BLM

United States Department of the Interior
Bureau of Land Management

Environmental Assessment

DOI-BLM-CO-S050-2012-0029 EA

June 2013

Programmatic Environmental Analysis
for
Integrated Weed Management Treatments

Location: *Uncompahgre Field Office, including*
Gunnison Gorge National Conservation Area
and portions of
Dominquez-Escalante National Conservation Area

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ENVIRONMENTAL ASSESSMENT

NUMBER: DOI-BLM-S050-2012-0029 EA

PROJECT NAME: Programmatic Environmental Analysis for Integrated Weed Management Treatments

LOCATION: All BLM Public Lands within Uncompahgre Field Office, including Gunnison Gorge National Conservation Area and the portion of the Dominguez-Escalante National Conservation Area that is within the Uncompahgre Field Office. The legal description is too lengthy to provide in this document (**map 1**).

APPLICANT: BLM

BACKGROUND and INTRODUCTION

Noxious weeds are non-native plant species that are capable of becoming detrimental, destructive, and difficult to control in native ecosystems. A noxious weed is any plant designated by a federal, state, or county government to be injurious to public health, agriculture, recreation, wildlife, or any public or private property (Sheley and Petroff 1999).

These species usually germinate under a wide variety of conditions, establish quickly, and produce large amounts of seed (often with long term viability). They also have the ability to displace native species on a large scale at the watershed and local level, or invade small but crucial habitats such as riparian areas. Other potential effects of weed invasion include accelerated erosion, degradation of fish and wildlife habitat, alteration of ecological processes, and impacts on rare and sensitive species and habitats. Noxious weeds and their continued expansion have been recognized as the single greatest threat to the integrity of native plant communities (Asher and Spurrier, 1998).

Noxious and invasive weeds are a concern in the Uncompahgre Field Office (UFO) due to increases in the number, size, and distribution of infestations resulting from both human-caused and natural disturbances. Weed proliferation has contributed to a downward trend in the health of native plant communities in portions of the UFO.

Introduction of new invasive species are a continual threat and can be introduced and spread by vehicles, recreational activities, machinery, grazing animals (both wild and domestic) and

humans. Infestations are often due to disturbances such as wildfire, right-of-ways (ROW), range improvement projects, vegetation treatments, recreational uses, or introduced via hay.

The UFO has been conducting systematic landscape-wide surveys for noxious and invasive weed infestations. To date, the UFO has surveyed approximately 473,000 acres for noxious and invasive weed infestations (**map 2).** The remaining 410,432 acres of public land within the UFO will be systematically surveyed as funding permits.

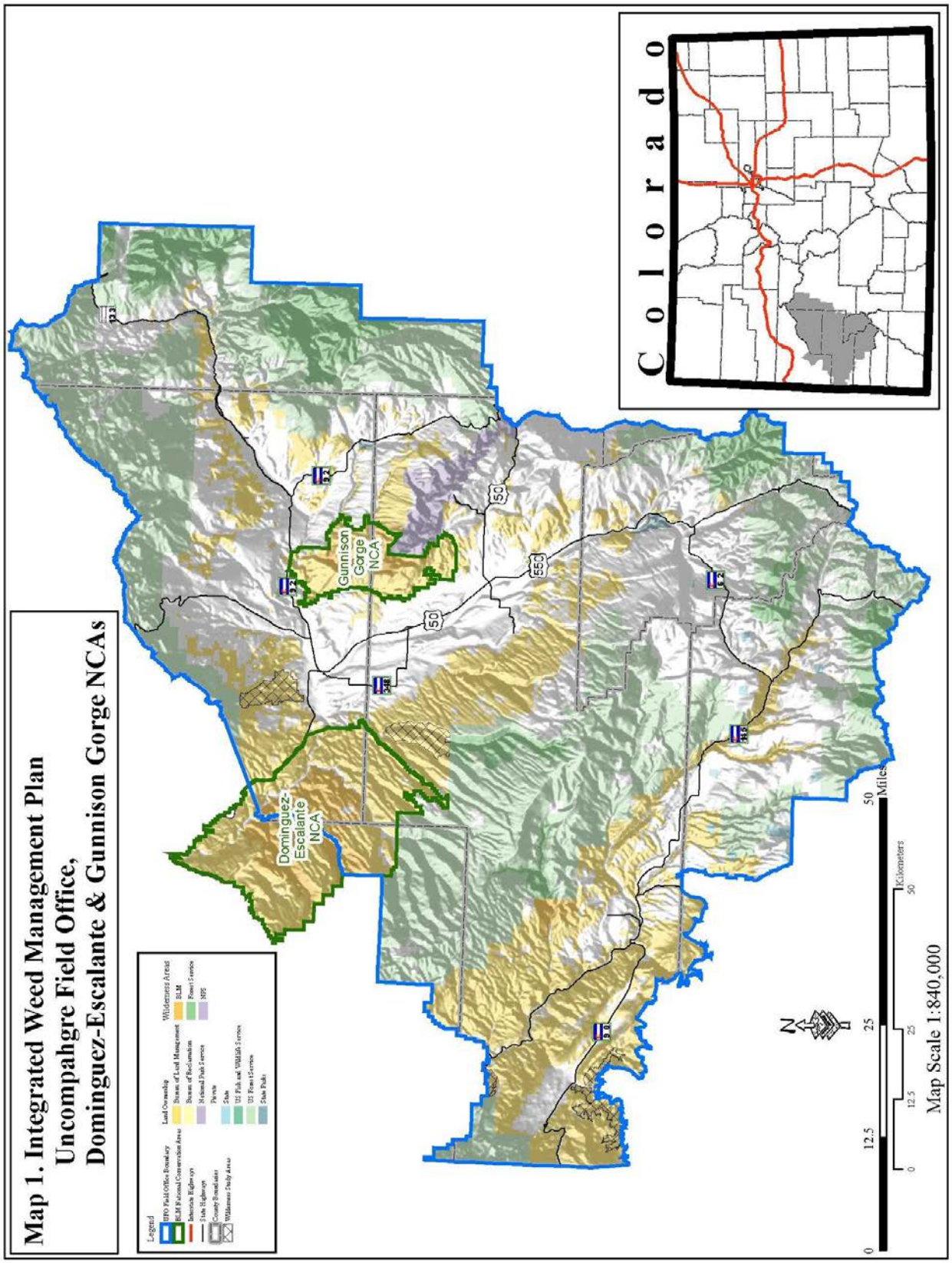
As a result of surveys there have been approximately 6,600 noxious weed infestations identified affecting approximately 8,600 acres. This estimate is conservative and not comprehensive, as the entire planning area has not been surveyed. Much of the survey is linear, and part of the survey was completed over ten years ago. Surveys suggest the average size of an infestation is 1.3 acres, making it relatively small and easy to treat.

Since 2011 the BLM has treated approximately 970 weed infestations and the counties have treated infestations along county roads transecting public lands. In addition, large tracts of tamarisk have been defoliated by the tamarisk leaf beetle in the Dolores and Gunnison River drainages. Of the weed treatments on BLM, 75% were carried out with herbicide or a combination of herbicide and mechanical, manual treatments or biological agents.

PURPOSE AND NEED FOR THE ACTION:

The purpose for the action is to reduce the adverse impacts associated with an increase in noxious and invasive weeds in the Uncompahgre Field Office (UFO), including the Gunnison Gorge NCA) and portions of the Dominguez-Escalante NCA.

The need is to have a range of treatment options or combination of options available for eradicating or controlling noxious and other invasive weed species.


Map 1. Integrated Weed Management Plan
Uncompahgre Field Office,
Dominguez-Escalante & Gunnison Gorge NCAs
Colorado
Gunnison Gorge NCA
Dominguez-Escalante NCA
Legend
Land Ownership
Wilderness Areas
BLM
Bureau of Land Management
Bureau of Reclamation
National Park Service
Forest Service
NPS
Parks
State
US Fish and Wildlife Service
US Forest Service
State Parks
Wilderness Study Areas
County Boundaries
State Highways
Interstate Highways
BLM National Conservation Areas
BLM Field Office Boundary
N
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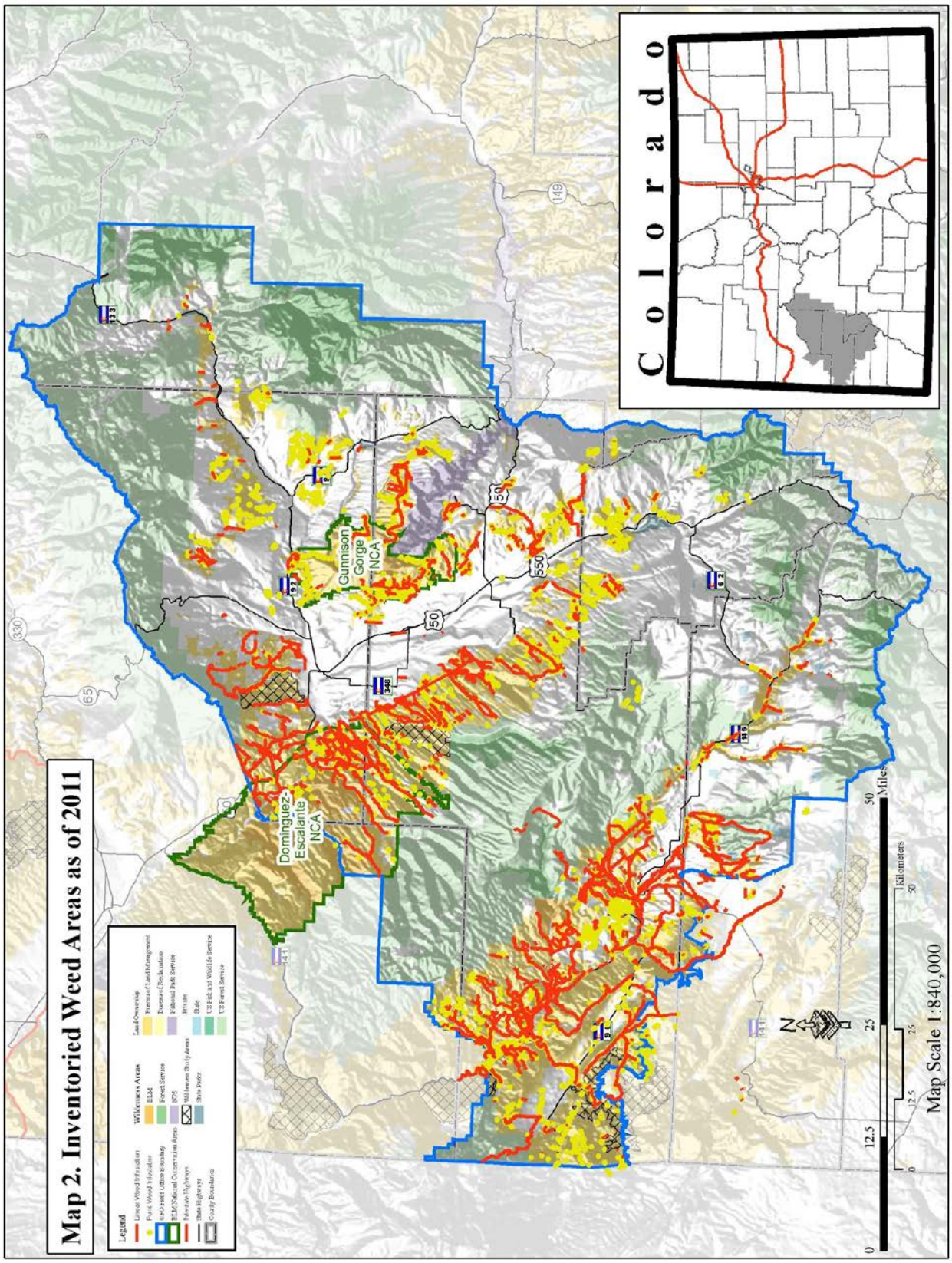
Kilometers
Map Scale 1:840,000


Map 2. Inventoried Weed Areas as of 2011
Legend
Wilderness Areas
Land Ownership
Gunnison Gorge NCA
Dominguez-Escalante NCA
Colorado
N
Map Scale 1:840,000
Miles
Kilometers

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Three alternatives were developed based on the purpose and need for the project and concerns identified. The alternatives include the Proposed Action, Alternative 1 (identical to the proposed action, but without aerial application of herbicides), and the No Action Alternative (no changes in the use of previously authorized herbicides).

This proposed action and alternative would occur within the Uncompahgre Field Office, which includes the Gunnison Gorge National Conservation Area and the portion of the Dominguez-Escalante National Conservation Area that is within the UFO (Map 1).

Proposed Action:
Implement a Programmatic Integrated Weed Management Plan (IWMP) to eradicate or control noxious and other invasive weed species. Targeted species are those on the "List of Colorado's Noxious Weeds"[1] and the "BLM National List of Invasive Weed Species of Concern"[2]. Also, any exotic annual that is threatening ecological sites would be part of the IWMP.

Required Standard Operating Procedures (SOPs) are in Appendix A. Recommended Best Management Practices (BMPs) are Appendix B and are tools to use as needed.[3] Appendix C is required Conservation Measures for Listed, Proposed or Candidate Threatened or Endangered Species.

Treatment methods, including design features, for use by BLM, project proponents and right-of-way holders are described in Table 1.

Table 1. Treatment Methods under IWMP

Manual Control
Description: Use of hand tools and hand operated power tools to dig, cut, clear, or prune herbaceous and woody species. Treatments include cutting plants above ground level; pulling, grubbing, or digging out root systems to prevent sprouting and re-growth; cutting at the ground level or removing competing plants around desired species; or placing mulch around desired vegetation to limit weed germination and growth (BLM 1991b). Examples of hand tools include a handsaw, axe, shovel, rake, machete, grubbing hoe, mattock, Pulaski, brush hook, hand clippers, motorized chainsaws and power brush saws. **Effectiveness:** Manual treatments are most effective when infestations are small and complete removal of the roots is possible. 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

[1] The list can be found on the Colorado Department of Agriculture web site. Web address is current as of completion of this EA:
http://www.colorado.gov/cs/Satellite?c=Page&childpagename=ag_Conservation%2FCBONLayout&cid=1251618874438&pagename=CBONWrapper

[2] The list can be found on the Colorado BLM web site (Botany Program). Web address is current as of completion of this EA:
http://www.blm.gov/co/st/en/BLM_Programs/botany/invasiweed.html

[3] Appendices A and B were adapted from appendices in the Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS), (BLM 2007a), and Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report (PER), (BLM 2007 b).

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. Typical manual vegetation control costs from $70.00 to $1200.00 per acre (PER, BLM 2007b).

Design Features:
Reduce damage to non-target plants by educating the weed control team on how to identify target and non-target plants.

