA 2,4-D Weed Killer	Loveland Products Inc.	34704-5
	Clean Amine	Loveland Products Inc.	34704-120
	Low Vol 4 Ester Weed Killer	Loveland Products Inc.	34704-124
	Low Vol 6 Ester Weed Killer	Loveland Products Inc.	34704-125
	LV-6 Ester Weed Killer	Loveland Products Inc.	34704-6
	Saber	Loveland Products Inc.	34704-803
	Saber CA	Loveland Products Inc.	34704-803
2,4-D	Salvo	Loveland Products Inc.	34704-609

Herbicides Approved for Use on BLM-Administered Lands in Colorado (Updated 9/28/07)[1]

Active Ingredient	Trade Name	Manufacturer	EPA Registration Number
2,4-D (continued)	Savage DF	Loveland Products Inc.	34704-606
	Aqua-Kleen	NuFarm Americas Inc.	71368-4
	Esteron 99C	NuFarm Americas Inc.	62719-9-71368
	Weedar 64	NuFarm Americas Inc.	71368-1
	Weedone LV-4	NuFarm Americas Inc.	228-139-71368
	Weedone LV-4 Solventless	NuFarm Americas Inc.	71368-14
	Weedone LV-6	NuFarm Americas Inc.	71368-11
	Formula 40	Nufarm Americas Inc.	228-357
	2,4-D LV 6 Ester	Nufarm Americas Inc.	228-95
	Platoon	Nufarm Americas Inc.	228-145
	WEEDstroy AM-40	Nufarm Americas Inc.	228-145
	Hi-Dep	PBI Gordon	2217-703
	2,4-D Amine	Setre (Helena)	5905-72
	Barrage LV Ester	Setre (Helena)	5905-504
	2,4-D LV4	Setre (Helena)	5905-90
	2,4-D LV6	Setre (Helena)	5905-93
	Clean Crop Amine 4	UAP-Platte Chemical Co.	34704-5 CA
	Clean Crop Low Vol 6 Ester	UAP-Platte Chemical Co.	34704-125
	Salvo LV Ester	UAP-Platte Chemical Co.	34704-609
	2,4-D 4# Amine Weed Killer	UAP-Platte Chemical Co.	34704-120
	Clean Crop LV-4 ES	UAP-Platte Chemical Co.	34704-124
	Savage DF	UAP-Platte Chemical Co.	34704-606
	Cornbelt 4 lb. Amine	Van Diest Supply Co.	11773-2
	Cornbelt 4# LoVol Ester	Van Diest Supply Co.	11773-3
	Cornbelt 6# LoVol Ester	Van Diest Supply Co.	11773-4
	Amine 4	Wilbur-Ellis	2935-512
	Lo Vol-4	Wilbur-Ellis	228-139-2935
	Lo Vol-6 Ester	Wilbur-Ellis	228-95-2935
Dicamba	Dicamba DMA	Albaugh Inc./Agri Star	42750-40
	Vision	Albaugh Inc.	42750-98

Herbicides Approved for Use on BLM-Administered Lands in Colorado (Updated 9/28/07)[1]

Active Ingredient	Trade Name	Manufacturer	EPA Registration Number
Dicamba (continued)	Clarity	BASF Ag. Products	7969-137
	Rifle	Loveland Products Inc.	34704-861
	Banvel	MicroFlo Company	51036-289
	Diablo	Nufarm Americas Inc.	228-379
	Vanquish Herbicide	Nufarm Americas Inc.	228-397
Dicamba + 2,4-D	Outlaw	Albaugh Inc./Agri Star	42750-68
	Range Star	Albaugh Inc./Agri Star	42750-55
	Weedmaster	BASF Ag. Products	7969-133
	Rifle-D	Loveland Products Inc.	34704-869
	KambaMaster	Nufarm Americas Inc.	71368-34
	Veteran 720	Nufarm Americas Inc.	228-295
Dicamba + Diflufenzopyr	Distinct	BASF Ag. Products	7969-150
	Overdrive	BASF Ag. Products	7969-150
Diquat	Reward	Syngenta Crop Prot., Inc.	100-1091
Diuron	Diuron 80DF	Agriliance, LLC	9779-318
	Karmex DF	Griffin Company	1812-362
	Direx 80DF	Griffin Company	1812-362
	Direx 4L	Griffin Company	1812-257
	Direx 4L-CA	Griffin Company	1812-257
	Diuron 4L	Loveland Products Inc.	34704-854
	Diuron 80 WDG	Loveland Products Inc.	34704-648
	Diuron 4L	Makteshim Agan of N.A.	66222-54
	Diuron 80WDG	UAP-Platte Chemical Co.	34704-648
	Vegetation Man. Diuron 80 DF	Vegetation Man., LLC	66222-51-74477
	Diuron-DF	Wilbur-Ellis	00352-00-508-02935
Fluridone	Avast!	SePRO	67690-30
	Sonar AS	SePRO	67690-4
	Sonar Precision Release	SePRO	67690-12
	Sonar Q	SePRO	67690-3
	Sonar SRP	SePRO	67690-3
Glyphosate	Aqua Star	Albaugh Inc./Agri Star	42750-59
	Forest Star	Albaugh Inc./Agri Star	42570-61

Herbicides Approved for Use on BLM-Administered Lands in Colorado (Updated 9/28/07)[1]

Active Ingredient	Trade Name	Manufacturer	EPA Registration Number
Glyphosate (continued)	Gly Star Original	Albaugh Inc./Agri Star	42750-60
	Gly Star Plus	Albaugh Inc./Agri Star	42750-61
	Gly Star Pro	Albaugh Inc./Agri Star	42750-61
	Glyphosate 4 PLUS	Alligare, LLC	81927-9
	Glyfos	Cheminova	4787-31
	Glyfos PRO	Cheminova	67760-57
	Glyfos Aquatic	Cheminova	4787-34
	ClearOut 41	Chem. Prod. Tech., LLC	70829-2
	ClearOut 41 Plus	Chem. Prod. Tech., LLC	70829-3
	Accord Concentrate	Dow AgroSciences	62719-324
	Accord SP	Dow AgroSciences	62719-322
	Accord XRT	Dow AgroSciences	62719-517
	Glypro	Dow AgroSciences	62719-324
	Glypro Plus	Dow AgroSciences	62719-322
	Rodeo	Dow AgroSciences	62719-324
	Mirage	Loveland Products Inc.	34704-889
	Mirage Plus	Loveland Products Inc.	34704-890
	Aquamaster	Monsanto	524-343
	Roundup Original	Monsanto	524-445
	Roundup Original II	Monsanto	524-454
	Roundup Original II CA	Monsanto	524-475
	Honcho	Monsanto	524-445
	Honcho Plus	Monsanto	524-454
	Roundup PRO	Monsanto	524-475
	Roundup PRO Concentrate	Monsanto	524-529
	Roundup PRO Dry	Monsanto	524-505
	GlyphoMate 41	PBI Gordon Corp.	2217-847
	Aqua Neat	Nufarm Americas Inc.	228-365
	Foresters	Nufarm Americas Inc.	228-381
	Razor	Nufarm Americas Inc.	228-366
	Razor Pro	Nufarm Americas Inc.	228-366
	Rattler	Setre (Helena)	524-445-5905
	Buccaneer	Tenkoz	55467-10
	Buccaneer Plus	Tenkoz	55467-9
	Mirage Herbicide	UAP-Platte Chemical Co.	524-445-34704
	Mirage Plus Herbicide	UAP-Platte Chemical	524-454-34704

Herbicides Approved for Use on BLM-Administered Lands in Colorado (Updated 9/28/07)[1]