In designated Wilderness, wilderness study areas, and the Tabeguache special area, non-motorized tools would be used unless motorized tools (such as chainsaws) are determined to be the "minimum tool". The Minimum Requirement Decision Guide (MRDG) is used to determine the "minimum tool".

In areas managed for the protection of wilderness characteristics, and in designated, suitable or eligible Wild and Scenic River corridors with classifications or tentative classifications of "scenic" or "wild," any slash generated by cutting of woody species should not intrude on the natural setting. Slash may be mulched, burned, removed, widely scattered, etc. to avoid unnatural alterations of the setting.

Biological Control

Description: Biological controls use domestic animals and biological control agents 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 specifically designed to control a particular plant 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.

A treatment with biological control agents (insects, nematodes, mites, or plant pathogens such as bacteria or fungi) is one which uses living organisms (agents) to reduce the population of undesirable plants.[4] The UFO would use only those biological controls approved by APHIS for release in Colorado. The use of biological control agents would be conducted in accordance with BLM procedures in the Use of Biological Control Agents of Pests on Public Lands (BLM Manual 9014).

When releasing biological agents on BLM lands, the following process would be followed**:**

A Biological Control Agent Release Proposal (BCARP) would be prepared. A 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 Weed Coordinator, Field Manager, State Office Pest Management Specialist,

[4] Biological control agents which are approved for use by the BLM have undergone rigorous testing by the United States Department of Agriculture (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. Prior to the release of a new agent, an environmental analysis is prepared by APHIS (Agricultural Plant Health Inspection Service). Once a biological control has been approved for release, its release can only occur in states that have been covered under the environmental assessment.

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) of release, weather conditions, and weed species treated.

Effectiveness: Biological control agents are not currently available for many weed species. They are most effective for large populations of weeds. It is unlikely that they would completely eradicate a weed population, because as populations 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 controls are most effective when followed with other treatments. Biological control agents range from $80.00 to $150.00 per release for ground applications. Weed treatment using domestic livestock is relatively inexpensive, costing $50.00 to $100.00 per acre.

Design Features:
If using domestic livestock, select sites with weeds that are palatable and non-toxic to the animal.

Manage the intensity and duration of the containment by domestic animals to minimize overutilization of desirable plant species.

Utilize domestic animals to contain the target species in the treatment areas prior to weed seed set. Or if seed set has occurred, do not move animals to un-infested areas for a period of 7 days.

Use only biological control agents that have been tested and approved to ensure they are host specific.

Herbicide Control

Description: Herbicide control involves the use of chemicals to kill or suppress target plants. In addition, adjuvants are added to the herbicide to improve their efficacy.

Herbicide control includes use of any of the 18 herbicide active ingredients approved in the PEIS Record of Decision[5]: 2,4-D, bromacil, chlorsulfuron, clopyralid, dicamba, diflufenzopyr, diquat, diuron, fluridone, glyphosate, hexazinone, imazapic, imazapyr, metsulfuron methyl, picloram, sulfometuron methyl, tebuthiuron, and triclopyr.
Table 2 classifies the herbicides into treatment classes.

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, spray bottle or wiping (wicking) directly onto the foliar tissue.

In remote areas and areas where motorized and mechanized equipment is limited, herbicides may be carried and applied using pack animals. In designated Wilderness, wilderness study areas, and the Tabeguache Area, non-motorized tools would be used unless motorized tools (such as ATV'S/UTV's,

[5] Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (PEIS), (BLM 2007a).

etc.) are determined to be the "minimum tool". The Minimum Requirement Decision Guide (MRDG) would be used to determine the "minimum tool". Motorized/mechanized equipment must not exceed the tread width of the trail.

Larger weed infestations in highly disturbed areas with good accessibility can be treated by sprayers mounted on ATVs, UTVs, 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**:**

Applicators must present current 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 the Certified Pesticide Applicator, Field Weed Coordinator, Field Manager, State Office PUP Coordinator, and Deputy State Director. A PUP is valid for 3 years and requires renewal after that time.

The 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 was applied, weather conditions, equipment used, weed species treated, and number of acres treated. Applicators are required to turn in these records to the UFO at the end of spraying the specific project.

The UFO would prepare an annual Pesticide Use Report (PUR) which would be submitted to the BLM Colorado State Office. This report includes a total of all pesticides applied on the UFO/GGNCA and DENCA.

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 persist in the environment, or leach into ground water depending on specific site characteristics and herbicide used. 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).

Design Features:
All treatments would comply with the U.S. Environmental Protection Agency (EPA) label directions and follow BLM procedures outlined in BLM Handbook H-9011-1 (Chemical Pest Control), H-8550-1 and manuals 1112 (Safety), 9015 (Integrated Weed Management), and meet or exceed State label standards (BLM 1991). Herbicide applications would adhere to all State (Colorado) and Federal pesticide laws.

All applicators that apply herbicides would comply with the application rates, uses and handling instructions on the herbicide label, and where more restrictive, the rates, uses and handling instructions developed by the BLM (2007b).

Cautiously apply herbicides in areas of extreme ecological significance to protect those values; for example around candidate or threatened and endangered species. Use the minimum tool necessary (i.e. manual removal if appropriate, wicking, etc.).

Notify the public of any proposed project level treatments greater than 150 acres (as opposed to spot treatment of weeds) that utilize herbicides in their adjacent area.

Complete additional site specific environmental analysis for any large acreage blanket treatment (greater than 150 acres).

Provide a buffer:

- between private land and BLM land of a minimum of 100 feet for aerial application, 25 feet for vehicle application, and 10 feet for hand application (as with a wand or backpack) (BLM manual H-9011-1), or by label requirements, whichever is more restrictive.

- between treatment areas and human residences based on guidance given in the Health Human Risk Analysis (HHRA), with a minimum buffer of ¼ mile for aerial applications and 100 feet for ground applications, unless a written waiver is granted.

- BLM may take into account a higher degree of sensitivity in an area and may make buffers larger than suggested to account for local concerns.

BLM would work with individual organic or other producers to determine if a larger buffer zone would be more appropriate. All aerial herbicide application near organic production would be with a helicopter and would follow all BLM buffers restrictions above.

Aerial application on projects or fire rehabilitation in sensitive areas would occur with a helicopter when possible instead of fixed wing for better placement and control of herbicide drift. All label restrictions would be followed in terms of wind speed, drift, and application of herbicide.

Notify, collaborate, and coordinate with surrounding residents when an area is slated for large restoration projects involving herbicide application.

If motorized or mechanized travel is necessary off-route in “Limited” or in “Closed” OHV designated areas for treatment, prior approval from the authorized officer would be required.

Bare-ground treatments would not be used in: designated wilderness; wilderness study areas; areas managed for the protection of wilderness characteristics; or any eligible, suitable or designated Wild and Scenic River corridor with a classification or tentative classification of “scenic” or “wild.”

Manufacturers’ recommendations would be strictly followed for disposal of used containers.

Herbicide applicators would be trained in weed and non-target plant identification.

Appropriate herbicide, application timing, methods and rates would be selected to reduce kill and damage

to non-target species while still achieving effective noxious weed control.

For aerial herbicide application, re-vegetation would be required unless the native community was considered adequate to recover within 3 years post treatment.

Mechanical Removal

Description: Mechanical treatments involve the use of vehicles such as wheeled tractors, crawler-type tractors, or specially designed vehicles with attached implements designed to cut, uproot, or chop/shred existing vegetation. The selection of a particular mechanical method is based on the characteristics of the vegetation, seedbed preparation and re-vegetation needs, topography and terrain, soil characteristics, climatic conditions, and analysis of the improvement cost compared to the expected productivity (USDI BLM 1991a).

Effectiveness: Unless used with follow-up herbicide treatments, mechanical treatments have limited use for noxious weed control, as machinery tends to spread seeds and not kill roots. One area where mechanical treatments do well when combined with an herbicide treatment is in the treatment of tamarisk. Mechanical methods are appropriate where a high level of control over vegetation removal is needed, such as in sensitive wildlife habitats or near home sites.

Design Features:
Additional site-specific NEPA would be completed for individual mechanical treatments greater than 25 acres per treatment per year; this includes uplands and riparian areas.

Mechanical treatments of any size require a cultural survey or evaluation prior to implementation, and an appropriate avoidance or mitigation strategy.

Mechanical treatments of any size require a T & E survey or evaluation prior to implementation, and an appropriate avoidance or mitigation strategy.

Mechanical weed projects that involve ground disturbance beyond the impact of a wheel or track (e.g. bulldozers) would require a site specific environmental analysis.

In lands being managed for wilderness characteristics use of tractors and heavy equipment would not be used unless the treatment would enhance or protect those characteristics.

All vehicle/heavy equipment refueling and maintenance activities would be conducted at least 150 feet from any water or drainage.

Any hazardous materials spills (e.g. fuels, lubricants) would be reported to the BLM and spills would be cleaned up using standard haz-mat procedures. These conditions would be made a part of any authorizations or contracts for vegetation management.

All heavy equipment would be cleaned (e.g. power washed) to prevent the introduction of weed seed prior to working on public lands.

If motorized or mechanized travel is necessary off-route in “Limited” or in “Closed” OHV designated areas for treatment, prior approval would be acquired from the authorized officer.

Damage to desirable plants would be reduced by training equipment operators in weed and non-target

species identification.

Fire Use

Description: Fire use includes prescribed fire and wildland fire use for resource benefits. Prescribed fire is the intentional application of fire to wildland fuels under specified conditions of fuels, weather, and other variables. The intent is for the fire to stay within a predetermined area to achieve site-specific resource management objectives. Burning may be used prior to other treatments to remove vegetation that reduces the effectiveness of various treatments, including herbicide treatment. These could include removing standing dead left by biological control agents as is the case with tamarisk or removal of thatch layers as with invasive annuals (such as cheatgrass). Pile burning would be utilized for cut material (for instance, cut and piled tamarisk).

Effectiveness: Prescribed burning effectively removes thatch layers enabling herbicides to reach target species for maximum control with less retreatment needed in consecutive years. Prescribed burning effectively removes large stands of dead fuels, allowing for treatment of understory noxious weeds that were not treatable before burning and contributing to easier rehabilitation in some cases. However, in some situations, prescribed fire can encourage the germination and establishment of weeds if the burned area is not treated with herbicides or re-vegetated after fire use.

Design Features:
A broadcast burn treatment greater than 25 acres per year would require additional environmental analysis.

A broadcast burn of any size would require a cultural survey or evaluation prior to implementation, and an appropriate avoidance or mitigation strategy.

A broadcast burn of any size would require a T & E survey or evaluation prior to implementation, and an appropriate avoidance or mitigation strategy.

Thoroughly consider environmental and climatic conditions and prepare a Burn Plan to establish the prescription and contingencies. All burns require permitting by the state Air Quality program (smoke permit).

Use trained personnel with adequate equipment.

Minimize burning herbicide-treated vegetation for at least 6 months to allow herbicide to continue to work.

Revegetation

Description: Native vegetation would be reintroduced to a site by the following methods:

- hand held seeders
- ATV mounted seeders
- vegetative plugs
- pole plantings
- potted plants
- bare root plants

Vegetative plugs, pole plantings, potted plants and bare root plants would require digging holes to accommodate the plants.

Other methods that involve ground disturbing activities would require site specific environmental analysis.

Effectiveness: This would promote rehabilitation of the native plant community which in turn would be more resistant to environmental stresses and noxious weed invasion.

Design Features:
In lands with wilderness character, use of ATVs/UTV's for seeding would be allowed if the use is for the protection and enhancement of wilderness values.

Within the Tabeguache Area, Wilderness areas, wilderness study areas ATVs and UTVs would be allowed if the use is for the protection and enhancement of wilderness values.

Cages would be placed around plantings if needed to deter possible animal damage.

Table 2. Treatment Suitability Classification

Herbicide	Terrestrial	Riparian	Aquatic	Oil/Gas/Uranium
2,4-D	X	X	X	X
bromacil				X
chlorsulfuron	X			X
clopyralid	X			X
dicamba	X			X
diuron				X
glyphosate	X	X	X	X
hexazinone				X
imazapyr	X	X		X
metsulfuron methyl	X			X
picloram	X			X
sulfometuron methyl	X			X
tebuthiuron	X			
triclopyr	X	X		X
imazapic	X			
*diflufenzopyr (in formulation with dicamba)	X			X
fluridone		X	X	
diquat		X	X	

*diflufenzopyr is approved only in a formulation with dicamba (called Overdrive®). BLM could approve diflufenzopyr as a stand-alone herbicide in the future if registered by the EPA.

The IWMP incorporates the following principles as described in the PEIS:

1. Take actions to prevent or minimize the need for vegetation control when and where feasible, considering the management objectives of the site.
2. Use effective non-herbicide methods of vegetation control when and where feasible.
3. Use herbicides only after considering the effectiveness of other treatment methods or in combination with other methods or controls.

Monitoring: Weed treatments would be mapped using GPS; information about the treatment would be gathered simultaneously and stored in GIS. Photo points would also be established within substantial patches of hard to control noxious weeds. Photo points would be taken on a one to two year cycle to note condition of the noxious weed infestation. Monitoring data would be housed in the GIS geo-database along with other weed data.

Alternative 1:

Alternative 1 is the same as the Proposed Action, except for aerial application. There would not be any aerial application of herbicide allowed.

No Action Alternative:

Currently, control of noxious weeds is authorized under the decision record for EA # CO-034-UB-97-020-EA (1997). This environmental document needs to be updated to continue to use herbicides. Herbicides and other forms of treatment could continue to be used, but on a case by case basis and with additional NEPA analysis for each instance of treatment. More likely, little invasive/noxious species control would occur, including spot treatment of small infestations. The no action alternative does not fully meet the purpose and need for the proposed action but rather degrades the ability of the BLM and state and local governments to implement policy and laws regarding noxious and invasive weeds in a timely manner.

ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

No Weed Control Alternative: This alternative would eliminate control of any weeds on public lands within the UFO, other than bio-control insects that have already been released. As weeds continue to invade and establish, the number and cover of native species would be reduced, erosion rates would increase, wildlife forage and bird habitat would be reduced, ecological processes (such as fire behavior) would be altered, sensitive, rare, T&E species and habitats would be threatened. If not controlled, noxious weeds and other invasive exotic species, such as cheatgrass and spotted knapweed, would have great effects on ecosystem structure and function and the future productivity of the land would be compromised. Additionally, this alternative promotes a perpetual decline in ecosystem health and it is not considered reasonable, and therefore is not considered in detail. It is also in direct conflict with the 1974 Federal Noxious Weed Law, the Colorado Weed Act, the 1999 Executive Order on Invasive Species, and the 2007a PEIS.

SCOPING AND ISSUES

On November 10, 2009 scoping letters were sent to various members of the public, organizations, and elected officials. In response, the BLM received five comment letters. Three of the letters were in support of Integrated Weed Management including the use of herbicides, and two of the letters were in support of Integrated Weed Management without the

use of herbicides. The concerns brought forward in the two letters opposing the use of herbicides were the contamination of water sources, a concern for the wildlife and livestock in the area, and the jeopardizing of a natural grass fed beef label.

There are public concerns about herbicide application, especially near rural subdivisions, housing developments, organic farms, and areas of sensitive, rare, candidate and threatened or endangered species habitat.

PLAN CONFORMANCE REVIEW

The Proposed Action is subject to and has been reviewed for conformance with the following plans (43 CFR 1610.5-3, BLM 1617.3):

Name of Plan: Uncompahgre Basin Resource Management Plan
Date Approved: June 1988. Amended: 1997 to include Colorado Standards for Public Land Health and Guidelines for Livestock Grazing.
Decision Number/Page: 6-7 of the Standards for Public Land Health
Decision Language: Standard 1: Soils require vigorous desirable plants, Std 2: Riparian requires a mix of appropriate native or desirable introduced spp., Std 3: Plant communities require noxious weed and undesirable species are minimal in the overall plant community, Standard 4: T & E species supports the wording in Standard. 3, and Standard 5: requires soil stability, appropriate infiltration rates, reduced runoff into live waters etc.

Name of Plan: Gunnison Gorge National Conservation Area Resource Management Plan
Date Approved: November 2004
Decision Number/Page: 2-16
Decision Language: Weed control measures will be implemented throughout the NCA to minimize infestation of noxious and undesirable non-native species.

Relationship to Other Plans, Statutes or Regulations:

- *Vegetation Treatments using Herbicides on BLM Lands in 17 Western States, Final Programmatic Environmental Impact Statement*. The PEIS (BLM 2007a) assesses the use of 18 herbicides to treat invasive and noxious weed vegetation on public lands administered by the BLM and provides a broad, comprehensive background source of information to which subsequent environmental analyses can be tiered (this EA tiers to the PEIS). The programmatic analysis in the PEIS (BLM 2007a) contains broad regional descriptions of resources, provides a broad environmental impact analysis, including cumulative impacts, focuses on general policies, and provides Bureau-wide decisions on herbicide use for vegetation management. Additionally, it provides a programmatic Endangered Species Act (ESA) Section 7 consultation for the broad range of activities described. Tiering the analysis in this EA to the PEIS allows the UFO to prepare a more specific environmental document without duplicating relevant portions of the PEIS (BLM 2007a). The PEIS is used to facilitate the analysis process by providing BLM treatment design features and providing impact assessment data for herbicides.

- The *Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report, 2007(BLM 2007b)* analyzed the direct, indirect, and cumulative impacts to various resources from using non-herbicide treatment methods (i.e. fire use, mechanical, manual, and biological control methods) to treat hazardous fuels, invasive species, and other unwanted or competing vegetation.

- The *Carson-Foley Act of 1968* (Public Law 90-583; 43 U.S.C. 1241 et seq.), and the *Plant Protection Act of 2000* (Public Law 106-224; 7 U.S.C. 7701 et seq.) authorize and direct the BLM to manage noxious weeds (including management of undesirable plants on federal lands) 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* (Public Law 93-629), *as amended by Section 15, Management of Undesirable Plants on Federal Lands, 1990*, (7 U.S.C. 2801 et seq.) authorizes the Secretary "...to cooperate with other federal and state agencies and others in carrying out operations or measures to eradicate, suppress, control, prevent, or retard the spread of any noxious weed." This Act 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 *Federal Land Policy and Management Act of 1976, as amended*, (Public Law 94-579; 43 U.S.C. 1701 et seq.) directs BLM to "...take any action necessary to prevent unnecessary and or undue degradation of the public lands."

- Pulling Together. *National Strategy for Invasive Plant Management*. http:// refuges.fws.gov/FICMNEWFiles/NatIWeedStrategyTOC.html Case T J. 1990.

- Partners against weeds: *An action plan for the BLM*. Washington, D.C, 1996a.

- The Colorado *Noxious Weed ACT* (35-5.5-101-199 C.R.S.) specifies the list of noxious weeds in the state and requires control of these designated weeds and other pests on public and private lands.

- The *Public Rangelands Improvement Act of 1978* (Public Law 95-514; 43 U.S.C. 1901 et seq.) requires that BLM manage, maintain, and improve the condition of the public rangelands so that they become as productive as feasible.

- *BLM Manual 9015: Integrated Weed Management, 1992*, provides policy relating to the management and coordination of noxious weed activities among BLM, organizations, and individuals.

- *Department of the Interior, Departmental Manual 609: Weed Control Program, 1995*, prescribes policy to control undesirable or noxious weeds on the lands, waters, or facilities under its jurisdiction to the extent economically practicable, as needed for resource protection and accomplishment of resource management objectives.

- *Executive Order 13112, Invasive Species, 1999*, 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.

- The *Noxious Weed Control and Eradication Act of 2004* (Public Law 108–412) established a program to provide assistance through states to eligible weed management entities to control or eradicate harmful, non-native weeds on public and private lands.

- *The UFO/GGNCA Weed Management Strategy Including Strategy by Species 2007(amended 2010)*, describes the integrated weed control strategy adopted to protect and maintain the native vegetative communities throughout the Field Office area, including strategies for treatment of noxious species.

- *43 CFR 6300 (Wilderness Management; Federal Register 2000), and in the Management of Designated Wilderness Areas Handbook H-8560-1 (USDI BLM 1988e), Management of Designated Wilderness Areas Manual 8560 (USDI BLM 1993), Interim Management Policy for Lands under Wilderness Review Handbook H-8550-1 (USDI BLM 1995), Interim Management Policy for Lands under Wilderness Review Manual 8550, and the Wilderness Inventory and Study Procedures Handbook H-6310-1 (USDI BLM 2001a)*, contain guidance for vegetation treatments used in wilderness and wilderness study areas.

STANDARDS FOR PUBLIC LAND HEALTH: In January 1997, Colorado Bureau of Land Management (BLM) approved the Standards for Public Land Health. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. A finding for each standard will be made in the environmental analysis (next section).

Standard	Definition/Statement
#1 Upland Soils	Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes. Adequate soil infiltration and permeability allows for the accumulation of soil moisture necessary for optimal plant growth and vigor, and minimizes surface runoff.
#2 Riparian Systems	Riparian systems associated with both running and standing water, function properly and have the ability to recover from major surface disturbances such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment, and provides forage, habitat and bio-diversity. Water quality is improved or maintained. Stable soils store and release water slowly.
#3 Plant and Animal Communities	Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations, and ecological processes.
#4 Threatened and Endangered Species	Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

#5 Water Quality	The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado. Water Quality Standards for surface and ground waters include the designated beneficial uses, numeric criteria, narrative criteria, and anti-degradation requirements set forth under State law as found in (5 CCR 1002-8), as required by Section 303(c) of the Clean Water Act.

AFFECTED ENVIRONMENT and ENVIRONMENTAL CONSEQUENCES

This Environmental Assessment tiers to the Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States, Final Programmatic Environmental Impact Statement (BLM 2007a), and the Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report (BLM 2007b). Analyses of impacts are presented in detail in the two documents.

This chapter provides a description of the human and environmental resources that could be affected by the Proposed Action and alternatives and presents comparative analyses of the direct, indirect and cumulative effects on the affected environment stemming from the implementation of the Proposed Action or alternative.

Potential effects to resources/concerns (Table 4) were evaluated to determine if detailed analysis is necessary. Consideration of some elements is to ensure compliance with laws, statutes or Executive Orders that impose certain requirements upon all Federal actions. Other items are relevant to the management of public lands in general, and to the BLM UFO in particular.

Cumulative impacts of the proposed action and alternative are shown in the analysis of each element. Past, present and reasonably foreseeable actions known to the BLM that may occur within the affected area are shown at the end of this section.

Table 4

Element	Not Applicable or Not Present	Present, But No Impact	Applicable & Present; Brought Forward for Analysis
Air Quality			X
ACEC			X
Wilderness			X
Wilderness Characteristics			X
Wild and Scenic Rivers			X
Cultural			X
Native American Religious Concerns			X
Farmlands, Prime/Unique			X
Soils			X

Vegetation			X
Invasive, Non-native Species			X
Threatened and Endangered Species			X
Migratory Birds			X
Wildlife, Terrestrial			X
Wildlife, Aquatic			X
Wetlands & Riparian Zones			X
Floodplains			X
Surface and Groundwater			X
Wastes, Hazardous or Solid			X
Environmental Justice			X
Access and Transportation			X
Realty Authorizations			X
Rangeland Management			X
Forest Management			X
Fire			X
Noise			X
Recreation			X
Visual Resources			X

AIR QUALITY

Affected Environment: The Black Canyon of the Gunnison National Park is the only Class 1 air-shed in the vicinity of the proposed project. The Uncompahgre Field Office (UFO) borders approximately 23 linear miles of this air-shed.

Air quality in the proposed project area is generally good. The area complies with federal air quality standards. Air quality concerns in this region primarily are from the impacts of motor vehicles, energy development, and controlled and uncontrolled burns (CDPHE 2011).

Environmental Consequences:

Proposed Action – Any deterioration in air quality as a result of the proposed action could slightly vary in scales of time and distance, depending on the herbicide application method used: either ground or aerial. While using ground application methods, any deterioration would occur only during herbicide application and thus would be of very short duration and limited to localized areas (within a few feet of the application site). While using aerial application methods, any impacts to air quality would also be generally short term (<5 hours) and by scheduling the application under appropriate atmospheric conditions, the spray drift will be limited to a localized area. All product label instructions will be adhered to.

Alternative 1 – Any deterioration in air quality as a result of this alternative would occur

only during herbicide application and thus would be of a very short duration and limited to a localized area (within a few feet of the application site). There is essentially no potential for measurable impacts to air quality as a result of this Alternative.

Cumulative Impacts – Any cumulative impacts to air quality would generally add incrementally for only short periods of time (<5 hours) with no measurable cumulative impacts beyond localized area.

No Action Alternative – A coordinated weed management program would not take place. Control projects would not occur, unless other environmental analyses were completed. There would not be air quality impacts.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Affected Environment: The project area includes the seven ACECs as shown in the table below.

ACEC Name	Size in acres	Location in UFO	Protected Values
Fairview RNA/ACEC	377	East of Montrose	The two tracts contain a large population of a listed endangered species and significant populations of a candidate species.
Needle Rock ONA/ACEC	80	East of Crawford	A unique volcanic geological structure with high-value scientific, interpretive, and scenic characteristics.
Adobe Badlands ONA/ACEC	6,783	North of Delta	Mancos shale hills and flats which, through wind and water erosion, have formed unique scenic formations, as well as known and potential habitat for several endangered and threatened plant species.
San Miguel ACEC	20,964	Northeast of Norwood	Unique, high quality riparian vegetation resources, the scenic values of the corridor, and preservation of relic riparian communities.
Escalante Canyon ACEC	1,895	Northwest of Delta	Several geological formations, a rare saline marsh and several hanging garden communities, along with occurrences of a threatened plant species.
Native Plant ACEC	4,577	East of Olathe	Several high quality examples of woodland and shrub steppe communities which are important for regional biodiversity conservation.
Gunnison Sage Grouse ACEC	22,197	South of Crawford	An important population of Gunnison Sage Grouse together with the habitat which supports it.

Management of these areas is directed toward conserving their important natural values. Additional compatible activities may also take place in these ACECs. Noxious weeds occur at

some level in nearly all of these ACECs.

Environmental Consequences:

Proposed Action – This action would allow a variety of weed control measures to occur in the seven ACECs. All weed control activities would be in compliance with herbicide labels as well as the precautions spelled out in Pesticide Use Proposals. Activities would also incorporate measures to protect non-target vegetation, special status species, and wildlife (see appendix C), which would also protect important resources of the ACECs. Coordinated weed control efforts which use an integrated pest management approach would manage and in many cases reduce levels of noxious weeds in the ACECs. The Proposed Action would result in moderate to substantial long term benefits to the resources in the ACECs.

Alternative 1 – Results from this alternative would generally be similar to the Proposed Action, but could be less beneficial because there would be no aerial application of herbicide. BLM would not have an effective method to treat the invasive, exotic annuals which suppress native vegetation on large acreages in some areas, and have the potential to do so in ACECs, particularly after a fire. Vegetation on large infested areas would be expected to stay in its current degraded state. There would be no direct damage to non-target species in such areas, although they could decline over time due to heavy competition from the annuals.

Cumulative Impacts – ACECs are subject to numerous land uses and natural phenomena which have the potential to degrade their protected values. Recreational use, livestock grazing, wildlife use, wildfire, water management, the spread of invasive species, and drought are some of the more influential factors which contribute to cumulative degradation of ACECs in west-central Colorado. Under the Proposed Action, ACECs and lands adjacent to these areas would have fewer weed infestations and healthier native vegetation, which would reduce the cumulative threat to the protected values. Alternative 1 would result in a lesser reduction to this cumulative threat, while the No Action Alternative would result in little or no reduction.

No Action Alternative – Under the no action alternative, a coordinated weed management program would not take place. Occasional small scale weed control projects in ACECs might arise in association with authorization of activities. Under the No Action Alternative, weed infestations in the ACECs would probably continue to increase in density and size across the native vegetation. Anticipated impacts would be long term, with increasing weeds in the native plant communities, reduced habitat quality, and reduced resilience of the native vegetation to recover from disturbances like drought and fire. These would degrade the values the ACECs are supposed to protect. The net result would be long term, moderate to substantial degradation of the ACECs.

WILDERNESS AND WILDERNESS STUDY AREAS

Affected Environment: Currently the Uncompahgre Field Office (UFO), which includes the Gunnison Gorge National Conservation Area and portions of the Dominquez-Escalante National Conservation Area, entails all or portions of two Wilderness Areas and four Wilderness Study Areas, and one Nationally Designated Area. Management of Adobe Badlands WSA,

Camel Back WSA, and the Gunnison Gorge Wilderness (in the Gunnison Gorge NCA) are the responsibility of the UFO. The Dominquez Wilderness Area (in the Dominquez Escalante NCA) and the Sewemup WSA are jointly managed with the Grand Junction Field Office and the Dolores River Canyon WSA is jointly managed with the Tres Rios Field Office. The UFO also contains the designated Tabeguache Creek Area which under the Colorado Wilderness Act (H.R. 631) mandated that the area be managed by the BLM so to maintain the area's "presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System" and the law further stated that "mechanized and motorized travel shall not be permitted" in the area. Therefore the Tabeguache Creek Area is still under consideration for wilderness designation under the BLM's wilderness proposal.