Active Ingredient	Trade Name	Manufacturer	EPA Registration Number
		Co.	
Glyphosate (continued)	Glyphosate 4	Vegetation Man., LLC	73220-6-74477
Glyphosate + 2,4-D	Landmaster BW	Albaugh Inc./Agri Star	42570-62
	Campaign	Monsanto	524-351
	Landmaster BW	Monsanto	524-351
Glyphosate + Dicamba	Fallowmaster	Monsanto	524-507
Hexazinone	Velpar ULW	DuPont	352-450
	Velpar L	DuPont	352-392
	Velpar DF	DuPont	352-581
	Pronone MG	Pro-Serve	33560-21
	Pronone 10G	Pro-Serve	33560-21
	Pronone 25G	Pro-Serve	33560-45
	Pronone Power Pellet	Pro-Serve	33560-41
Hexazinone + Sulfometuron	Westar	DuPont Crop Protection	352-626
Imazapic	Plateau	BASF	241-365
	Panoramic 2SL	Alligare, LLC	66222-141-81927
Imazapic + Glyphosate	Journey	BASF Ag. Products	241-417
Imazapyr	Arsenal Railroad Herbicide	BASF Ag. Products	241-273
	Chopper	BASF Ag. Products	241-296
	Arsenal Applicators Conc.	BASF Ag. Products	241-299
	Arsenal	BASF Ag. Products	241-346
	Arsenal PowerLine	BASF Ag. Products	241-431
	Stalker	BASF Ag. Products	241-398
	Habitat	BASF Ag. Products	241-426
	Imazapyr E-Pro 2 –VM & Aquatic Herbicide	Etigra	81959-8
	Polaris RR	Nufarm Americas Inc.	241-273-228
	Polaris SP	Nufarm Americas Inc.	241-296-228
	Polaris AC	Nufarm Americas Inc.	241-299-228
	Polaris AQ	Nufarm Americas Inc.	241-426-228
	Polaris Herbicide	Nufarm Americas Inc.	241-346-228
	SSI Maxim Arsenal 0.5G	SSI Maxim Co., Inc.	34913-23
	Ecomazapyr 2 SL	Vegetation Man., LLC	74477-6
	Imazapyr 2 SL	Vegetation Man., LLC	74477-4
	Imazapyr 4 SL	Vegetation Man., LLC	74477-5
Imazapyr + Diuron	Mojave 70 EG	Alligare, LLC	74477-9-81927
	Sahara DG	BASF Ag. Products	241-372
Imazapyr + Diuron (cont.)	SSI Maxim Topsite 2.5G	SSI Maxim Co., Inc.	34913-22

Herbicides Approved for Use on BLM-Administered Lands in Colorado (Updated 9/28/07)[1]

Active Ingredient	Trade Name	Manufacturer	EPA Registration Number
Metsulfuron methyl	Escort	DuPont	352-439
	Escort XP	DuPont	352-439
	Metsulfuron Methyl DF	Vegetation Man., L.L.C.	74477-2
	Patriot	Nufarm Americas Inc.	228-391
	PureStand	Nufarm Americas Inc.	71368-38
	MSM E-AG 60 EG Herbicide	Etigra	81959-14
	MSM E-Pro 60 EG Herbicide	Etigra	81959-14
Metsulfuron methyl + Dicamba + 2,4-D	Cimarron MAX	DuPont	352-615
Picloram	Triumph K	Albaugh, Inc.	42750-81
	Triumph 22K	Albaugh, Inc.	42750-79
	Picloram K	Alligare, LLC	42750-81-81927
	Picloram 22K	Alligare, LLC	42750-79-81927
	Grazon PC	Dow AgroSciences	62719-181
	OutPost 22K	Dow AgroSciences	62719-6
	Tordon K	Dow AgroSciences	62719-17
	Tordon 22K	Dow AgroSciences	62719-6
Picloram + 2,4-D	Picloram + D	Alligare, LLC	42750-80-81927
	Tordon 101M	Dow AgroSciences	62719-5
	Tordon 101 R Forestry	Dow AgroSciences	62719-31
	Tordon RTU	Dow AgroSciences	62719-31
	Grazon P+D	Dow AgroSciences	62719-182
	HiredHand P+D	Dow AgroSciences	62719-182
	Pathway	Dow AgroSciences	62719-31
	GunSlinger	Albaugh, Inc.	42750-80
Sulfometuron methyl	Oust	DuPont	352-401
	Oust XP	DuPont	352-601
	SFM 75	Vegetation Man., LLC	72167-11-74477
	Spyder	Nufarm Americas Inc.	228-408
Tebuthiuron	Spike 20P	Dow AgroSciences	62719-121
	Spike 80W	Dow AgroSciences	62719-107
	Spike 1G	Dow AgroSciences	1471-104
	Spike 40P	Dow Agro Sciences	62719-122
	Spike 80DF	Dow AgroSciences	62719-107
	SpraKil S-5 Granules	SSI Maxim Co., Inc.	34913-10
Tebuthiuron + Diuron	SpraKil SK-13 Granular	SSI Maxim Co., Inc.	34913-15
	SpraKil SK-26 Granular	SSI Maxim Co., Inc.	34913-16
Triclopyr	Element 3A	Dow AgroSciences	62719-37
	Element 4	Dow AgroSciences	62719-40
	Forestry Garlon XRT	Dow AgroSciences	62719-553

Herbicides Approved for Use on BLM-Administered Lands in Colorado (Updated 9/28/07)[1]

Active Ingredient	Trade Name	Manufacturer	EPA Registration Number
	Garlon 3A	Dow AgroSciences	62719-37
	Garlon 4	Dow AgroSciences	62719-40
	Garlon 4 Ultra	Dow AgroSciences	62719-527
	Remedy	Dow AgroSciences	62719-70
Active Ingredient	Trade Name	Manufacturer	EPA Registration Number
Triclopyr (cont.)	Remedy Ultra	Dow AgroSciences	62719-552
	Pathfinder II	Dow AgroSciences	62719-176
	Tahoe 3A	Nufarm Americas Inc.	228-384
	Tahoe 3A	Nufarm Americas Inc.	228-518
	Tahoe 4E	Nufarm Americas Inc.	228-385
	Ecotriclopyr 3 SL	Vegetation Man., LLC	72167-49-74477
	Triclopyr 3 SL	Vegetation Man., LLC	72167-49-74477
Triclopyr + 2,4-D	Crossbow	Dow AgroSciences	62719-260
Triclopyr + Clopyralid	Redeem R&P	Dow AgroSciences	62719-337

[1] *Refer to the complete label before considering the use of any herbicide formulation. Label changes can impact the intended use, e.g., through the creation or elimination of Special Local Need (SLN) or 24(c) registrations; changes in application sites, rates, and timing; and county restrictions.*

Appendix B

Best Management Practices for Preventing Infestations of Noxious and Invasive Weeds

Best Management Practices for Noxious and Invasive Weed Prevention

This list incorporates many suggested practices under many types of land management operation types and is designed to allow managers to pick and choose those practices that are most applicable and feasible for each situation (DOI 2005).

A. Site-Disturbing Projects

Pre-project Planning

- Environmental analyses for projects and maintenance programs should assess weed risks, analyze high-risk sites for potential weed establishment and spread, and identify prevention practices.

- Determine site-specific restoration and monitoring needs and objectives at the onset of project planning.

- Learn to recognize noxious and invasive weeds.

- Inventory all proposed projects for weeds prior to ground-disturbing activities. If weeds are found, they would be treated (if the timing was appropriate) or removed (if seeds were present) to limit weed seed production and dispersal.

- Restrict movement of equipment and machinery *from* weed-contaminated areas *to* non-contaminated areas.

- Locate and use weed-free project staging areas. Avoid or minimize travel through weed infested areas, or restrict travel to periods when spread of disseminules is least likely.

- Identify sites where equipment can be cleaned. Remove mud, dirt, and plant parts from project equipment before moving it into a project area. Seeds and plant parts should be collected and incinerated when possible.

- If certified weed-free gravel pits become available in the county, the use of certified weed-free gravel would be required wherever gravel is applied to public lands (e.g., roads).

- Maintain stockpiled, non-infested material in a weed-free condition. Topsoil stockpiles should be promptly re-vegetated to maintain soil microbial health and reduce the potential for weeds.

- Use native seed mixes when practical. A certified seed laboratory should test each lot according to Association of Official Seed Analysts standards (which include an all-state noxious weed list) and provide documentation of the seed inspection test. The seed should contain no noxious, prohibited, or restricted weed seeds and should contain no more than 0.5 percent by weight of other weed seeds. Seed may contain up to 2.0 percent

of “other crop” seed by weight, including the seed of other agronomic crops and native plants; however, a lower percentage of other crop seed is recommended.

Project Implementation

- Minimize soil disturbance. To the extent practicable, native vegetation should be retained in and around project activity areas, and soil disturbance kept to a minimum.

- If a disturbed area must be left bare for a considerable length of time, cover the area with weed barrier until re-vegetation is possible.

Post-project

- Clean all equipment before leaving the project site when operating in weed infested areas.

- Inspect, remove, and properly dispose of weed seed and plant parts found on clothing and equipment. Proper disposal means bagging and incinerating seeds and plant parts or washing equipment in an approved containment area.

- Revegetate disturbed soil where appropriate to optimize plant establishment for that specific site. Define re-vegetation objectives for each site. Revegetation may include topsoil replacement, planting, seeding, fertilization, and certified weed-free mulching as necessary. Use native material where appropriate and feasible.

- Monitor sites where seed, hay, straw, or mulch has been applied. Eradicate weeds before they form seed. In contracted projects, contract specifications could require that the contractor control weeds for a specified length of time.