Section 4c of The Wilderness Act of 1964 requires that wilderness be "…protected and managed so as to preserve its natural conditions…" Non-native invasive species have the potential to damage the biological diversity and ecosystem integrity of many wilderness areas. Under the BLM Policy (43 CFR 6300) and Manual 8560, BLM may, as necessary to meet minimum requirements for the administration of the wilderness area use, build, or install temporary roads, structures or installations, and may use motor vehicles, motorized equipment, mechanical transport, and land aircraft, in designated wilderness; however this should be done by using the minimum tool or administrative practice necessary to successfully and safely accomplish the management objective with the least adverse impact on wilderness character and resources.

Under the H-8550-1 – Interim Management Policy (IMP) for Lands under Wilderness Review for WSA management: The general standard for interim management is that lands under wilderness review must be managed so as not to impair their suitability for preservation as wilderness.

Actions that clearly benefit a WSA's wilderness values through activities that restore, protect, or maintain these values are allowable, although they must be carried out in a manner which has the least impact on the quality of an individual or group's wilderness experience, as well as the physical, biological, and cultural resources within the WSA. Under the "minimum tool" concept, every proposed action should be scrutinized to determine if the action is necessary to protect the physical, biological, and cultural resources, as well as the quality of the wilderness experience.

Prescribed fire is permissible when it is used to enhance wilderness values.

Environmental Consequences:

Proposed Action and Alternative 1 – In designated Wilderness, wilderness study areas, and the Tabeguache special area non-motorized tools would be used unless motorized tools (such as chainsaws, ATV'S/UTV's, etc.) are determined to be the "minimum tool". The Minimum Requirement Decision Guide (MRDG) would be used to determine the "minimum tool".

Any impact from a chainsaw or ATV would be short term, as would herbicide on the ground or plants. Long-term, non-native invasive species would be controlled and the potential would be reduced for invasive species to damage the biological diversity and ecosystem integrity of wilderness areas and WSAs.

Cumulative Impacts -Wilderness, Special Areas and WSAs along with lands adjacent to these areas would have fewer weed infestations and healthier native vegetation, which would lead to enhanced naturalness. Supplemental values of scenery and wildlife would also be enhanced.

No Action Alternative – Without the coordinated/integrated approach to weed management, weed populations within these areas would be sustained and potentially increase, which over time, could diminish natural conditions and wilderness characteristics.

WILDERNESS CHARACTERISTICS

Affected Environment: Under FLPMA BLM is required to maintain an inventory of lands that possess wilderness characteristics. BLM Manual 6310, Conducting Wilderness Characteristics Inventory on BLM Lands provides further guidance on the inventory process.

The inventory of lands with wilderness characteristics in the Uncompahgre RMP Planning Area was updated in 2011, and for the Dominguez-Escalante RMP Planning Area in 2012. Five areas outside of WSAs and Wilderness were identified as possessing wilderness characteristics in the Uncompahgre RMP Planning Area and three were identified in the portion of the Dominguez-Escalante RMP Planning Area that is within the UFO. The report, maps and datasheets are available for download here:
www.blm.gov/co/st/en/fo/ufo/uncompahgre_rmp/lwc_inventory.html and
http://www.blm.gov/style/medialib/blm/co/field_offices/denca/Major_Documents.Par.66892.File.dat/UpdatedInventory_final_signed_for_web.pdf

Environmental Consequences:

Common to both Alternatives – Depending on the type of weed treatment, the "naturalness" characteristic could be impaired while native vegetation recovers. After removal of large patches or woody noxious/invasive species, there could be stumps, slash, and dead patches of vegetation. There could be obvious new plantings. Spot treatment of weeds would not be noticeable. Over time, the treatment areas would likely become more natural in appearance as native vegetation would replace invasive species.

Because of the presence of treatment crews, equipment and associated noise, opportunities for solitude could be diminished for a short time during treatments. Recreationists would be temporarily restricted from areas if there were mechanical treatments, restricting opportunities for unconfined recreation. These impairments would be short-lived, lasting only for the duration of a given treatment.

Cumulative Impacts – Activities permitted in areas with wilderness characteristics would not diminish the naturalness. Weed treatment would have short term noticeable impact to naturalness, if any. Areas possessing wilderness characteristics along with lands adjacent to these areas would have fewer weed infestations and healthier native vegetation, which would lead to enhanced naturalness. Supplemental values of scenery and wildlife would also be enhanced long term.

No Action Alternative – Initially there would be no effect on wilderness characteristics. Over time, however, weeds would continue to spread, and could eventually lead to a loss of native vegetation and associated apparent naturalness.

WILD AND SCENIC RIVERS

Affected Environment: Wild and Scenic River studies in the UFO are divided between two areas.

The BLM completed the Gunnison Gorge NCA planning area study in 2004. One 6-mile segment was found suitable for inclusion in the National Wild and Scenic River System (but has not been designated). See Appendix I, Revised Final Wild and Scenic Rivers Study Report, from the Gunnison Gorge NCA Resource Management Plan:
http://www.blm.gov/style/medialib/blm/co/field_offices/gunnison_gorge_national.Par.70287.File.dat/GGNCA-RODRMP-Nov2004.pdf

A second study for the rest of the UFO, including the portion of the Dominguez-Escalante NCA that is within the UFO is underway at the time of preparation of this document. The draft eligibility report shows 34 eligible river segments. The "Final Wild and Scenic River Eligibility Report for the BLM Uncompahgre Planning Area" (June 2010) for this area is available for download on the UFO Planning page:
http://www.blm.gov/co/st/en/fo/ufo/wild_and_scenic_river.html

Environmental Consequences:

Proposed Action – Treatments for noxious/invasive species would help to protect and restore native vegetation within Wild and Scenic River corridors, including segments determined to be eligible, as well as any future suitability determinations and congressional designations. This would protect and enhance native plant community outstandingly remarkable values.

Under the design criteria of this document, herbicide use including aerial application could be conducted in Wild and Scenic River corridors if they were determined to not degrade water quality or negatively affect outstandingly remarkable values of the river segments. Also, in designated, suitable or eligible Wild and Scenic River corridors with classifications or tentative classifications of "scenic" or "wild," any slash generated by cutting of woody species would not intrude on the natural setting; slash would be mulched, burned, removed or widely scattered to avoid unnatural alterations of the setting.

Alternative 1 – Same as proposed action, except that without aerial spraying there would be an increased chance of weeds such as cheat grass spreading to Wild and Scenic River corridors from areas left untreated.

Cumulative Impacts – Ongoing weed treatments within the Wild and Scenic River study corridors would likely result in an increase in native vegetation, increased soil stability, and improved water quality over time. These results would support the resource values and

management goals of river corridors under protective management.

No Action Alternative – Weeds would continue to spread in Wild and Scenic River corridors. This would negatively affect native plant community outstandingly remarkable values, and in extreme cases it could reduce the natural appearance and scenic quality of the corridors.

CULTURAL RESOURCES

Affected Environment: There are over 15,000 known recorded archaeological sites within the boundaries of the Uncompahgre Field Office. In general, about 1/3 of these sites or 5,000 sites are considered to be eligible for nomination to, or listed on, the National Register of Historic Places. In order to comply with the provisions of the National Historic Preservation Act, eligible cultural properties must either be avoided by federally sponsored or permitted projects, or any adverse effects to these eligible properties must be mitigated.

Environmental Consequences:

Proposed Action – The proposed action has very low potential to impact eligible cultural properties. Generally, aerial spraying and other applications of herbicides should have no impacts, while the use of prescribed fire and mechanical vegetation treatments may impact some vulnerable properties. If ground based prescribed fire or mechanical treatments are found to be necessary, individual vegetation treatment projects would be evaluated prior to implementation, and the appropriate avoidance or mitigation strategy would be implemented. The normal practice of spot spraying and routine spray treatments does not result in any ground disturbing activity and is unlikely to damage or disrupt cultural sites. Since impacts must be addressed on a case-by-case basis, no additional provisions are suggested for cumulative impacts.

Alternative 1 – Ground based applications of herbicides has a higher potential for disturbing eligible cultural properties than aerial applications. These impacts are all in the nature of secondary impacts through the use of wheeled vehicles to reach the localities of weed infestations. Risks of secondary impacts to eligible cultural properties are similar to other ground based activities and should present no additional threat. Projects would need to be evaluated on a case-by-case basis for their potential, and the appropriate inventory and mitigation would be implemented. Since impacts must be addressed on a case-by-case basis, no additional provisions are suggested for cumulative impacts.

Cumulative Impacts -- Cumulative Impacts from the proposed action or alternative 1 would be minimal. Survey would be used to develop a strategy to avoid or mitigate sites during any mechanical or wheeled treatment.

No Action Alternative – There would be no additional impacts to eligible cultural properties.

NATIVE AMERICAN RELIGIOUS CONCERNS

Affected Environment: Native American religious concerns are not limited to site-specific localities, but tend to encompass more landscape-based areas across a broad range of eco-zones. Traditional Cultural Properties, Sacred sites and landscapes and traditional use areas may be present in any place across the Uncompahgre Field Office, but unless there are specific (project based) proposals, it is difficult to determine the impact (if any) to these localities. Traditional landscapes and use areas are likely to be far larger than the specifically targeted areas for herbicide application, and impacts from this proposal would be limited. Historically, many native species important to Native American traditional uses have been declining due to competition with non-native species.

Environmental Consequences:

Proposed Action – Potential effects to Native American Religious Concerns may center on inadvertent herbicide applications on native species found to be of traditional importance, or may involve targeted and/or inadvertent alterations to a native vegetation community within a traditional use or sacred landscape.

No known Native American religious sites or traditional cultural properties would be directly affected by this proposal. Indirect impacts may occur due to inadvertent loss of native species of plants important traditional uses. Specifically targeted herbicides are unlikely to impact these resources; however, broad based herbicides could kill native plants important to the attributes of places, events and values of traditional cultural properties. Site and project specific consultation would be implemented on a case-by-case basis as needed. Should future consultations reveal such interests; the appropriate management would be implemented.

Alternative 1 – Potential impacts are as stated in the Proposed Action above. Ground based herbicide applications may have less impact than aerial applications. Site and project specific consultation would be implemented on a case-by-case basis. Should future consultations reveal such interests; the appropriate management would be implemented.

Cumulative Impacts -- No additional cumulative impacts are anticipated.

No Action Alternative – There would be no adverse impacts to any known Native American Religious Concerns. Some potential exists for non-native species to crowd out native species important to indigenous peoples, which could negatively impact traditional cultural practices.

FARMLANDS, PRIME AND UNIQUE

Affected Environment: The Natural Resources Conservation Service (NRCS) conducts classification of farmland for the purposes of identifying the location and extent of the most suitable land for producing food, feed, fiber, forage and oil seed crops (National Soil Survey Handbook, 622.03(b)).

The soils classified by NRCS as Prime, Unique or of Statewide Importance that occur on BLM lands are generally situated above the existing irrigation system in the valley or are not irrigated. When these soils exist in areas with a developed irrigation water supply, only those soils that are irrigated are considered Prime, Unique or of Statewide Importance (National Soil Survey Handbook, 622.04(a)(3)).

There are however, lands adjacent to BLM that are considered Prime, Unique or of Statewide Importance and are irrigated. These farms and ranches produce a wide variety of crops including; traditional crops, organic products, hay, and livestock.

Environmental Consequences:

Proposed Action – The reduction or eradication of noxious weeds on public land could result in impacts to Prime and Unique soils on adjacent private property from drift. These impacts would be minimized by applying the buffer zones and tailoring application methods to individual projects and the adjacent properties.

The minimum buffer zones BLM requires are 10 ft. for hand application, 25 ft. for vehicle spraying and 100 ft. for aerial spraying, or as required by the label, whichever is larger (BLM manual H-9011-1). BLM would work with the land owner to determine if a larger buffer would be more appropriate. All aerial herbicide application adjacent to farming including organic farming would be with a helicopter and would follow label directions. The use of a helicopter, as compared to a fixed wing aircraft, would allow for a more controlled application of herbicide, which would apply the herbicide only to the target area and would reduce drift.

The BLM has analyzed the potential risks of herbicide treatments in the "Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic EIS." The UFO would work with adjacent land owners and partners to treat noxious weeds in a responsible manner.

Alternative 1 – Aerial spraying would not be used in alternative 1. This would reduce the potential for overspray onto adjacent Prime and Unique Soils on private property. Other discussion and analysis is the same as the proposed action.

Cumulative Impacts - This action, when combined with the past, present and reasonably foreseeable actions, could improve overall soil health and specifically soils classified by the NRCS as Prime, Unique or of Statewide Importance. Reduction of invasive species could improve soil health by restoring native vegetation and nutrient cycling on BLM land that might be adjacent to private property with classified soils. Some of the causes of invasive species on BLM and Forest Service lands in the watershed include: mining, oil and gas development, grazing, rights of ways, recreation, and travel infrastructure. Invasive species also come from activities associated with private property in the watershed, including: cultivation, irrigation, livestock production, residential and commercial land development, roads, and oil and gas development. The cumulative effect of treating invasive species in the watershed could contribute to improving Prime and Unique soil health on private property.

No Action Alternative – Under the no action alternative the BLM could continue to treat

some noxious weeds, after separate environmental analysis, but with less range of techniques and herbicides than under the proposed action.

SOILS (includes a finding on Standard 1)

Affected Environment: The inter-bedded sandstone and shale units of the Dakota and Morrison formations dominate the surface over much of the field office, and weather to produce sandy and fine sandy loam textured soils. Mancos Shale is the primary shale formation, which characteristically weathers to produce fine-textured, silty clay loam soils. Additionally, the Mancos Shale is a marine-deposited evaporite—a sediment resulting from the evaporation of ancient water bodies—and as a result, often contains excessive levels of selenium (a non-metallic chemical element) and a variety of dissolvable salts, both of which can degrade water quality in receiving streams when mobilized by wind or water processes.

The soils in the lower and more arid portions of the area are mostly classified in the following soil orders; Aridisols (soils of dry climate regimes) and Entisols (very limited soil development), and have little organic matter throughout their vertical profile. At the higher elevations, soils are commonly in the following soil orders; Alfisols (high level of subsoil development) and Mollisols (soils having darkened, organic matter enriched surfaces). The soils in the UFO are more specifically described in the Soil Surveys for Ridgway Area, Colorado and Paonia Area, and San Miguel Area Colorado (USDA, Natural Resources Conservation Service).

Environmental Consequences:

Proposed Action – All alternatives would involve removal of invasive and noxious weeds and could potentially affect soils by altering their physical, chemical and/or biological properties for short durations. Physical changes could include loss of soil through erosion or changes in soil structure, porosity or organic matter content. In addition to the design features, Standard Operating Procedures (SOP) as defined in the PER (Chapter 4-Effects of Vegetation Treatments) would minimize or avoid adverse effects to soils as a result of treatment activities.