- Inspect and document all ground-disturbing activities in noxious weed infested areas for at least three growing seasons following completion of the project. For ongoing projects, continue to monitor until reasonably certain that no weeds are present. Plan for follow-up treatments based on inspection results.

Pre-project Planning

- Communicate with contractors, local weed districts or weed management areas about projects and best management practices for prevention.

- Remove mud, dirt, and plant parts from project equipment before moving it into a project area. Seeds and plant parts should be collected and incinerated when practical, or washed off in an approved containment area.

- Avoid acquiring water for road dust abatement where access to water is through weed-infested sites.

- Treat weeds on travel rights-of-ways before seed formation so construction equipment doesn't spread weed seed.

- Schedule and coordinate blading or pulling of noxious weed-infested roadsides or ditches in consultation with the local weed specialist. When it is necessary to blade weed-infested roadsides or ditches, schedule the activity when disseminules are least likely to be viable.

Project Implementation

- Retain shade to suppress weeds by minimizing the removal of trees and other roadside vegetation during construction, reconstruction, and maintenance; particularly on south aspects.

- Do not blade or pull roadsides and ditches infested with noxious weeds unless doing so is required for public safety or protection of the roadway. If the ditch must be pulled, ensure weeds remain onsite. Blade from least infested to most infested areas.

Post-project

- Clean all equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts before leaving the project site if operating in areas infested with weeds. Seeds and plant parts should be collected and incinerated when possible.

- When seeding has been specified for construction and maintenance activities, seed all disturbed soil (except travel route) soon after work is completed.

- Use a certified weed-free seed mix suitable for local environmental conditions that includes fast, early growing (preferably native) species to provide quick re-vegetation. Consider applying weed free mulch with seeding.

- Periodically inspect roads and rights-of-way for noxious weeds. Train staff to recognize weeds and report locations to the local weed specialist. Follow-up with treatment when needed.

- When reclaiming roads, treat weeds before roads are made impassable. Inspect and follow up based on initial inspection and documentation.

- To avoid weed infestations, create and maintain healthy plant communities whenever possible, including utility rights-of-ways, roadsides, scenic overlooks, trailheads, and campgrounds.

C. Wilderness Recreation

- Inspect and clean mechanized trail vehicles of weeds and weed seeds.

- Wash boots and socks before hiking into a new area. Inspect and clean packs, equipment, and bike tires.

- Avoid hiking through weed infestations whenever possible.

- Keep dogs and other pets free of weed seeds.

- Avoid picking unidentified "wildflowers" and discarding them along trails or roadways.

- Maintain trailheads, campgrounds, visitor centers, boat launches, picnic areas, roads leading to trailheads, and other areas of concentrated public use in a weed-free condition. Consider high-use recreation areas as high priority sites for weed eradication.

- Sign trailheads and access points to educate visitors on noxious and invasive weeds and the consequences of their activities.

- In areas susceptible to weed invasion, limit vehicles to designated, maintained travel routes. Inspect and document travel corridors for weeds and treat as necessary.

D. Watershed Management

- Frequently and systematically inspect and document riparian areas and wetlands for noxious weed establishment and spread. Eradicate new infestations immediately since effective tools for riparian-area weed management is limited.

- Promote dense growth of desirable vegetation in riparian areas (where appropriate) to minimize the availability of germination sites for weed seeds or propagules transported from upstream or upslope areas.

- Address the risk of invasion by noxious weeds and other invasive species in watershed restoration projects and water quality management plans.

E. Grazing Management

- Consider prevention practices and cooperative management of weeds in grazing allotments. Prevention practices may include: altering season of use, minimizing ground disturbance, exclusion, preventing weed seed transportation, maintaining healthy vegetation, re-vegetation, inspection, education, reporting.

- Provide certified weed-free supplemental feed in a designated area so new weed infestations can be detected and treated immediately. Pelletized feed is unlikely to contain viable weed seed.

- If livestock may contribute to seed spread in a weed-infested area, schedule livestock use prior to seed-set or after seed has fallen.

- If livestock were transported from a weed-infested area, annually inspect and treat entry units for new weed infestations.

- Consider closing infested pastures to livestock grazing when grazing will either continue to exacerbate the condition or contribute to weed seed spread. Designate those pastures as unsuitable range until weed infestations is controlled.

- Manage the timing, intensity (utilization), duration, and frequency of livestock activities to maintain the competitive ability of desirable plants and retain litter cover. The objective is to prevent grazers from selectively removing desirable plant species and leaving undesirable species.

- Exclude livestock grazing on newly seeded areas with fencing to ensure that desired vegetation is well established, usually after 2-3 growing seasons.

- Reduce ground disturbance, including damage to biological soil crusts. Consider changes in the timing, intensity, duration, or frequency of livestock use; location and changes in salt grounds; restoration or protection of watering sites; and restoration of yarding/loafing areas, corrals, and other areas of concentrated livestock use.

- Inspect areas of concentrated livestock use for weed invasion, especially watering locations and other sensitive areas that may be particularly susceptible to invasion. Inventory and manage new infestations.

- Defer livestock grazing in burned areas until vegetation is successfully established, usually after 2-3 growing seasons.

F. Outfitting / Recreation Pack and Saddle Stock Use

- Allow only certified weed-free hay/feed on BLM lands.

- Inspect, brush, and clean animals (especially hooves and legs) before entering public land. Inspect and clean tack and equipment.

- Regularly inspect trailheads and other staging areas for backcountry travel. Bedding in trailers and hay fed to pack and saddle animals may contain weed seed or propagules.

- Tie or contain stock in ways that minimize soil disturbance and prevent loss of desirable native species.

- Authorized trail sites for tying pack animals should be monitored several times per growing season to quickly identify and eradicate new weeds. Trampling and permanent damage to desired plants are likely. Tie-ups should be located away from water and in shaded areas where the low light helps suppress weed growth.

- Educate outfitters to look for and report new weed infestations.

G. Wildlife

- Periodically inspect and document areas where wildlife concentrate in the winter and spring and cause excess soil disturbance.

- Use weed-free materials for all wildlife management activities.

- Incorporate weed prevention into all wildlife habitat improvement project designs.

H. Fire

Incident Planning

- Increase weed awareness and weed prevention by providing training to new and/or seasonal fire staff on invasive weed identification and prevention.

- For prescribed burns, inventory the project area and evaluate potential weed spread with regard to
- the fire prescription. Areas with moderate to high weed cover should be managed for at least 2 years prior to the prescribed burn to reduce the number of weed seeds in the soil. Continue weed management after the burn.

- Ensure that a weed specialist is included on a Fire Incident Management Team when wildfire or prescribed operations occur in or near a weed-infested area. Include a discussion of weed prevention operational practices in all fire briefings.

- Use operational practices to reduce weed spread (e.g., avoid weed infestations when locating fire lines).

- Identify and periodically inspect potential helispots, staging areas, incident command posts, base camps, etc. and maintain a weed-free condition. Encourage network airports and helibases to do the same.

- Develop a burned-area integrated weed management plan, including a monitoring component to detect and eradicate new weeds early.

Fire-fighting

- Ensure that all equipment (including borrowed or rental equipment) is free of weed seed and propagules before entering incident location.

- When possible, use fire suppression tactics that reduce disturbances to soil and vegetation, especially when creating fire lines.

- Use wet or scratch-lines where possible instead of fire breaks made with heavy equipment. Given the choice of strategies, avoid ignition and burning in areas at high risk for weed establishment or spread.

- Hose off vehicles on site if they have traveled through infested areas.

- Inspect clothing for weed seeds if foot travel occurred in infested areas.

- When possible, establish incident bases, fire operations staging areas, and aircraft landing zones in areas that have been inspected and are verified to be free of invasive weeds.

- Cover weed infested cargo areas and net-loading areas with tarps if weeds exist and can't be removed or avoided.

- Flag off high-risk weed infestations in areas of concentrated activity and show weeds on facility maps.

- If fire operations involve travel or work in weed infested areas, a power wash station should be staged at or near the incident base and helibase. Wash all vehicles and equipment upon arrival from and departure to each incident. This includes fuel trucks and aircraft service vehicles.

- Identify the need for possible fire rehab to prevent or mitigate weed invasion during fire incident and apply for funding during the incident.

Appendix C

Standard Operating Procedures for Weed Treatments on BLM-Administered Lands in the WRFO

RESOURCE	STANDARD OPERATING PROCEDURE
GENERAL See BLM Handbook H-9011-1 (Chemical Pest *Control*) and manuals 1112 (*Safety*), 9011 (Chemical Pest Control), 9012 (Expenditure of Rangeland Insect Pest Control Funds), 9015 (Integrated Weed Management), and 9220 (Integrated Pest Management)	• Prepare spill contingency plan in advance of treatment. • Conduct a pretreatment survey before applying herbicides. • Select herbicide that is least damaging to environment while providing the desired results. • Select herbicide products carefully to minimize additional impacts from degradates, adjuvants, inert ingredients, and tank mixtures. • Apply the least amount of herbicide needed to achieve the desired result. • Follow product label for use and storage. • Have licensed applicators apply herbicides. • Use only EPA-approved herbicides and follow product label directions and "advisory" statements. • Review, understand, and conform to the "Environmental Hazards" section on the herbicide label. This section warns of known pesticide risks to the environment and provides practical ways to avoid harm to organisms or the environment. • Consider surrounding land use before assigning aerial spraying as a treatment method and avoid aerial spraying near agricultural or densely populated areas. • Minimize the size of application areas, when feasible. • Comply with herbicide-free buffer zones to ensure that drift will not affect crops or nearby residents/landowners. • Post treated areas and specify reentry or rest times, if appropriate. • Notify adjacent landowners prior to treatment. • Keep copy of Material Safety Data Sheets (MSDSs) at work sites. MSDSs available for review at http://www.cdms.net/. • Keep records of each application, including the active ingredient, formulation, application rate, date, time, and location. • Avoid accidental direct spray and spills to minimize risks to resources. • Avoid aerial spraying during periods of adverse weather conditions (snow or rain imminent, fog, or air turbulence). • Make helicopter applications at a target airspeed of 40 to 50 miles per hour (mph), and at about 30 to 45 feet above ground. • Minimize drift by not applying herbicides when winds exceed 10 mph (6 mph for aerial applications) or a serious rainfall event is imminent. • Conduct pre-treatment surveys for sensitive habitat and special status species within or adjacent to proposed treatment areas, when deemed necessary by BLM WRFO Botanist or Biologist. • Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation. • Use drift reduction agents and low volatility formulations, as

RESOURCE	STANDARD OPERATING PROCEDURE
	appropriate, to reduce the drift hazard to non-target species. • Turn off applied treatments at the completion of spray runs and during turns to start another spray run. • Refer to the herbicide label when planning re-vegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Clean OHVs to remove seeds.

RESOURCE	STANDARD OPERATING PROCEDURE
Wetlands and Riparian Areas	• Use a selective herbicide and a wick or backpack sprayer. • Use appropriate herbicide-free buffer zones for herbicides not labeled for aquatic use based on risk assessment guidance, with minimum widths of 100 feet for aerial, 25 feet for vehicle, and use of only herbicides that pose no to low risk to fish or amphibians within 10 feet of riparian areas.
Vegetation See Handbook H-4410-1 (National Range Handbook) and Manuals5000 (Forest Management) and 9015 (Integrated Weed Management)	• Refer to the herbicide label when planning re-vegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Use native or sterile species for re-vegetation and restoration projects to compete with invasive species until desired vegetation establishes • Use weed-free feed for horses and pack animals. Use weed-free straw or hay mulch for re-vegetation and other activities. • Identify and implement any temporary domestic livestock grazing and/or supplemental feeding restrictions needed to enhance desirable vegetation recovery following treatment. Consider adjustments in the existing grazing permit, needed to maintain desirable vegetation on the treatment site.
Pollinators	• Complete vegetation treatments seasonally before pollinator foraging plants bloom or following fruit set. • Time vegetation treatments to take place when foraging pollinators are least active both seasonally and daily. • Design vegetation treatment projects so that nectar and pollen sources for important pollinators and resources are treated in patches rather than in one single treatment. • Minimize herbicide application rates. Use typical rather than maximum rates where there are important pollinator resources. • Maintain herbicide free buffer zones around patches of important pollinator nectar and pollen sources. • Maintain herbicide free buffer zones around patches of important pollinator nesting habitat and hibernacula. • Make special note of pollinators that have single host plant species, and minimize herbicide spraying on those plants (if invasive species) and in their habitats.

RESOURCE	STANDARD OPERATING PROCEDURE
Fish and Other Aquatic Organisms See Manuals 6500 (Wildlife and Fisheries Management) and 6780 (Habitat Management Plans)	• Use appropriate buffer zones based on label and risk assessment guidance. • Minimize treatments near fish-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used, and use spot rather than broadcast or aerial treatments. • Use appropriate application equipment/method near water bodies if the potential for offsite drift exists. • For treatment of aquatic vegetation, 1) treat only that portion of the aquatic system necessary to achieve acceptable vegetation management, 2) use the appropriate application method to minimize the potential for injury to desirable vegetation and aquatic organisms, and 3) follow water use restrictions presented on the herbicide label.
Wildlife See Manuals 6500 (Wildlife and Fisheries Management) and 6780 (Habitat Management Plans)	• Use herbicides of low toxicity to wildlife, where feasible. • Use spot applications or low-boom broadcast operations where possible to limit the probability of contaminating non-target food and water sources, especially non-target vegetation over areas larger than the treatment area. • Use timing restrictions (e.g., do not treat during critical wildlife breeding or staging periods) to minimize impacts to wildlife. • Avoid using glyphosate formulations that include the adjuvant R-11 in aquatic ecosystems and do not use formulations with the POEA surfactant to reduce risks to amphibians and aquatic organisms.

RESOURCE	STANDARD OPERATING PROCEDURE
Threatened, Endangered, and Sensitive Species See Manual 6840 (Special Status Species)	• Survey for special status species before treating an area, if deemed necessary by a BLM WRFO Biologist or Botanist. Consider effects to special status species when designing herbicide treatment programs. • Use a selective herbicide and a wick or backpack sprayer to minimize risks to special status plants. • Avoid treating vegetation during time-sensitive periods (e.g., nesting and migration, sensitive life stages) for special status species in area to be treated.

Appendix D

Mitigation Measures

RESOURCE	MITIGATION MEASURES
Wetland and Riparian Areas	• See mitigation for Water Resources and Quality and Vegetation.
Vegetation	• Minimize the use of terrestrial herbicides (especially bromacil, diuron, and sulfometuron methyl) in watersheds with downgradient ponds and streams if potential impacts to aquatic plants are of concern. • Establish appropriate (herbicide specific) buffer zones around downstream water bodies, habitats, and species/populations of interest. Consult the ERAs for more specific information on appropriate buffer distances under different soil, moisture, vegetation, and application scenarios. • To protect special status plant species, implement all conservation measures for plants presented in the Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Biological Assessment.
Fish and Other Aquatic Organisms	• Limit the use of diquat in water bodies that have native fish and aquatic resources. • Limit the use of terrestrial herbicides in watersheds with characteristics suitable for potential surface runoff, and have fish-bearing streams, during periods when fish are in life stages most sensitive to the herbicide(s) used. • Implement all conservation measures for aquatic animals developed during consultation for the BLM WRFO Programmatic Weed Management Plan Environmental Assessment. • Establish appropriate herbicide-specific buffer zones for water bodies, habitats, or fish or other aquatic species of interest (see Appendix C and recommendations in individual ERAs). • Avoid using the adjuvant R-11® in aquatic environments and do not use glyphosate formulations containing the POEA surfactant to reduce risks to aquatic organisms.
Wildlife	• To minimize risks to terrestrial wildlife, do not exceed the typical application rate for applications of dicamba, diuron, glyphosate, hexazinone, tebuthiuron, or triclopyr, where feasible. • Minimize the size of application areas, where practical, when applying 2,4-D, bromacil, diuron, and Overdrive® to limit impacts to wildlife, particularly through contamination of food items. • Where practical, limit glyphosate and hexazinone to spot applications in rangeland and wildlife habitat areas to avoid contamination of wildlife food items. • Avoid using the adjuvant R-11® in aquatic environments and do not use glyphosate formulations containing the POEA surfactant to

RESOURCE	MITIGATION MEASURES
Wildlife (continued)	reduce risks to amphibians and aquatic organisms. • Do not apply bromacil or diuron in rangelands, and use appropriate buffer zones to limit contamination of offsite vegetation, which may serve as forage for wildlife. • Do not aerially apply diquat directly to wetlands or riparian areas. To protect special status species, implement all conservation measures developed during consultation for the BLM WRFO Programmatic Weed Management Plan Environmental Assessment. • To protect special status species, implement all conservation measures developed during consultation for the BLM WRFO Programmatic Weed Management Plan Environmental Assessment
Water Resources and Quality	• Establish appropriate (herbicide-specific) buffer zones to downstream water bodies, habitats, and species/populations of interest.