Prescribed Fire
The effects of prescribed burning on soils is directly related to the extent the surface litter layer and soil organic matter (0 to 3 cm) is burned as well as vegetation removal which exposes the soil to wind and water erosion. In a high intensity burn, the mineral soil surface is exposed, increasing erosion processes such as rain splash mobilization, soil sealing, increased dry ravel, development of a less permeable hydrophobic layer 1 to 10 cm below the surface and destruction of the protective microbial crust and associated soil aggregates. All of these factors contribute to increased overland flow and the potential to deliver large amounts of sediment to wetlands and stream channels. Another factor that can deliver large amounts of sediment to the stream is the increased possibility of mass slope failures due to the absence of vegetation which increases the soil weight and downward forces on the slope and eventually landslides (Graham, 2003).

Prescribed burning would typically occur on mesa tops and benches where slopes are shallow and the fuel loading is moderate to low. In addition, conducting burns while soil and live fuel moisture is high would result in lower surface temperatures and short burning duration. As a

result, removal of the surface litter and soil organic matter should not be severe enough to cause great changes in the physical properties of the soil. Root bed mortality of perennial grasses and forbs, and mortality of the seed bed should also be low. Evidence suggests from previous studies, that in contrast to severe wildfires, low and even moderate severity fires generally do not result in a corresponding increase in runoff and erosion (Robichaud and Waldrop, 1994). Despite the beneficial burning conditions described above, it is possible that some soil erosion could increase for one to three growing seasons post burn due to increased soil surface exposure. Within that time frame, herbaceous vegetation cover should increase above pre-burn levels resulting in increased soil stability, increased water infiltration and uptake, and overall ecological vigor.

Mechanical Treatments
Mechanical treatments have the potential to disturb soil and to crush vegetation and biological soil crust from heavy equipment tires and tracks. Disturbed areas would be reseeded to ensure establishment of native vegetation and to reduce the opportunity for invasive species to reestablish. These areas would be monitored and retreated as necessary.

Mechanical treatments could result in additional surface cover in the form of ground surface litter. Once the trees (typically tamarisk) are removed, the canopy would be opened up and allow for greater grass and forb cover. The increased cover could reduce the potential for surface runoff and soil erosion from the current conditions. The overall increase in cover would begin immediately after the treatment and slowly increase as the vigor of the existing vegetation improves.

Biological Treatments
Biological treatments involving domestic animals would cause some disturbance including disruption of the biological soil crust, compaction, and shearing of the soil. These impacts could increase its susceptibility to both water and wind erosion. The effects could be minimized by limiting the number and amount of livestock and the use of fencing to control movement. Appropriate use of livestock can increase plant vigor while decreasing weeds without the use of herbicides. This method of removal where feasible is a cost effective way to remove or maintain weed infestations. Generally, other treatments may be necessary as grazing alone will not totally eradicate a noxious weed patch.

Biological treatments with biological control agents (insects, nematodes, mites, plant pathogens) could expose soil to increased wind and water erosion as the invasive vegetative cover is removed. These effects would be short in duration as native plant species are seeded and begin to establish over 1 to 3 years.

Herbicidal Treatments
Herbicidal application in upland areas would remove vegetation and increase the risk of water and wind erosion due to lack of rainfall intercept and decreased soil stability in the short term. Herbicide persistence in the soil regime can vary by herbicide from 4 days to 3 years due to a variety of physical, chemical and biological processes eventually affecting their efficacy. This residual in the soil can be beneficial in preventing invasive species from flourishing but can leave the soil surface exposed to erosion for a longer period of time.

Herbicides can be highly effective at removing select invasive species thus increasing the success of native species beneficial to enhancing soil quality. Due to the limited herbicidal application areas under the proposed action, negative soil quality impacts and erosion potential would be minimal, but aerial spraying would be allowed when required to treat larger areas.

Although there are some short-term negative effects on soils, the proposed action provides a long-term benefit to soil quality by increasing native vegetation regrowth. Vegetative species diversity can result in increased soil cover through all seasons which increases plant litter and reduces bare soils.

Alternative 1 – The impacts from this alternative would be similar to the Proposed Action, but without the possibility of using aerial application of herbicide.

Cumulative Impacts – This proposed action and alternative, when combined with the past, present and reasonably foreseeable actions, could improve overall soil health by reducing invasive species and improving soil health by restoring native vegetation and nutrient cycling. Some of the causes of invasive species on BLM and Forest Service lands in the watersheds of the planning area include mining, grazing, roads, oil and gas development, rights of ways, recreation and travel infrastructure. Invasive species also come from activities associated with private property in the planning area, including cultivation, irrigation, livestock production, residential and commercial land development, agriculture, mining, and oil and gas development. The cumulative effect of treating invasive species in the watershed could contribute to improving soil health.

No Action Alternative – Under the no action alternative the BLM could continue to treat some noxious weeds, after separate environmental analysis, but with less range of techniques and herbicides than under the proposed action.

Finding on the Public Land Health Standard for upland soils: Many areas of upland soils in the UFO have been assessed and rated for Standard 1 as not meeting, or meeting with problems. Weed infestations are to blame for many of these ratings. Under the proposed action, more acreage would likely meet Standard 1 due to weed treatments and resulting increased soil stability with increased native vegetation. Alternative 1 would result in ratings improvements, but are not expected to be as effective as the Proposed Action. Under the no action alternative, there would be no change to ratings for Standard 1, and conditions would be expected to worsen over time as infestations spread and new weeds are introduced causing more soils to not meet Standard 1.

VEGETATION (includes a finding on Standard 3)

Affected Environment: There are numerous distinctive plant communities on BLM lands in the Uncompahgre Field Office. These vegetation communities are largely determined by soil type and climate, which are influenced by underlying geology, elevation and topography.

The lowest elevations, and especially southern facing slopes with alkaline soils, support salt desert shrublands characterized by greasewood (*Sarcobatus vermiculatus*) or mat saltbush and Gardner saltbush (*Atriplex corrugata* and *Atriplex gardneri*), that grades into shadscale (*Atriplex confertifolia*) and galleta grass (*Pleuraphis jamesii*) communities as moisture increases.

Slightly higher elevations with less alkaline soils support a grass/forb rangeland which typically occurs on the lower elevation mesa tops, on moderately deep and deep soils. Typical species in this community include galleta grass (Pleuraphis jamesii), blue grama (*Bouteloua gracilis*), needle-and-thread grass (*Hesperostipa comata*), sandberg bluegrass (*Poa secunda*), sand dropseed (*Sporobolus cryptandra*), Indian ricegrass *(Achnatherum hymenoides),* western wheatgrass (*Pascopyrum* smithii), and scarlet globemallow (*Sphaeralcia coccinia*). Four-wing saltbush (*Atriplex canescens*), prickly pear cactus (*Opuntia* spp.), winterfat (*Krascheninnikovia lanata*), and snakeweed (*Gutierrezia sarothrae*) are the most common shrubs. In areas that have received vegetation treatments, crested wheatgrass (*Agropyron cristatum*) is a common species. Degraded areas have cheatgrass (*Bromus tectorum*) and filaree (*Erodium cicutarium*) in varying amounts.

With increasing elevation, the grassland grades into pinyon-juniper woodland on shallower, steeper soils and big sagebrush on the deeper soils. The pinyon-juniper woodland is dominated by Colorado pinyon (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) with a sparse and variable understory that may contain green Mormon tea (*Ephedra viridis*), yucca (*Yucca harrimanii),* snakeweed, prickly pear cactus, muttongrass (*Poa fendleriana*), and bottlebrush squirreltail (*Elymus elemoides*).

The sagebrush community appears to be dominated by various crosses between Basin big sage (*Artemesia tridentata tridentata*) and Wyoming big sagebrush (*Artemesia tridentata* wyomingensis). Black sage (*Artemesia nova*) is also widespread on some soils. Frequently snakeweed, winterfat, or four-wing saltbush is a secondary shrub in these communities, and there is an understory of the same native grasses found in the grass/forb community, and cheatgrass.

At lower elevations, pinyon-juniper woodland occurs together with sagebrush on some sites. These may be areas that burned years ago and are slowly transitioning back to woodland dominance.

At higher elevations, the pinyon-juniper community contains birchleaf mountain mahogany (*Cercocarpus* montanus), Utah serviceberry (*Amelanchior utahensis),* and Gambel oak. With increasing elevation, pinyon trees drop out of the community, and the mountain shrubs dominate the vegetation, with a productive understory of forbs and grasses such as elk sedge (*Carex geyeri*), Junegrass (*Koeleria macrantha*), Kentucky bluegrass (*Poa pratensis*) and lupine.

Small areas of ponderosa pine (*Pinus ponderosa*) woodland occur around 7,500-9,000 feet. These often have an understory of Gambel oak, and sparse grasses and forbs. In some areas Gambel oak forms almost closed stands. Rocky Mountain juniper (*Juniperus scopulorum*) is present in some areas, while black chokecherry (*Prunus virginiana*) is found on more mesic sites intermixed with the other mountain shrubs. Roundleaf snowberry (*Symphoricarpos rotundifolius*) is common throughout most of these communities. Where there are openings

between the typically dense shrub canopies, or in areas where the canopy is significantly above the ground surface, a productive understory of forbs and grasses exists. Commonly found species are elk sedge (*Carex geyeri*), Letterman's needlegrass (*Acnatherum lettermanii*), Kentucky bluegrass (*Po a pratensis*), muttongrass, Sandberg bluegrass, bottlebrush squirreltail, western wheatgrass, and nodding brome (*Bromus anomalus*). Forbs are numerous with many species. The most widespread and dominant include western yarrow (*Achillea millefolium*), lupine (*Lupinus* spp.), western sweetcicily (Osmorhiza occidentalis), southern ligusticum (*Ligusticum porteri*), biscuitroot, and aspen peavine (*Lathyrus lanzwertii*).

At the highest elevations (above 9,000 feet) and in mesic drainages, aspen, Douglas fir and spruce-fir (*Picea engelmanii* and *Abies lasiocarpa*) vegetation classes are found on BLM. The understory in the Douglas fir and spruce-fir community is typically sparse but contains many of the same grasses and forbs found in the mountain shrub communities, and occasionally whortleberry (*Vaccinium* spp.) The aspen understory typically contains snowberry and often black chokecherry, with a very productive understory of the grasses and forbs found with the mountain shrubs.

Weed invasions in these communities degrade habitat quality and the functionality of the vegetation, especially with respect to fire regimes and drought. Invasions also reduce the amount of native plant species on the landscape. Examples include invasion of plant communities by cheatgrass (*Bromus tectorum*) which can increase fire frequency and over time replace nearly all of the native vegetation, and Russian knapweed, which forms dense groves and emits allelopathic substances which prevent germination of native plants. Extensive weed inventories and evaluations of several thousand sites across the UFO have shown that invasive plants are now one of the greatest threats to vegetation health. Most sites have at least a low level of invasive (but not noxious) species, while noxious weeds have a low level of distribution across undisturbed vegetation, but are widespread in disturbed areas and along drainages.

Environmental Consequences:

Proposed Action – Overall mid-term and long term, substantial benefits to vegetation would occur under this alternative because it allows BLM to effectively combat a primary existing cause of vegetation community degradation, and very importantly, to prevent the existing degradation to spread and become much worse. Weed control would be carried out in a strategic, coordinated manner that would include use of a range of weed control measures to achieve eradication or control objectives. Emphasis would be placed on prevention of weed spread and use of non-herbicide practices where they can be effective, but a variety of herbicides and spray application methods would also be allowed. This approach would result in broad scale benefits to native and desirable vegetation which would greatly outweigh the short term, localized vegetation damage some of the weed control methods would incur.

Control Methods:
Manual control would result in very short term, small scale and minor damage to existing vegetation through weed pulling or cutting causing disruption to neighboring desirable plants. This disruption would either kill or injure some desirable plants in the stand, but the majority of desirable plants in the stand would be expected to increase in abundance and vigor with removal

of the competing weed. Damage would be reduced through educating the weed control team in how to identify target and non-target plants.

Biological control would result in improvements in abundance and vigor of the other plants in the stand as bio-control reduces vigor and abundance of the target weed. Where other plants are desirable species, this would represent a benefit to vegetation. Where other species are types of noxious weeds, there may be no overall benefit to the vegetation community. Because bio-control agents are extensively screened by United States Department of Agriculture- Animal and Plant Health Inspection Service (USDA-APHIS) and the State against possible non-target species, there is little risk that bio-control would harm desirable or native species.

Herbicide control through spot treatments would result in short to intermediate term, small scale, death or damage to non-target species which are growing within or adjacent to the target weed patch. In addition to following label, programmatic environmental impact statement, and PUP requirements, this damage would be reduced by training the weed sprayers in weed and non-target plant identification, as well as selection of appropriate herbicides and timings to reduce kill of non-target species. Over the long term, the abundance and vigor of desirable species would increase with reductions in the competing weeds.

Herbicide control through aerial application would be suitable for large-scale infestations, and enable BLM to manage some of the invasive, exotic annuals which currently degrade and suppress native vegetation from thriving on large acreages. Similar benefits to vegetation in the broader region and similar damage to non-target species would be expected as with the spot herbicide treatments. This would also be mitigated somewhat with selection of appropriate herbicides, rates and timings to reduce damage to non-target species. In addition, revegetation would be required on these types of treatments unless the native community was considered adequate to recover within 2 years post treatment. Herbicide treatments >150 acres on large disturbance like wildland fire would be analyzed in a separate NEPA analysis.

Mechanical control would have the same effects on non-target species as manual control, but at a larger scale. More damage to neighboring plants would be expected because of the reduced precision of heavy equipment, and larger area they are able to cover. Similar long term benefits to the non-target species would be expected with the removal of the competing weeds. Damage to desirable plants would be reduced by training equipment operators in weed and non-target species identification.

Fire would be used in some instances to help control weeds or gain access to them to improve the effectiveness of other weed control practices. Fire would probably cause the greatest amount of damage to non-target species because it can be difficult to control precisely. Many native and desirable species are adapted to fire and regenerate well after a burn. These species would be expected to increase after a fire, whereas fire intolerant species would be expected to disappear or decline after a fire.

Revegetation through seeding or other types of planting would be expected to benefit desirable vegetation over time as the new plants establish and help increase the abundance of vegetation. Direct planting would be expected to result in small scale damage adjacent vegetation for the

short term through crushing or removal as holes are dug.

Alternative 1 – Results from this alternative would be similar to the Proposed Action, but less beneficial because there would be no aerial application of herbicide. BLM would not have an effective method to treat the invasive, exotic annuals which currently suppress native vegetation on large acreages. Vegetation on these areas would be expected to stay in its current degraded state. These acreages could increase over time as well due to the invasive nature of the annuals. There would be no direct damage to non-target species in these areas, although they might decline over time due to heavy competition from the annuals.