Appendix E

General Conservation Measures for Wildlife and Special Status Plant Species

Wildlife

- To minimize risks to Colorado pikeminnow habitat, the following conservation measures will be included in the IWMP regarding biological control of tamarisk:
  - Known infestations of weeds shall be treated at the release site prior to the release of any tamarisk leaf beetles.
  - Revegetation of the site with native vegetation (including cottonwoods and willows) shall occur as soon as practical after the release of tamarisk leaf beetles (i.e. as soon as there is a high enough mortality or decline in tamarisk to make conditions suitable to plantings).
  - Annual monitoring and treatment of weed infestations will be conducted at the release site (or any other site experiencing substantial tamarisk mortality due to the beetles moving off-site).

- In order to minimize the amount of chemical entering aquatic habitats, buffer strips will be provided for streams and riparian areas when using terrestrial formulations. A minimum buffer strip of 25 ft (7.6m) will be provided for vehicle applications (e.g. ATV sprayers). Within 25 ft (7.6m) of water, herbicides will be applied using a backpack sprayer. Herbicides that pose a moderate to high risk to fish (e.g. bromacil, diquat, diuron, terrestrial formulations of glyphosate, imazapyr, picloram, and triclopyr BEE at any application rate or 2,4-D and triclopyr TEA at maximum application rates) will not be used within 10 ft (3m) of water.

- When possible (i.e. when compatible with specific chemical formulations or tank mixes), Agri-Dex shall be the preferred surfactant to use within 10 ft (3m) of riparian areas that support special status fisheries or critical habitat.

- To minimize disturbance to nesting sage-grouse, treatments shall not occur from April 15th through July 7th. Whether or not to impose such a timing restriction on individual projects will be evaluated based on the type of activity (e.g. method of control, access, duration of activity), the condition of the treatment area in respect to nesting and brood-rearing habitat, and whether or not conducting the treatment outside of this time period will result in a failure to meet weed management objectives.

- Care should be taken when treatments include riparian vegetation which is a critical habitat component for all special status aquatic wildlife species. Efforts should be taken to avoid or minimize involvement and damage to woody riparian shrubs and trees by using manual control, minimizing the wetting of desirable plant foliage with herbicide, and using less persistent herbicides beneath or within 25 feet (7.6 m) of desirable plant canopies.

- In the event raptor nest activity is discovered within treatment areas, restrictions on activities around the nest site would be applied until nest functions are complete.

- To minimize impacts to migratory birds that rely on these areas, it is critical that cottonwoods and willows be re-established at sites (e.g. using plantings) where tamarisk removal is successful.

- If possible, delaying treatment of weed trees (tamarisk and Russian olive) until after the nesting period of migratory birds (i.e. after mid-August) would prevent destruction of nests.

Special Status Plant Species

- The WRFO-specific mitigation measures are found in both the FONSI and the Special Status Plant Species section of the associated Environmental Analysis and should be used for management direction related to special status species under this decision. In cases where additional direction or clarification is needed, the tiered documents (PEIS, PBA, PBO) may contain additional SMP's, mitigation and BOP's that are applicable, and may be used, as long as they are at least as restrictive as the direction provided under this decision. In the cases where mitigation, SOP or BMP's are less restrictive in the tiered documents, the WRFO BO conservation measures and procedures, and additional site-specific mitigation, as outlined in this document, will apply.

Conservation Measures for Wildlife by Chemical

2,4-D

- Do not broadcast spray in black-footed ferret or Canada lynx habitat or within ¼ mile of black-footed ferret or Canada lynx habitat. Spot spray application is permitted but use of a carrier dye is required to ensure herbicide application is only applied to target weed species.
- Special care should be taken to follow all instructions and SOPs to avoid spill and direct spray scenarios in aquatic habitats during transport and application.
- Since 2,4-D poses a high risk to a variety of migratory birds and special status species, it is recommended that its use be restricted within suitable habitats for these species. Other herbicides that are not as toxic to these species could be used to treat most of the weeds (except for leafy spurge and toadflax) that can be treated using 2,4-D. Site specific proposals shall be evaluated based on the application method (i.e. spot spray or broadcast), condition of the treatment area in respect habitat requirements, and whether or not there are other effective treatment methods for the target weed. It should not be used as a matter of convenience or habit when there are other treatment methods available and site specific proposals should document the reason why the use of 2,4-D is critical to achieving objectives

Bromacil

- Do not broadcast spray in Canada lynx habitat (except for bare ground treatments).

- Where feasible, avoid using in black-footed ferret and Canada lynx habitat.
- If broadcast spraying in or near black-footed ferret habitat, apply at the typical, rather than the maximum application rate.
- Broadcast application (at rates higher than the typical rate in ferret habitat and at any rate in lynx habitat) would only be permitted for bare ground treatments in black-footed ferret or Canada lynx habitat. For bare ground treatments, the area to be treated will be limited to a distance of up to 10 feet (3m) from the edge of well heads, meter houses, tanks, etc. Equipment enclosed in fences would be protected from the encroachment of vegetation out to the fence. Aerial application would not be used for bare ground treatments.
- Special care should be taken to follow all instructions and SOPs to avoid spill and direct spray scenarios in aquatic habitats during transport and application.
- In watersheds that support Colorado pikeminnow or Greenback cutthroat trout or their habitat, do not apply in upland habitats within ½ mile upslope of aquatic habitats under conditions that would likely result in surface runoff.

Chlorosulfuron

- Do not broadcast spray in Canada lynx habitat.
- This chemical has not been specifically evaluated for effects on amphibians. Where feasible, avoid the use of this herbicide in occupied amphibian habitats.

Clopyralid

- Where feasible, avoid using in black-footed ferret and Canada lynx habitat.
- Do not broadcast spray in black-footed ferret or Canada lynx habitat; do not broadcast spray in areas adjacent to black-footed ferret or Canada lynx habitat under conditions when spray drift onto habitat is likely.
- Special care should be taken to follow all instructions and SOPs to avoid spill and direct spray scenarios in aquatic habitats during transport and application.
- This chemical has not been specifically evaluated for effects on amphibians. Where feasible, avoid the use of this herbicide in occupied amphibian habitats.

Dicamba

- Do not broadcast spray in Canada lynx habitat.

Difluenzopyr

- Do not broadcast spray in Canada lynx habitat.
- This chemical has not been specifically evaluated for effects on amphibians. Where feasible, avoid the use of this herbicide in occupied amphibian habitats.

Diquat

- Do not broadcast spray in Canada lynx habitat.
- Where feasible, avoid using in black-footed ferret and Canada lynx habitat.

- If broadcast spraying in or near black-footed ferret habitat, apply at the typical, rather than the maximum application rate.
- Do not use glyphosate formulations that include R-11 or POEA surfactant.
- Do not use to treat aquatic vegetation within the 100-year floodplain of the White River, within the Carr Creek and Roan Creek watersheds, or within riparian systems that support special status aquatic wildlife.

Diuron

- Where feasible, avoid using in black-footed ferret and Canada lynx habitat.
- Do not broadcast spray in black-footed ferret or Canada lynx habitat; do not broadcast spray in areas adjacent to black-footed ferret or Canada lynx habitat under conditions when spray drift onto habitat is likely.
- Broadcast application would only be permitted for bare ground treatments in black-footed ferret or Canada lynx. For bare ground treatments, the area to be treated will be limited to a distance of up to 10 feet (3m) from the edge of well heads, meter houses, tanks, etc. Equipment enclosed in fences would be protected from the encroachment of vegetation out to the fence. Aerial application would not be used for bare ground treatments.
- Special care should be taken to follow all instructions and SOPs to avoid spill and direct spray scenarios in aquatic habitats during transport and application.
- Do not broadcast spray in upland habitats adjacent to the 100-year floodplain of the White River or riparian systems that support special status aquatic wildlife, or within the Carr Creek and Roan Creek watersheds under conditions that would likely result in off-site drift.
- Do not apply in upland habitats within ½ mile upslope of the 100-year floodplain of the White River, riparian systems that support aquatic wildlife, or within the Carr Creek and Roan Creek watersheds under conditions that would likely result in surface runoff.
- For aquatic habitats that support vertebrate aquatic wildlife, maintain the following minimum buffers for broadcast applications of diuron:
  - Typical Rate, High Boom (50 inches): 100 ft Minimum Buffer
  - Maximum Rate, Low Boom (20 inches): 100 ft Minimum Buffer
  - Maximum Rate, High Boom: 900 ft Minimum Buffer
- Diuron shall not be used within the buffers mentioned above for special status aquatic wildlife. If a proposed bare ground treatment occurs within the buffers, alternative chemicals (e.g. glyphosate) or treatment methods (e.g. gravel) should be used.

Fluridone

- Do not broadcast spray in Canada lynx habitat.
- Do not use to treat aquatic vegetation within the 100-year floodplain of the White River, within the Carr Creek and Roan Creek watersheds, or within riparian systems that support special status aquatic wildlife.

- This chemical has not been specifically evaluated for effects on amphibians. Where feasible, avoid the use of this herbicide in occupied amphibian habitats.

Glyphosate

- Where feasible, avoid using in black-footed ferret and Canada lynx habitat.
- If conducting manual spot applications to vegetation in black-footed ferret or Canada lynx habitat, utilize the typical, rather than the maximum, application rate.
- Do not broadcast spray at rates higher than 0.375 lbs of acid equivalent per acre in black-footed ferret habitat or in areas adjacent to black-footed ferret habitat under conditions when spray drift onto the habitat is likely.
- Do not broadcast spray in Canada lynx habitat; do not broadcast spray in areas adjacent to Canada lynx habitat under conditions when spray drift onto habitat is likely.
- Broadcast application (at rates higher than 0.375 lbs AE/ac in ferret habitat or at any rate in lynx habitat) would only be permitted for bare ground treatments in black-footed ferret or Canada lynx habitat. For bare ground treatments, the area to be treated will be limited to a distance of up to 10 feet (3m) from the edge of well heads, meter houses, tanks, etc. Equipment enclosed in fences would be protected from the encroachment of vegetation out to the fence. Aerial application would not be used for bare ground treatments.
- Do not use terrestrial formulations to treat aquatic vegetation within the 100-year floodplain of the White River, within the Carr Creek and Roan Creek watersheds, or within riparian systems that support special status aquatic wildlife.
- Special care should be taken to follow all instructions and SOPs to avoid spill and direct spray scenarios in aquatic habitats during transport and application.
- Do not broadcast spray terrestrial formulations in upland habitats adjacent to the 100-year floodplain of the White River or riparian systems that support special status aquatic wildlife, or within the Carr Creek and Roan Creek watersheds under conditions that would likely result in off-site drift.

Hexazinone

- Where feasible, avoid using in black-footed ferret and Canada lynx habitat.
- If conducting manual spot applications to vegetation in black-footed ferret or Canada lynx habitat, utilize the typical, rather than the maximum, application rate.
- Do not broadcast spray in black-footed ferret or Canada lynx habitat; do not broadcast spray in areas adjacent to black-footed ferret or Canada lynx habitat under conditions when spray drift onto habitat is likely.
- Special care should be taken to follow all instructions and SOPs to avoid spill and direct spray scenarios in aquatic habitats during transport and application.
- This chemical has not been specifically evaluated for effects on amphibians. Where feasible, avoid the use of this herbicide in occupied amphibian habitats.

Imazapic

- Do not broadcast spray in Canada lynx habitat.
- This chemical has not been specifically evaluated for effects on amphibians. Where feasible, avoid the use of this herbicide in occupied amphibian habitats.

Imazapyr

- Where feasible, avoid using in black-footed ferret and Canada lynx habitat.
- Do not broadcast spray in Canada lynx habitat.
- If broadcast spraying in or near black-footed ferret habitat, apply at the typical, rather than the maximum application rate.
- Broadcast application (at rates higher than the typical application rate in ferret habitat or at any rate in lynx habitat) would only be permitted for bare ground treatments in black-footed ferret and Canada lynx habitat. For bare ground treatments, the area to be treated will be limited to a distance of up to 10 feet (3m) from the edge of well heads, meter houses, tanks, etc. Equipment enclosed in fences would be protected from the encroachment of vegetation out to the fence. Aerial application would not be used for bare ground treatments.
- Special care should be taken to follow all instructions and SOPs to avoid spill and direct spray scenarios in aquatic habitats during transport and application.
- This chemical has not been specifically evaluated for effects on amphibians. Where feasible, avoid the use of this herbicide in occupied amphibian habitats.

Metsulfuron methyl

- Do not broadcast spray in Canada lynx habitat.
- Where feasible, avoid using in black-footed ferret and Canada lynx habitat.
- If broadcast spraying in or near black-footed ferret habitat, apply at the typical, rather than the maximum application rate.
- Special care should be taken to follow all instructions and SOPs to avoid spill and direct spray scenarios in aquatic habitats during transport and application.
- This chemical has not been specifically evaluated for effects on amphibians. Where feasible, avoid the use of this herbicide in occupied amphibian habitats.

Picloram

- Where feasible, avoid using in black-footed ferret and Canada lynx habitat.
- Do not broadcast spray in black-footed ferret or Canada lynx habitat; do not broadcast spray in areas adjacent to black-footed ferret or Canada lynx habitat under conditions when spray drift onto habitat is likely.
- Special care should be taken to follow all instructions and SOPs to avoid spill and direct spray scenarios in aquatic habitats during transport and application.
- Do not broadcast spray in upland habitats adjacent to the 100-year floodplain of the White River or riparian systems that support special status aquatic wildlife, or within the Carr Creek and Roan Creek watersheds under conditions that would likely result in off-site drift.

- This chemical has not been specifically evaluated for effects on amphibians. Where feasible, avoid the use of this herbicide in occupied amphibian habitats.

Sulfometuron methyl

- Do not broadcast spray in Canada lynx habitat.

Tebuthiuron

- Do not broadcast spray in Canada lynx habitat.
- Special care should be taken to follow all instructions and SOPs to avoid spill and direct spray scenarios in aquatic habitats during transport and application.
- Do not apply in upland habitats within ½ mile upslope of the 100-year floodplain of the White River, riparian systems that support aquatic wildlife, or within the Carr Creek and Roan Creek watersheds under conditions that would likely result in surface runoff.
- Tebuthiuron (e.g. Spike 20P) is an herbicide for woody vegetation (i.e. trees and shrubs) that can be used (according to the label) to treat big sagebrush, juniper, and pinyon pine. These species are highly valuable in terms of nesting and foraging habitat a variety of wildlife. Treatments specifically targeting big sagebrush, juniper, pinyon pine, or any other native shrub or tree should not be considered weed treatments, per se, and should be analyzed in a separate NEPA document. To prevent accidental harm to native woody vegetation over an unacceptably large area, tebuthiuron should not be aerially broadcast.

Triclopyr

- Where feasible, avoid using in black-footed ferret and Canada lynx habitat.
- If conducting manual spot applications to vegetation in black-footed ferret or Canada lynx habitat, utilize the typical, rather than the maximum, application rate.
- Do not broadcast spray in black-footed ferret or Canada lynx habitat; do not broadcast spray in areas adjacent to black-footed ferret or Canada lynx habitat under conditions when spray drift onto habitat is likely.
- Do not use triclopyr BEE to treat aquatic vegetation within the 100-year floodplain of the White River, within the Carr Creek and Roan Creek watersheds, or within riparian systems that support special status aquatic wildlife.
- Special care should be taken to follow all instructions and SOPs to avoid spill and direct spray scenarios in aquatic habitats during transport and application.
- Do not broadcast spray triclopyr BEE in upland habitats adjacent to the 100-year floodplain of the White River or riparian systems that support special status aquatic wildlife, or within the Carr Creek and Roan Creek watersheds under conditions that would likely result in off-site drift.
- Do not apply triclopyr BEE in upland habitats within ½ mile upslope of the 100-year floodplain of the White River, riparian systems that support aquatic wildlife, or within the Carr Creek and Roan Creek watersheds under conditions that would likely result in surface runoff.

Special Status Plant Species Conservation Measures by Chemical

Table 7. Herbicide Buffer Distances from Terrestrial Special Status Plant Species [1, 2]

Active Ingredient	Buffer Width	Method(s) to Which Applied
2,4-D	0.5 mile	All
Bromacil	1,200 feet	All
Chlorsulfuron	1,200 feet	Ground
	1,500 feet	Aerial
Clopyralid	900 feet	Ground, typical rate
	0.5 mile	Ground, maximum rate; aerial
Dicamba	1,050 feet	Ground
Diflufenzopyr	100 feet	Low boom, typical rate
	500 feet	Low boom, maximum rate; high boom
	900 feet	Aerial
Diquat	900 feet	Ground, typical rate
	1,000 feet	Ground, maximum rate
	1,200 feet	Aerial
Diuron	1,100 feet	All
Fluridone	0.5 mile	All
Glyphosate	50 feet	Ground, typical rate
	300 feet	Ground, maximum rate; aerial
Hexazinone	300 feet	Ground, typical rate
	900 feet	Ground, maximum rate
Imazapic	25 feet	Ground, typical or maximum rates
	300 feet	Aerial, typical rate
	900 feet	Aerial, maximum rate
Imazapyr	900 feet	Ground or aerial, typical rate
	0.5 mile	Ground or aerial, maximum rate
Metsulfuron Methyl	900 feet	Ground or aerial, typical rate
	0.5 mile	Ground or aerial, maximum rate
Overdrive®	100 feet	Low boom, typical rate
	900 feet	Low boom, maximum rate; high boom
Picloram	0.5 mile	All
Sulfometuron Methyl	1,500 feet	All
Tebuthiuron	25 feet	Low boom, typical rate
	50 feet	Low boom, maximum rate; high boom, typical rate
	900 feet	High boom, maximum rate
Triclopyr	300 feet	Ground, typical rate
	500 feet	Aerial, typical rate
	0.5 mile	Ground or aerial, maximum rate

[1] Source: BLM 2007a
[2] See Appendix C for information related to aquatic species and other specific situations (e.g., areas vulnerable to wind erosion of treated soil.