Cumulative Impacts – This proposed action, when combined with past, present and reasonably foreseeable actions would reduce the potential for deterioration of vegetation health in the west central Colorado region, and may contribute to its overall improvement to a small extent. This would come about through more effective and widespread control of invasive weeds, which are one of the principle threats. Not only should existing weed infestations be reduced, but the threat of continued spread and establishment of new weeds should also be reduced. This should in part offset other impacts in the region that are taking place on private and federal lands. Additional impacts to vegetation on federal lands in the watershed include those associated with wildfire, vegetation treatments, mining, livestock grazing, wildlife use, rights of ways, recreation, adjacent private inholdings, and travel infrastructure. Impacts to vegetation resulting from activities on private property in the watershed include cultivation, irrigation, livestock production, residential and commercial land development, mining, and oil and gas development.

No Action Alternative – Under the no action alternative, a coordinated weed management program would not take place. Occasional small scale weed control projects might arise in association with other activities. These would probably not be maintained to the point of eradication, or result in substantial levels of weed control. Under the no action alternative, weed infestations would probably continue to increase in density and size across the native vegetation. Anticipated impacts would be long term, with increasing weeds in the native plant communities, reduced habitat quality, and reduced resilience of the native vegetation to recover from disturbances like drought and fire.

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Wildlife, Aquatic; Wildlife, Terrestrial; and Invasive, Non-native Species):
In the UFO, there are many areas of vegetation that have been evaluated for Standard 3 and rated as not meeting, or meeting with problems. In many cases these ratings have arisen from weeds infesting the plant communities. Under the proposed action, the acreage of such areas meeting Standard 3 would increase as weed problems diminish and community resilience to disturbance improves. Under Alternative 1, ratings would improve, but not to the same extent as under the Proposed Action. Under the no action alternative, there would be no change to ratings for Standard 3, and conditions would be expected to worsen over time as infestations spread and new weeds are introduced.

INVASIVE, NON-NATIVE SPECIES (includes a finding on Standard 3)

Affected Environment: Colorado has 71 different species of weeds which are designated noxious by State law:
http://www.colorado.gov/cs/Satellite?c=Page&childpagename=ag_Conservation%2FCBONLayout&cid=1251618874438&pagename=CBONWrapper

These weeds are classified into three levels of concern:

- List A species (18 total) are to be eradicated, using Early Detection/Rapid Response, wherever detected in order to protect neighboring communities and the state as a whole;
- List B species (39 total) - the Colorado Commissioner of Agriculture, in consultation with the Colorado Noxious Weed Advisory Committee and local governments, will develop and implement state noxious weed management plans designed to stop the continued spread of these species; and
- List C species (14 total) the goal is to provide additional education, research and biological control resources to jurisdictions that choose to require management.

In addition, BLM has 132 plant species on the National List of Invasive Weed Species of Concern: http://www.blm.gov/co/st/en/BLM_Programs/botany/invasiweed.html

Noxious invasive weeds known to be in the Uncompahgre Field Office are listed in Table 5. Although not all of the species listed on the Colorado Noxious Weed List or BLM Species of Concern list are present in the UFO there is a threat of invasion from neighboring counties and states. The BLM would treat any noxious and invasive species under any of the action alternatives.

Table 5. Noxious Weeds Known to Occur in the UFO, which includes GGNCA and D-E NCA

Weed Species	Listing	Number of Infestations	Acres Infested	Average Infestation (by Acre)	Potential Average Rate of Spread %
Russian knapweed *Acroptilon repens*	State Noxious "B" BLM Concern	1,920	2,280.0	1.2	8-14%
Spotted knapweed *Centaurea maculosa*	State Noxious "B" BLM Concern	85	725.0	8.5	10-24%
Diffuse knapweed *Centaurea diffusa*	State Noxious "B" BLM Concern	26	31.0	1.2	16%
Oxeye daisy *Chrysanthemum leucanthemum*	State Noxious "B" BLM Concern	35 (does not include San Miguel River watershed)	115.0	3.3	Not Documented
Yellow toadflax *Linaria vulgaris*	State Noxious "B" BLM Concern	2	5.0	5.0	8-29%
Dalmation toadflax *Linaria dalmatica*	State Noxious "B" BLM Concern	1	1.0	1.0	8-29%

Weed Species	Listing	Number of Infestations	Acres Infested	Average Infestation (by Acre)	Potential Average Rate of Spread %
Purple loosestrife *Lythrum salicaria*	State Noxious "A" BLM Concern	8	4.0	0.5	15%
Hoary Cress (Whitetop) *Cadaria draba*	State Noxious "B" BLM Concern	340	288.0	1.0	11-18%
Absinth wormwood *Artemisia absinthium*	State Noxious "B"	4	2.0	0.5	Not Documented
Yellow starthistle *Centaurea solstitialis*	State Noxious "A" BLM Concern	4	20.0	10.0	13-17%
Sulfur cinquefoil *Potentilla recta*	State Noxious "B" BLM Concern	2	2.0	1.0	Not Documented
Canada thistle *Cirsium arvense*	State Noxious "B" BLM Concern	1,253	1,264.0	1.0	10-12%
Bull thistle *Cirsium vulgare*	State Noxious "B" BLM Concern	399	296.0	1.0	Not Documented
Musk thistle *Carduus nutans*	State Noxious "B" BLM Concern	659	1,104.0	1.5	12-22%
Russian olive *Elaeagnum angustifolia*	State Noxious "B" BLM Concern	24	7.5	0.5	Not Documented
Tamarisk *Tamarix* spp.	State Noxious "B" BLM Concern	907	1,508.0	1.7	12%
Chinese clematis *Clematis orientalis*	State Noxious "B" BLM Concern	2	2.0	0.3	Not Documented
Jointed goatgrass *Aegilops cylindrica*	State Noxious "B" BLM Concern	6	11.0	1.8	14% (traits similar to cheatgrass)
Burdock *Arctium minus*	State Noxious "B" BLM Concern	113	222.0	2.0	Not Documented
Plumeless thistle *Carduus acanthoides*	State Noxious "B" BLM Concern	5	5.3	1.0	Not Documented
Chicory *Cichorium intybus*	State Noxious "C" BLM Concern	18	7.3	0.4	Not Documented
Field bindweed *Convolvulus arvensis*	State Noxious "C" BLM Concern	73	133.0	1.8	Not Documented
Houndstongue *Hieracium cynoglossoides*	State Noxious "B" BLM Concern	63	83.5	1.3	Not Documented
Leafy spurge *Euphorbia esula*	State Noxious "B" BLM Concern	1	89.0	89.0	12-16%
Halogeton *Halogeton*	State Noxious "C" BLM Concern	47	90.0	1.9	Not Documented

WEED SPECIES	LISTING	NUMBER OF INFESTATIONS	ACRES INFESTED	AVERAGE INFESTATION (BY ACRE)	POTENTIAL AVERAGE RATE OF SPREAD %
glomeratus					
Scotch thistle *Onopordum acanthium*	State Noxious "B" BLM Concern	2	0.4	0.2	Not Documented
Siberian elm *Ulmus pumila*	BLM Concern	4	5.6	1.4	Not Documented
Common mullein *Verbascum thapsus*	State Noxious "B" BLM Concern	263	58.0	0.3	Not Documented
Meadow knapweed *(Centaurea pratensis)*	State Noxious "A" BLM Concerns	1	15	0.1	Not Documented
Downy Brome *(Bromus tectorum)*	State Noxious "B" BLM Concern	Many	Many	1	14%
Japanese Brome *(Bromus japonicas*)	BLM Concern	Few	Few	0.1	Not Documented maybe similar to Downy Brome
*****Alyssum (*Alyssum alyssoides)*	UFO Concern	Many	Many	0.5	Not Documented

Rate of spread, Duncan and Clark (2005).

***** Although not on the noxious weed lists, Alyssum is an exotic annual that is threatening ecological sites within the program area.

Environmental Consequences:

Proposed Action – One of the BLM's priorities is to promote ecosystem health and one of the greatest obstacles to reaching this goal is the rapid expansion of noxious weeds across public lands. Under this action both mid and long term benefits would be gained. This action allows BLM to effectively battle noxious weeds, which is the primary cause of native vegetation community degradation. This action also protects surrounding communities by preventing the spread of noxious weeds and establishment of new noxious weed infestations. Weed control would be carried out in a strategic, integrated manner which uses a wide array of weed control measures to achieve eradication or control strategies. Use of non-chemical practices such as pulling, biological control, grubbing, and grazing would be used where feasible and effective. A variety of herbicide application methods would also be allowed where non-chemical applications would not be effective. This integrated approach would result in broad scale benefits to native and desirable vegetation.

Alternative 1 – This alternative would be comparable to the Proposed Action, but less effective because there would be no aerial application of herbicide. This alternative would restrict the use of an effective tool to treat large expanses of invasive, exotic annuals which currently suppress native vegetation especially following large disturbances like wildland fire.

Vegetation in disturbed areas is at high risk of being converted to exotic annuals with a strong probability of staying in a degraded state. Additionally, these acreages could increase over time as disturbances continue to occur on the landscape.

Cumulative Impacts - The proposed action when combined with past, present and reasonably foreseeable actions would reduce the potential degradation of native ecosystems within the UFO and surrounding public and private lands.

No Action Alternative – An integrated weed management program would not be implemented. Occasional small scale weed control projects might arise in association with other activities. These would not be maintained to the point of eradication, which over time would allow for re-establishment and spread of noxious weeds. Under the no action alternative, weed infestations would continue to increase in density and size across native communities. Anticipated impacts would be long term, with increasing weeds in the native plant communities, reduced habitat quality, and reduced resilience of the native vegetation to recover from disturbances like drought and fire. The no action alternative does not fully meet the purpose and need for the proposed action but rather degrades the ability of the BLM and state and local governments to implement policy and laws regarding treatment and control of noxious and invasive weeds in a timely manner.

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Wildlife, Aquatic; Wildlife, Terrestrial; and Vegetation):
Proposed Action - Through an integrated weed management approach this action would contribute to and maintain/increase Land Health Standards especially, in native communities where disturbance and satellite noxious weed infestations are present.

Alternative 1- Would control small satellite infestations which would maintain and contribute to land health standards. Large scale disturbances on the landscape will continue to degrade natural communities. This alternative would partially maintain and contribute to meeting land health standards.

No Action Alternative - This action would not support land health and would actually contribute to the continued compromise of native communities (also see vegetation section).

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

Affected Environment: Special status species that occur in the UFO are listed in Appendices D, E, and F.

This section is for special status plants; special status animals are discussed in the Terrestrial Wildlife section, and special status fish are discussed in the Aquatic Wildlife section.

According to the latest species list available online from the USFWS, Mountain-Prairie Region, the following Federally listed, proposed, or candidate plant species occur within or could be

affected by actions occurring in the Planning Area: Colorado hookless cactus (*Sclerocactus glaucus*), and Clay-loving Wild Buckwheat (*Eriogonum pelinophilum).*

BLM sensitive plant species with potential habitat and/or occurrence records in the Planning Area include: Grand Junction milkvetch (*Astragalus linifolius*), Naturita milkvetch (*Astragalus naturitensis*), San Rafael milkvetch (*Astragalus rafaelensis*), De Beque milkvetch (*Astragalus debequaeus*), Sandstone milkvetch (*Astragalus sesquiflorus*), Gypsum Valley cateye (*Cryptantha gypsophilia*), Fragile (slender) rockbrake (*Cryptogramma stelleri*), kachina fleabane (Erigeron kachinesis), Dolores River skeletonplant (*Lygodesmia doloresensis*), Eastwood's monkeyflower (*Mimulus eastwoodii*), Aromatic Indian breadroot (*Pediomelum aromaticum*), (*Lesquerella vicina*), Colorado (Adobe) desert parsley (*Lomatium concinnum*) and Paradox Valley (Payson's) lupine (*Lupinus crassus*).

Environmental Consequences:

Proposed Action –

Consultation

The UFO consulted with the USFWS during development of this programmatic EA, as required by Section 7 of the ESA, and prepared a Biological Assessment (BA) to evaluate likely impacts to federally listed or proposed threatened or endangered species (BLM 2012). The BA reached a determination of "May Affect, Likely to Adversely Affect" for the Colorado hookless cactus, and Clay-loving Wild Buckwheat. The determination was based on the need to manage weeds that either are threatening the species or are limiting the species via competitive exclusion and plant community degradation. BLM and USFWS have developed specific SOPs, mitigation measures, and conservation for avoiding or minimizing impacts to these species measures (see Appendices A, B, and F).

The USFWS issued a Biological Opinion on February 15, 2013 regarding the proposed plan and its impacts on federally protected plants, including the proposed conservation measures (USFWS 2013). The USFWS Biological Opinion is that the proposed IWMP is not likely to jeopardize the continued existence of the Colorado hookless cactus or the clay-loving wild buckwheat. Further they have concluded that the proposed action would not result in the destruction or adverse modification of critical habitat for clay-loving buckwheat.

For this analysis, effects are considered to be similar for all threatened, endangered, proposed, candidate, and BLM sensitive (TEPC&S) plant species. 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, mitigation measures, and conservation measures (Appendices A, B, and C) are expected to avoid or minimize potential adverse impacts to TEPC&S plants. However; if the measures are not properly implemented, the following impacts could occur.

Direct Effects

When herbicide treatments occur within TEPC&S plant habitat, plants could be stepped on by workers doing hand applications, crushed by trucks or ATVs during ground applications, causing

injury or mortality. The ecological risk assessments (ERAs) incorporated into the PEIS (BLM, 2007a) and PBA (BLM, 2007c) predicted the potential for TEPC&S 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 presence of Russian knapweed within occupied clay-loving buckwheat habitat does threaten both individual plants and potentially populations if left unchecked. Russian knapweed has an estimated annual spread rate of 14% (Duncan and Clark 2005). It appears that knapweed prefers the same micro habitat that buckwheat occupies and without intervention it is likely that knapweed will continue to expand and displace buckwheat. Because of the observed close proximity of buckwheat individuals to knapweed at North Fairview there is potential that buckwheat individuals could be killed or express reduced fitness from herbicide application, either through direct spraying of herbicide onto foliage or from uptake of herbicide present in the soil. Because knapweed often requires multiple herbicide applications it is likely that buckwheat plants that are not initially killed could see multiple applications which may ultimately cause mortality. Currently North Fairview is the only location where knapweed is occurring within occupied habitat for clay-loving buckwheat. It is anticipated that as many as three subpopulations at North Fairview could be impacted by chemical weed treatments with each subpopulation having approximately 25-100 individuals. Based on 2011 surveys as many as 200 individual buckwheat could be killed or injured by chemical weed treatments at North Fairview. Even with the proposed conservation measures it is reasonable to assume that such impacts would occur given the potential for Clopyralid or Imazapic to remain active in the soil for several weeks after application.