Appendix F

List of Riparian System in the WRRA
along with Functional Classification
Taken from the 1997 White River ROD/RMP

Location	Proper Functioning Condition[1/ 2]	BLM Acres of Riparian	Ecological Condition/Trend[2]
Douglas Creek/Cathedral Geographic Reference Area			
Bear Park Creek	FAR	4.5	Mid/Stable
East Douglas Creek	PFC	60.5	Late/Improving
Main Douglas Creek	FAR	360	Mid/Improving
Cathedral Creek	FAR	10.8	Mid/Improving
West Creek	NON	5	Early/Declining
Lake Creek	FAR	8.4	Mid/Improving
Soldier Creek	NON	2.8	Mid/Declining
Crooked Wash/Deep Channel Geographic Reference Area			
Crooked Wash	FAR	10	Mid-Seral/Stable
Piceance Basin Geographic Reference Area			
Cow Creek	NON	14.6	Early-Seral/Declining
No Name	NON	3.9	Early/Declining
Trapper's Creek	FAR	5	Mid-Seral/Improving
West Fawn Creek	FAR	3	Mid-Seral/Stable
Black Sulphur Creek	FAR	8.5	Late-Seral/Improving
Timber Gulch	NON	1.4	Mid-Seral/Improving
Joe Bush Gulch	NON	0.7	Early-Seral/Stable
Segar Gulch	NON	0.7	Early-Seral/Stable
Deer Gulch	PFC	1	Late-Seral/Stable
Yellow Creek	FAR	54.5	Mid Seral/Stable
Willow Creek	FAR	13.3	Mid/Stable
Brush Creek	NON	4.2	Mid/Declining
Clear Creek	NON	4	Mid/Declining
Blue Mountain/Moosehead Geographic Reference Area			
Meadow Creek	FAR	6.5	Mid/Stable
Turner Creek	FAR	9.4	Mid/Stable
Bull Canyon	FAR	2.3	Late/Stable
Willow Creek	FAR	2.3	Late/Stable
Danforth Hills/Jensen Geographic Reference Area			
Big Beaver Creek	PFC	2	Late/Stable
Wolf Creek/Red Wash Geographic Reference Area			
Divide Creek Reservoir	PFC	4	Late/Stable
White River Riparian Geographic Reference Area			
White River	FAR	116	Late/Stable
Total		**719.3**	

Location	Proper Functioning Condition[1/ 2]	BLM Acres of Riparian	Ecological Condition/Trend[2]
Douglas Creek/Geographic Reference Area			
Gillam Draw	NON	5.5	Early/Stable
Sucker/Willow Creek	FAR	5.5	Mid/Declining
West Douglas Creek	FAR	2.7	Mid/Stable
Missouri Creek	NON	17.6	Fair/Declining
West Evacuation Creek	FAR	1.4	Mid/Stable
East Evacuation Creek	FAR	7	Mid/Stable
Foundation Creek	FAR	4.6	Mid/Stable
Bitter Creek	FAR	3.6	Mid/Stable
Spring Creek	NON	5.9	Early/Stable
Crooked Wash/Deep Channel Geographic Reference Area			
Deep Channel Creek	FAR	1.7	Mid/Stable
Tschuddi Gulch	FAR	6.1	Mid/Improving
Scenery Gulch	NON	0.5	Fair/Improving
Black's Gulch	NON	1.9	Fair/Stable
Piceance Basin Geographic Reference Area			
Piceance Creek	FAR	30	Mid/Stable
West Branch Cow Creek	NON	0.5	Mid/Declining
Bear Creek	NON	3	Early/Stable
Fawn Creek	FAR	3.7	Mid/Stable
Yankee Gulch	FAR	3.9	Mid/Stable
Dry Fork Piceance Creek	NON	2.8	Early/Stable
Eureka Creek	NON	1.4	Mid/Stable
Hay Gulch	NON	0.7	Early/Stable
Davis Gulch	FAR	1	Mid/Stable
Greasewood Gulch	FAR	2.4	Late/Stable
Little Corral	FAR	7.8	Early/Stable
Dark Canyon	FAR	4.8	Early/Stable
Cole Gulch	FAR	0.5	Mid/Stable
Hatch Gulch	FAR	0.5	Mid/Stable
Collins Gulch	FAR	0.7	Mid/Stable
Cascade Gulch	FAR	0.7	Mid/Stable
Thirteen Mile	FAR	0.6	Mid/Stable
Fourteen Mile	FAR	0.4	Late/Stable
Ryan Gulch	NON	3.4	Early/Stable
Smizer Gulch	NON	2.6	Early/Stable
Galloway Gulch	NON	2.3	Early/Stable
Stake Spring Draw	NON	5.3	Early/Stable
Big Duck Creek	NON	3.1	Early/Stable
Black Cabin Gulch	NON	1	Early/Stable

Location	Proper Functioning Condition[1/ 2]	BLM Acres of Riparian	Ecological Condition/Trend[2]
Blue Mountain/Moosehead Geographic Reference Area			
Buckwater Draw	FAR	0.7	Mid/Stable
K Creek	FAR	0.8	Mid/Stable
Wolf Creek	FAR	12.9	Unknown
Burdette	FAR	1.4	Unknown
Bear Canyon	FAR	3.5	Unknown
Twin Wash	FAR	2.2	Unknown
Little Red Wash	FAR	1.4	Unknown
Spike Hollow	NON	0.9	Unknown
Mud Springs	NON	0.4	Unknown
Red Rock	NON	0.4	Unknown
Box Canyon	FAR	1.4	Unknown
Danforth Hills/Jensen Geographic Reference Area			
East Fork Wilson Creek	FAR	1.5	Mid/Stable
West Fork Good Spring Creek	FAR	2.4	Mid/Stable
East Fork Flag Creek	FAR	2	Late/Stable
Wolf Creek/Red Wash Geographic Reference Area			
Stinking Water Creek	PFC	7.9	Late/Stable
Peterson Draw	FAR	0.7	Late/Stable
Horse Draw	FAR	4	Good/Stable
Three Springs Draw	FAR	0.7	Late/Improving
Wolf Creek	NON	19.1	Mid/Stable
Red Wash	NON	11	Mid/Improving
Total		**221.9**	**N/A**

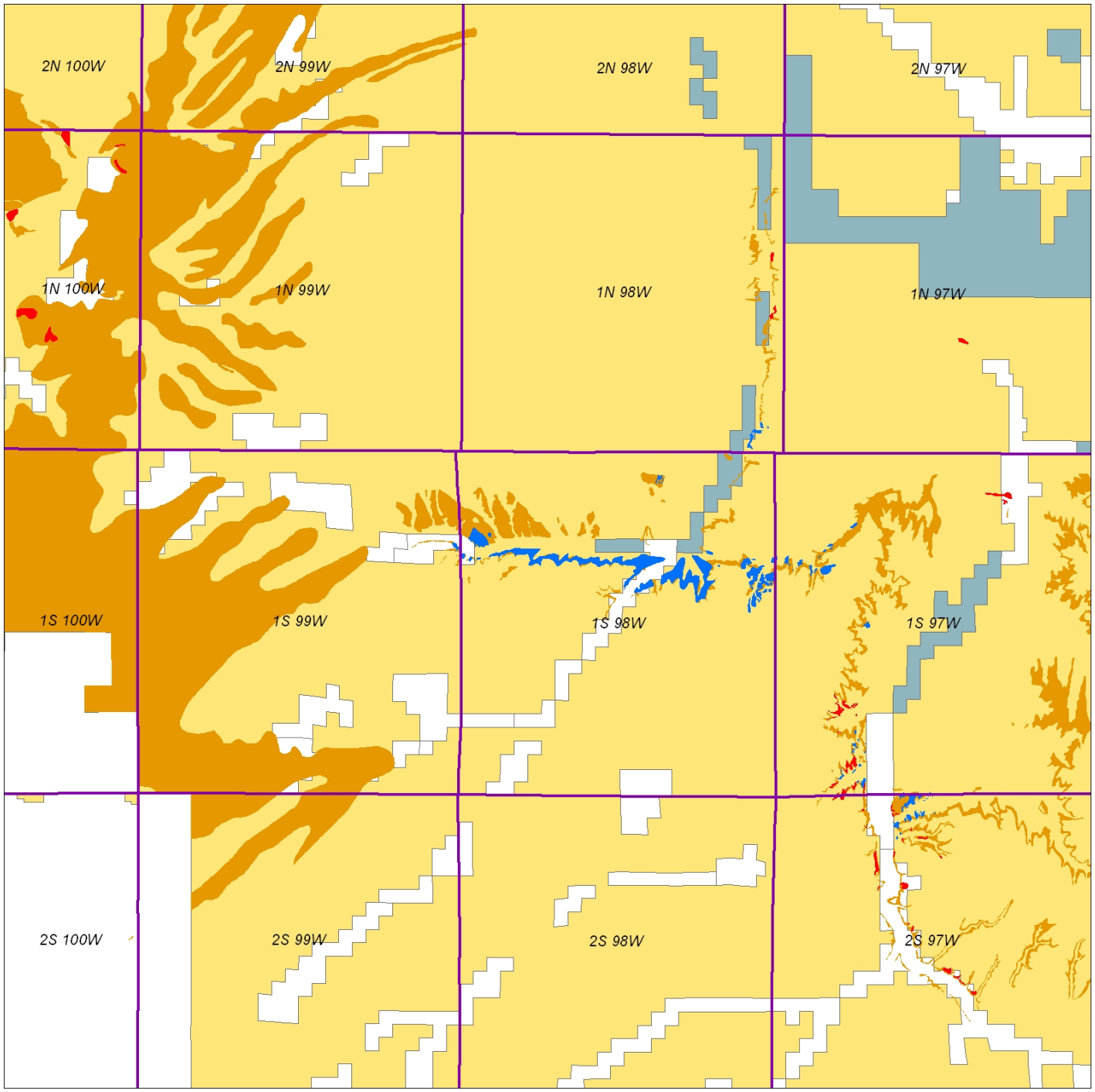
Location	Proper Functioning Condition[1/ 2]	BLM Acres of Riparian	Ecological Condition/Trend [2]
Piceance Basin GRA			
East Hunter Creek	NON	2	Unknown
West Hunter Creek	FAR	3.5	Unknown
Middle Fork Stewart	FAR	0.5	Unknown
Post Gulch	NON	0.3	Unknown
Kendall Gulch	FAR	0.7	Unknown
Main Prong	FAR	0.7	Unknown
McCarthy Gulch	NON	1	Unknown
Schutte Gulch	NON	1.1	Unknown
Story Gulch	NON	0.5	Unknown
Dry Gulch	NON	1	Unknown
Wagon Road	NON	1.3	Unknown
Box Elder	NON	2.1	Unknown
Corral Gulch	NON	0.9	Unknown

Location	Proper Functioning Condition[1/ 2]	BLM Acres of Riparian	Ecological Condition/Trend [2]
Douglas Creek GRA			
Red Cedar Spring	FAR	2	Unknown
Texas Creek	NON	1.1	Unknown
Trail Canyon	NON	0.9	Unknown
Big Spring	NON	1.7	Unknown
Whiskey Creek	FAR	1.9	Unknown
Davis Creek	FAR	0.5	Unknown
Wolf Creek GRA			
Divide Creek	NON	0.9	Unknown
Box Elder	NON	0.7	Unknown
Skull Creek	FAR	0.5	Unknown
Crooked Wash GRA			
Oil Well	NON	0.5	Unknown
Price Creek	FAR	0.5	Unknown
Total		**26.8**	

[1] *PFC = Proper function Condition; FAR = Functional at Risk; NON = Non-functional condition*
[2] *Based on professional judgment of specialists trained in functional conditions and /or ecological classification.*

Figure 1

Dudley Bluffs twinpod and Dudley Bluffs bladderpod
Habitat Map



Dudley Bluffs Twinpod and Bladderpod

TES Plants Habitat

- Potential Habitat
- Dudley Bluffs Twinpod
- Dudley Bluffs Bladderpod
- BLM
- CDW
- County
- FOR
- NPS
- PRI
- STA
- FieldOffice Boundary WRFO

FIGURE - 1

0 0.5 1 2 Miles

N

Sources:
BLM, USGS

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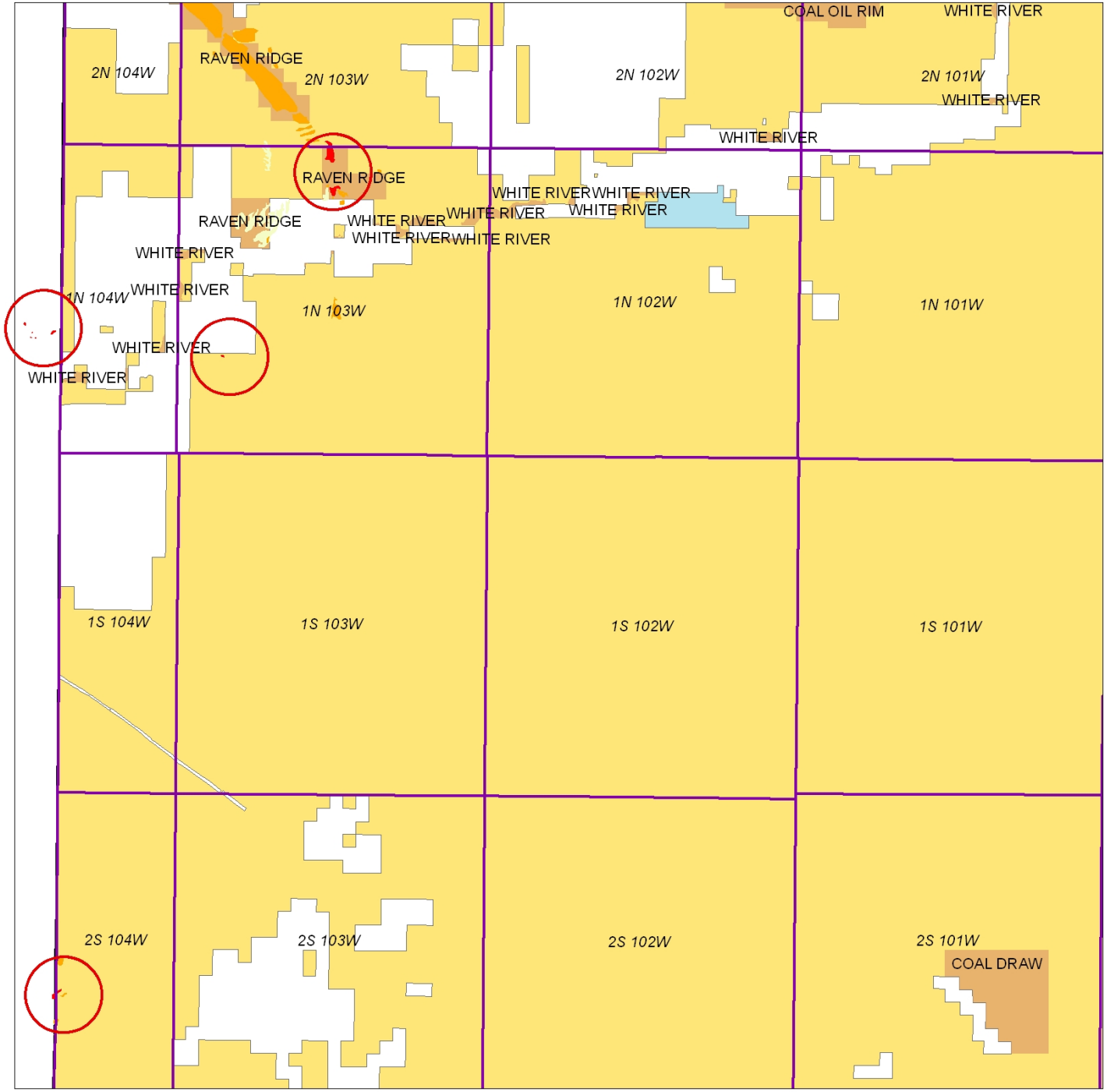
Figure 2

White River penstemon Habitat Map

White River Penstemon



TES Occupied

- Potential Habitat
- PeAl
- TES Plants Habitat
- ACEC
- BLM
- CDW
- County
- FOR
- NPS
- PRI
- STA
- FieldOffice Boundary WRFO

FIGURE - 2

0 0.5 1 2 Miles

N

Sources:
BLM, USGS

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