The only herbicides proposed that could potentially come in contact through direct spray or soil uptake for Colorado Hookless cactus includes glyphosate or imazapic. Both herbicides are effective at controlling invasive annuals commonly found within cactus habitat. At the rates proposed on Table 6 of Appendix C, neither of the herbicides has been shown to be overly detrimental to established perennial grasses and forbs when applied in early spring prior to perennial plant green up in the case of glyphosate, late fall after perennial plant dormancy in the case of imazapic. There is potential to utilize glyphosate in the fall depending on target species phenology in most cases native perennial plants would be dormant when such fall applications would occur. Imazapic does have soil longevity that acts to suppress annual species germination for up to three years post application. At the rates proposed perennial grasses and forbs have shown a level of tolerance to direct application of imazapic. Field trials with imazapic involving cacti in the *Echinocereus*, *Pediocactus*,and *Opuntia* genus' suggest that in general cactus can be somewhat tolerant to the effects of the herbicide. The primary effects observed include very limited mortality, reduced vigor, suppressed reproduction, and some abnormal growth. Based on these observations it is reasonable to assume similar effects can be anticipated for *Sclerocactus*. Glyphosate at the rates proposed coupled with appropriate timing, and use of nonionic surfactants is not expected to have measurable effects to cactus.

Biological control by selective grazing with domestic livestock could cause mortality and injury to TEPC&S 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. All biocontrol agents used by the UFO would be tested prior to release to ensure that they are host specific. According to the PEIS, "as a general rule, it is assumed that biocontrol agents that attack target species in the same genus as a TEPC&S plant would have a negative effect on that TEPC&S plant species, unless extensive research has shown otherwise" (BLM 2007a).

In general, the adverse impacts on TEPC&S 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. TEPC&S plants could be directly killed or injured if accidentally removed during a treatment or if tread upon by workers treating a site.

Revegetation could include drill seeding or broadcast seeding followed by raking or harrowing. With either method, cultivation (disking) prior to seeding could be required to prepare the soil. Plants could be crushed by tractors or ATVs during the cultivation, seeding, or raking/harrowing. Prior to any proposed revegetation, potential impacts versus benefits of soil manipulation and seeding would be analyzed in a project-specific NEPA document. Buffer zones would be established around TEPC&S plants, occupied habitat, or habitats critical to maintenance of the TEPC&S plants to prevent direct impacts.

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 reduce threats to individual populations and improve habitat quality for TEPC&S plant species. However, such gains could be more than offset if conservation measures to avoid or minimize impacts to the TEPC&S plants 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 -- in addition to undesirable herbivory on TEPC&S species or on other species needed to sustain them (e.g., species critical to pollinators). Biologic control agents such as insects and pathogens would be expected to have long-term positive effects on TEPC&S plants by controlling undesirable vegetation in occupied habitats. Competition for resources would be reduced, and more suitable habitat conditions would become available for TEPC&S plant species.

A long-term beneficial effect to TEPC&S plant species would also be expected to result from both chemical and manual treatments. Removal of undesirable competing vegetation could increase the health or vigor of existing TEPC&S populations or increase habitat suitability of unoccupied sites. Soil disturbance and risks of erosion would be minimal with manual methods and spot chemical treatments due to the limited number of plants to be killed or removed. Aggressive weed management is prudent; without eradication efforts TEPC&S plant populations would be indirectly effected by aggressive species such as Russian knapweed were conditions are favorable in occupied habitat. Without intervention extirpation of some individuals as well

as populations is likely to occur. In 2002 BLM first identified an approximately 0.10 acre knapweed infestation establishing within the North Fairview ACEC. As of June 2011 that infestation has grown to approximately 6 acres in size and is within 10 meters or less of buckwheat populations.

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

Alternative 1 – Impacts would be similar as those described in the proposed action; however, the scale of ecological restoration following a fire or other large disturbance in Colorado Hookless cactus habitats would be more costly to implement. It is unlikely that large scale proactive ecological restoration of occupied Colorado Hookless cactus habitats would occur under this alternative as the cost of such treatments using ground based application methods would make such undertaking economically unfeasible.

Cumulative Impacts - Cumulative effects include impacts of future State, local, or private actions that are reasonably certain to occur in the action area. Federal actions (e.g. rights of way, mineral extraction, trails) generally have a requirement to treat weeds.

Counties would continue to treat noxious weeds on county roads and private lands, and private landowners would 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) would continue to treat weeds along major thoroughfares. Chemical, manual, mechanical, and biological controls are currently employed by these entities.

Ground-disturbing activities would continue to occur, creating new weed infestations. If weeds are not effectively controlled, TEPC&S plant populations could decline or be extirpated. Cheatgrass (*Bromus tectorum*) and other invasive annuals are currently degrading the habitat of the Colorado hookless cactus (Federal threatened) in western Colorado by forming a dense cover in areas of historic and current hookless cactus habitat.

Finding on the Public Land Health Standard for Threatened & Endangered species: Removing or controlling invasive non-native plants will over time maintain those plant communities with special status plants currently meeting land health standards. In addition those communities containing special status plants not currently meeting land health standards due to invasive plants can be expected over time to shift towards meeting land health standards. Often the presence of weeds within plant communities supporting special status plants is cause for certain species to be recognized as sensitive. Such aggressive weed management (active restoration) as proposed in the proposed action can be thought of as recovery actions which would also result in meeting public land health standards.

No Action Alternative – Weed control would decrease, as each project would need to be analyzed prior to implementation. Herbicides approved for use on public lands by the 2007 PEIS such as imazapic would likely not be used to restore or remove weeds competing with or

competitively excluding sensitive and rare plant species.

WILDLIFE, TERRESTRIAL (including Migratory Birds and Special Status Species) (includes a finding on Standard 3& 4)

Affected Environment: Wildlife populations are found in areas and habitats where their basic needs -- food, shelter, water, reproduction, and movement -- are met. Many animals have special behaviors and physical traits that allow them to successfully fulfill life processes and compete with other animals in only one or a few habitats; many threatened, endangered, and sensitive species fall into this category. Less specialized species can use a wider range of habitats.

A list and description of key terrestrial wildlife (Herpetiles, Birds, Mammals) and special status species (Reptiles, Birds, Mammals) is in Appendix G. Birds of Conservation Concern are in Appendix F.

An important activity within the BLM is to manage vegetation to improve or maintain wildlife habitats. Plants, which are an important component of habitat, provide food and cover. For most fish and wildlife species, habitat loss and fragmentation have been and remain the primary cause for declines. Some of these species have also suffered from historic efforts to extirpate them, and some suffer competition or predation from species that have expanded their range or that have been introduced. Some management efforts by the BLM, USFWS, CPW, and others have reversed the downward trend for a number of these populations, but few populations are near their historic levels. Although well below historic levels, wetland breeding birds have shown steady increases in numbers nationally since the late 1970s when policies shifted from draining to protecting wetlands (North American Bird Conservation Initiative, US Committee 2009).

Environmental Consequences:

Proposed Action - The UFO consulted with the USFWS during development of this programmatic EA, as required by Section 7 of the ESA, and prepared a Biological Assessment (BA) to evaluate likely impacts to federally listed or proposed threatened or endangered species (BLM 2012). See the Threatened, Endangered, and Sensitive Plant Species section (above).

The BA prepared by the UFO (BLM 2012) determined there would be "**No Effect**" to the Mexican spotted owl, North American Wolverine, and Black-footed Ferret, therefore no consultation is required. The BA reached a determination of "**May Affect, Not Likely to Adversely Affect**" for the Canada lynx, as a consequence of implementing the Proposed Action. The USFWS concurred with the determination on February 15, 2013. Additionally, the UFO conducted informal conference regarding the Gunnison Sage-grouse. The BA prepared for this project reached a determination of not likely to jeopardize the continued existence of the Gunnison sage-grouse, and is not likely to destroy or adversely modify proposed critical habitat. The Service concurred with the determination on February 15, 2013. The UFO also requested Service concurrence, upon final rule to list the species, that the IWMP may affect, but is not likely to adversely affect the Gunnison sage-grouse and is not likely to adversely affect critical habitat for the species. The Service will confirm this concurrence, provided there are no

significant changes in the action as planned or in the information used during the conference. The determinations were based on BLM's adherence to the SOPs, BMPs, and conservation measures for avoiding or minimizing risks to these species (Appendices A, B, and C).

Impacts to special status terrestrial wildlife species under any of the alternatives would be similar to those for non-special status species.

Prevention or Mitigation of Adverse Impacts

The UFO would follow all SOPs presented in the ROD of the PEIS (Appendix A) to ensure that risks to human health and the environment from weed management are minimized. In addition, the UFO would implement measures as appropriate to mitigate potential adverse environmental effects as a result of weed treatments (Appendices B & C). If Federally listed, proposed, or candidate threatened or endangered species could potentially be affected by the weed treatments, UFO would implement the conservation measures listed in Appendix C of this EA and incorporated into the accompanying BA (BLM 2010).

General Impacts

Direct Effects

Terrestrial and Aquatic wildlife could be harmed directly through contamination of food, water sources, habitat alteration, or direct contact. The SOPs, BMPs, and conservation measures (Appendices A, B, and C) would be implemented. The following is summary of direct impacts of herbicide use to control weeds on BLM lands.

In general, field studies suggest that appropriate herbicide use is not likely to have significant direct toxicological effects on wildlife (e.g., Cole et al. 1997, Sullivan et al. 1998). However, some potential exists to individuals, populations, or species with both proper and improper use of chemical controls (e.g., see USDA Forest Service [USFS] 2005). Possible adverse direct effects to individual animals include death, damage to vital organs, change in body weight, decrease in healthy offspring, and increased susceptibility to predation.

The Ecological Risk Assessment (ERA) within the PEIS (BLM 2007a) evaluated toxicological risks to biological receptors of ten herbicides: bromacil, chlorsulfuron, diflufenzopyr, diquat, diuron, fluridone, imazapic, Overdrive® (dicamba + diflufenzopyr), sulfometuron methyl, and tebuthiuron. Based on the ERA, risks to terrestrial vertebrates from weed treatments using these ten herbicides would be as follows:

- Chlorsulfuron, Diflufenzopyr, Fluridone, Imazapic, and Sulfometuron Methyl – No risk to any wildlife group from direct spray at either the typical or maximum application rate.
- Bromacil and Overdrive® – Low risk to insects and large herbivores from direct spray at the maximum application rate.
- Diquat and Diuron – Low risk to insects, birds, and mammals from direct spray at the maximum application rate and less so at the typical application rate.

- Tebuthiuron – Low risk to large mammalian herbivores and large avian herbivores and high risk to small mammalian herbivores from direct spray at the maximum application rate.

The remaining eight herbicides approved for use by BLM (2, 4-D, clopyralid, glyphosate, hexazinone, imazapic, imazapyr, metsulfuron methyl, picloram, and triclopyr) were not assessed in the ERA but were assessed in PEIS in relation to human health. Assuming that exposure risks to human receptors also apply to other terrestrial vertebrates, the following potential risks to TEPC species would be expected from use of the eight additional herbicides:

- Imazapic, Imazapyr, and Metsulfuron Methyl – No risk for any exposure scenario analyzed.
- Glyphosate and Picloram – No risk for most exposures; low risk from ingesting water sprayed directly at the maximum application rate or subjected to a spill.
- Triclopyr – Moderate risk from direct spray onto skin at the maximum application rate; low or no risk from other scenarios.
- 2, 4-D and Hexazinone – Moderate from ingesting directly sprayed fruit or ingesting fish from a pond contaminated by aerial drift; no or low risk for most exposures.

These results indicate generally no or low risk of toxic effects from herbicides. However, some herbicide/exposure combinations represent moderate to high risks that would be given special consideration when planning herbicide treatments to avoid harm to wildlife (see Appendices A, B and C).

Indirect Effects

Adverse indirect effects could include reduction in plant species diversity and consequent availability of preferred food, habitat, and breeding areas; decrease in wildlife population densities within the first year following application as a result of limited reproduction; habitat and range disruption if treated areas are avoided due to habitat changes; and increase in predation of due to loss of cover.

Because of the relatively low risk of toxicological effects to most wildlife even with direct spraying, the main risk to wildlife from herbicide use is habitat modification. However, forage species and wildlife use of treated areas are likely to recover two to several years after treatment (Escholz et al. 1996, McNabb 1997, Miller and Miller 2004).

The impacts of herbicides on wildlife would depend on the sensitivity of each species to the particular herbicides used, the pathway by which the individual animal was exposed to the herbicide, and indirectly on the degree to which a species or individual was positively or negatively affected by changes in habitat. Species that reside in an area year-round and have a small home range (e.g., insects, small mammals, territorial birds), would have a greater chance of being directly adversely impacted if their home range was partially or completely sprayed because they would have greater exposure to herbicides -- either via direct contact upon application or indirect contact as a result of touching or ingesting treated vegetation. In addition, species feeding on animals that have been exposed to high levels of herbicides would be more likely to be impacted, particularly if the herbicide bioaccumulates in their tissues.

Wildlife inhabiting subsurface areas (e.g., insects, burrowing mammals) may also be at higher risk if soils are non-porous and herbicides have high soil-residence times. The degree of interception by vegetation, which depends on site and application characteristics, would also affect direct spray impacts.

The impacts of herbicide use on wildlife would primarily be site- and application-specific, and as such, site assessments would have to be performed at the field level, using available impact information, to determine the appropriate herbicide-use strategy that would minimize impacts to individual wildlife species, particularly in habitat that supports special status species.

Wildlife Impacts

Implementing the proposed IWM Plan to control noxious and invasive weeds would give UFO resource managers the greatest ability to restore native plant communities and their function for the benefit of all wildlife. Overall beneficial effects would be greatest under the proposed action due to the combination of herbicides and treatment methods available which offer the best potential to achieve the desired level of positive effect on the habitat. Advantages of the Proposed Action are the ability to use any of the 18 currently approved herbicides (including imazapic, which is currently the most effective herbicide for cheatgrass control) and to use aerial spraying for large or remote infestation that cannot be efficiently treated with ground methods. While the more extensive annual treatments possible under this alternative (potential aerial applications on cheatgrass) would have somewhat greater risk to wildlife because of more potential for direct and indirect exposure to herbicides, these risks remain low overall. The negative impact of loss of vegetation cover following treatment in areas of dense weeds would be temporary and more than offset by the long-term benefit of enhanced plant species diversity and forage quality.

Weed treatment methods used under the Proposed Action and associated impacts would include the following:

Manual Control – Manual control techniques could result in short-term displacement of wildlife in the vicinity of the treatment activity. Manual control could require the presence of many people and/or multiple treatments, possibly within a few months, that could cause repeated displacement of wildlife in the treatment area. This could cause negligible, short-term, site specific, adverse impacts in the form of energy expenditure or exposure to predation. The impacts of manual control techniques are expected to be minimal and of little significance to wildlife populations.

Biological Control – Introducing biological controls to kill vegetation could have unintentional effects on the wildlife community by establishing a new food source. Depending on what species uses the new food source, the effect could be positive or negative. If generalists respond positively to the new food source it may increase competition to other species causing an overall decline in specialist populations. Some weed species, such as tamarisk, are used as a food source or nesting and foraging habitat. Reducing these weed species could pose a potential risk to wildlife, particularly nesting migratory birds. However, as invasive species are replaced by

native species and the plant communities are reestablished, it is probable that the specialized wildlife would prefer the more native plant communities. Biological treatment impacts to wildlife would be minor to moderate in the short term and is expected to be beneficial in the long-term.

Chemical Control – Incorporating use of herbicides would include potential risks to wildlife from both direct and indirect effects of application of chemicals to habitat. These potential impacts are summarized below. Also under all alternatives, the SOPs listed in Appendix A, the BMPs in Appendix B, and the conservation measures in Appendix C would be applied as appropriate to minimize potential adverse impacts.

Alternative 1 – Impacts would be similar as those described in the proposed action however, the scale of ecological restoration following a fire or other large disturbance in specific habitats such as sage steppe communities would be more costly to implement. It is unlikely that large scale proactive ecological restoration of degraded habitats would occur under this alternative as the cost of such treatments using ground based application methods would make such undertakings economically unfeasible.

Cumulative Impacts - Potential adverse impacts to terrestrial wildlife species from weed treatments under the IWM Plan would be minor but cumulative to impacts associated with other land uses within the planning area. On BLM lands, these include oil and gas developments, coal mining, and increasing recreational use, including OHVs. On adjacent or nearby private lands, these also include oil and gas development as well as sand and gravel operations, a variety of industrial facilities such as ware yards, and rapid commercial and residential developments.

While few if any of these impacts on private lands are in areas of potential use by rare or specialized species, such is not the case for generalist species such as Gunnison sage-grouse. For such species, much of the development on private lands, such as subdivision and home construction in and around the Gunnison Gorge NCA, oil and gas and uranium development in the western portion of the UFO, and all developments/disturbance along the major river corridors within the planning area, parallels or occurs within high-quality or critical habitats. These developments on private land, and to a lesser extent on BLM lands, have resulted in some fragmentation of the riparian corridor and sage steppe which has reduced or eliminated buffers from disturbance. Therefore, any disturbance to such habitats, or negative changes in habitat quality resulting from weed treatments would exacerbate the existing habitat impacts.

Over the long term, benefits of weed eradication and control -- including manual treatments of Russian-olive and tamarisk -- would be expected to offset the temporary impacts of additional disturbance. Furthermore, the proposed conservation measures would specifically include measures to avoid or minimize potential direct or indirect impacts on terrestrial wildlife species.

No Action Alternative – Weed control would decrease, as each project would need to be analyzed prior to implementation. Herbicides approved for use on public lands by the 2007 PEIS such as imazapic would not be used to restore or remove weeds competing with or competitively excluding desirable plant species. The other tools (e.g. biological control, mechanical control) would not be available on small-acreage infestations.

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Vegetation; Invasive, Non-native Species; and Wildlife, Aquatic): Removing or controlling invasive non-native plants would over time maintain those plant communities essential for providing necessary habitats needs for terrestrial and special status wildlife currently meeting land health standards. In addition those communities not currently meeting land health standards due to invasive plants can be expected over time to shift towards meeting land health standards. Often the presence of weeds within plant communities is cause for certain species to be recognized as sensitive.

WILDLIFE, AQUATIC (including Special Status Species) (includes a finding on Standard 3& 4)

Affected Environment: Aquatic habitats in the planning area include both lentic (still water, as in ponds and lakes) and lotic (moving water, as in streams and rivers) resources. While the CPW and USFWS are responsible for managing fish and amphibian species, the BLM is responsible for aquatic habitat management on the lands under its jurisdiction.

The diverse abundance of fish throughout the planning area provides considerable recreational opportunity and economic benefit.

Several aquatic special status species are in the field office; two native trout species and seven "big river" fish species, and four amphibians.

A list and description of aquatic wildlife species (fish, amphibians) and special status species aquatic species (native trout, big river fish, amphibians) is in Appendix H.

Environmental Consequences:

Proposed Action – The UFO consulted with the USFWS during development of this programmatic EA, as required by Section 7 of the ESA, and prepared a Biological Assessment to evaluate likely impacts to federally listed or proposed threatened or endangered species (BLM 2012). See the Threatened, Endangered, and Sensitive Plant Species section (above).

The BA reached a determination of "**May Affect, Not Likely to Adversely Affect**" for the Colorado pikeminnow, designated critical habitat of the Colorado Pinkeminnow, Bonytail, Humpback chub, Razorback sucker, designated critical habitat of the Razorback Sucker, and Greenback cutthroat trout based on the SOPs, BMPs, and conservation measures (Appendices A, B and C) for avoiding or minimizing impacts. The USFWS has concurred with the BA and conservation measures on February 15, 2013.

Direct effects of herbicides on aquatic larvae of special status amphibians (Great Basin spadefoot, boreal toad, Canyon treefrog, and northern leopard frog) are expected to be comparable to those on fishes above.

The UFO would design herbicide treatments to avoid risks to fish-bearing waters through the use of the SOPs, BMPs, and conservation measures identified in Appendices A, B and C. Because this alternative would allow for the greatest area of weed treatment, the potential would be

greatest for indirect effects to sensitive aquatic wildlife due to increased sediment transport from treated areas. Weed infestations in areas where these species occur are generally minor and could be treated using spot application of herbicides or manual removal. Large-scale losses of riparian vegetation would not be expected, and increases in sedimentation would be minimal. This alternative would allow use all of the currently approved herbicides. These include two newly approved compounds: imazapic for cheatgrass control and fluridone for control of aquatic broadleaf weeds. Based on the above, the Proposed Action would provide the most long-term benefits to riparian habitats that support key and special status fish, amphibians, and other aquatic organisms by improving the naturalness and diversity of vegetation adjacent to streams and other aquatic sites. This major benefit is expected to offset the short-term impacts.

Over the long-term, all treatment methods that remove non-native and competing vegetation are likely to have a beneficial effect on the habitat of aquatic species, provided that native or other desirable plant species are returned to those habitats after the treatments. Noxious weeds can have substantial negative effects on stream/riparian areas by outcompeting more desirable riparian vegetation, reducing biodiversity, altering aquatic habitats (e.g., reducing streambank protection, undercut bank cover, overhanging vegetation cover, pool depth and volume, and detrital and nutrient inputs; and increasing erosion and fine sediment deposition, stream width, and thermal relationships), and altering natural ecosystem processes. Vegetation treatments that target plant communities adjacent to aquatic habitats should result in conditions that would be more suitable for supporting native aquatic species. Therefore, vegetation treatments would eventually increase the amount of suitable habitat, potentially leading to an increase in desired species populations.

Another long-term benefit of the removal of non-native fuels from riparian habitats is the decrease in the risk of a future high severity wildfire. Diverse, vigorous, and dense stands of native riparian vegetation are less susceptible to wildfire and help to protect streams from the direct and indirect effects of wildfires by buffering streams from the effects of temperature increases and filtering ash and debris flows. These benefits are less in small mountain streams or high-gradient canyon reaches with narrow riparian zones.

Direct Effects

Direct effects were determined primarily from literature review and the previous Ecological Risk Assessment cited in the PEIS to assess the impacts to fish and other aquatic resources from the use of chemical herbicides. Fish and other aquatic organisms are exposed to chemical herbicides in three primary ways:

- Uptake through the skin during swimming in contaminated water
- Uptake through the gills during respiration in contaminated water
- Uptake through the digestive system during ingestion of prey from contaminated water

The major factor influencing the potential for exposure to fish is aerial drift from treated areas into untreated areas and non-target resources (e.g., waterbodies). Other means by which herbicides could reach aquatic habitats is through runoff from treated areas, inadvertent direct spraying, and accidental spills. As discussed previously, the SOPs, BMPs, and conservation

measures in Appendices A, B and C of this document would substantially reduce the potential for these exposures.

Species-specific toxicological data do not exist for most ecological receptors, including fish. Thus, the ERAs cited in the PEIS (BLM 2007a) were used for evaluating potential adverse impacts from exposure to herbicides. Surrogate species used were the bluegill or unspecified sunfish (*Lepomis* spp.) to represent warmwater species and the rainbow trout to represent coldwater species.

Based on the ERA portion of the PEIS, the majority of the chemicals evaluated have little or no potential to negatively impact fish or aquatic invertebrates through acute exposures, and only one (diuron) has the potential to bioaccumulate in fish tissue. Acute toxicological effects to fish and aquatic invertebrates of the herbicides evaluated in the ERA from direct or indirect exposure scenarios normally associated with weed treatments may be summarized as follows:

- Chlorsulfuron, Imazapic, Imazapyr, Metsulfuron Methyl, and Sulfometuron Methyl – Potentially high risk to fish due to the toxicity of ALS (acetolactate synthase) inhibitors.
- Bromacil – Low risk from direct spray and spills mixed for the maximum application rate. No risk from offsite drift or runoff.
- Dicamba, Diflufenzopyr, and Overdrive® (Dicamba + Diflufenzopyr) – No risk to fish and aquatic invertebrates from direct spray, spills, offsite drift, or runoff, at either the typical or maximum application rate.
- Diuron –Moderate to high risk to fish and aquatic invertebrates from direct spray or spills. Low risk to fish from runoff into streams, mostly at the maximum application rate. Low risk from aerial drift with proper buffers.
- Diquat and Glyphosate –For diquat, high risk to fish and aquatic invertebrates from spills and to aquatic invertebrates from direct spray; low risk to fish from direct spray. No risk from offsite drift or runoff at either application rate. Risks from use of glyphosate probably similar, except for formulations specifically licensed for use in aquatic sites.
- Fluridone – Moderate to high risk from direct spills; no or low risk from direct spray at the maximum application rate. No risk from offsite drift or runoff.
- Tebuthiuron – No acute risk from direct spray, offsite drift, or runoff. Potential acute risk to fish from spills. Low to moderate chronic risk to fish and invertebrates from direct spray and spills and to invertebrates from runoff.

Since most of the fish species within the planning area are relatively short-lived (lifespans generally less than 7 years), the potential for chronic toxicity to the fish or to piscivorous predators that feed on them (e.g., bald eagle, double-crested cormorant, great blue heron) is generally minimal. The endangered Colorado River fishes, being long-lived, are at greater risk for chronic effects (see below).

Direct effects on aquatic larvae of non-special status amphibians (tiger salamander, Woodhouse's toad, leopard frog, western chorus frog) are expected to be comparable to those on fish described above.

Special Status Species

Direct impacts to the greenback cutthroat trout (Federally listed threatened species) and the Colorado River cutthroat trout, (BLM sensitive species) would be the same as discussed above for non-special status species.

Direct effects of herbicide treatments on the four federally listed endangered species (Colorado pikeminnow, bonytail, humpback chub, and razorback sucker) and the three BLM sensitive species (bluehead sucker, flannelmouth sucker, and roundtail chub) would generally be the same as described above for key non-special status species. However, the long lifespans of the big-river fishes (from 30 to 50 years) creates the potential for chronic toxic effects from bioaccumulation (retention in tissues of contaminants taken up from the surrounding environment), bioconcentration (accumulation in tissues of contaminants at high concentrations higher than those found in the surrounding environment), and biomagnification (increase in concentrations as contaminants move through progressively higher trophic levels in the food chain). Colorado pikeminnow, which is both long lived and piscivorous, would presumably be at greater risk of toxic effects than the other big-river species. However, only one of the chemicals evaluated in the PEIS, diuron, has a tendency (low to moderate) to bioaccumulate in the tissue of aquatic organisms (National Library of Medicine 2002). Since diuron is not an herbicide used in riparian systems, there is little risk from this active ingredient being introduced into live water systems when adhering to label recommended application.

Indirect Effects

In the planning area, large scale treatments of woody noxious weeds (tamarisk, Russian-olive) are only anticipated along the major waterways such as the San Miguel, Dolores, and Gunnison Rivers and their lower elevation tributaries which typically contain sediment tolerant species and do not contain the species sensitive to these effects such as the trout. In riparian areas with extensive houndstongue and Canada thistle, it is anticipated that existing sedges and rushes and other riparian grasses would quickly revegetate the sites.

Since all herbicide treatment methods are similar in that they remove and/or manipulate vegetation, the primary indirect effects that are common to all treatment types are discussed. In general, the vegetation treatments proposed by the BLM are expected to have short-term negative and long-term beneficial effects on aquatic habitats. Combined with SOPs, BMPs, and project design criteria, it is anticipated that negative effects would be minimized. In addition, all site-specific projects would be implemented with the objective of creating long-term beneficial effects on fish and other aquatic species and their habitats.

Overall, the indirect impacts addressed below would be very site specific and minor in scale within the planning area.

A general reduction in vegetation cover and biomass in riparian areas, which could occur by any of the treatment methods, could have multiple consequences for aquatic organisms, particularly those associated with coldwater streams. These could include an increase in water temperature and sedimentation and a decrease in water storage capacity. Riparian cover provides shade, which cools water temperatures and reduces temperature fluctuations. Riparian vegetation also stabilizes the soil on streambanks, helping to prevent sediment transport and the loss of riparian

vegetation by slumping into the stream. Tree and shrub canopies intercept rainfall, helping to reduce the flashiness of overland flow, while the herbaceous layer (grasses and forbs) captures or retards the transport of sediment and pollutants. Last, the diverse structure and composition of most riparian habitats provides a source of terrestrial insect prey.

Increased sedimentation entering aquatic habitats as a result of destabilized streambanks and increased erosion can cover spawning and rearing areas, thereby reducing the survival of fish embryos and juveniles. Excessive sedimentation can also fill in important pool habitats, making them unusable by fish and other aquatic organisms. Pool habitats are important as thermal refugia for fish during the temperature extremes of summer and winter seasons. Excessive sediment can fill in the interstitial spaces between stream substrates that are important for aquatic invertebrate productivity. A number of sublethal effects to aquatic species may also occur as a result of sedimentation, including avoidance behavior, reduced feeding and growth, and physiological stress (Waters 1995). Over the long-term, increased sediment loads reduce primary production in streams. Reduced instream plant growth, combined with the reductions in riparian vegetation, can limit populations of terrestrial and aquatic insects, which also serve as food sources for many fish as well as bat and bird species.

Within the planning area, impacts associated with potential increases in sediment would be to species most sensitive to increases in sediment -- primarily members of the order Salmoniformes. These species in the planning area include rainbow, brown, brook, and cutthroat trout. The mottled sculpin in the order Scorpaeniformes is also sensitive to sediment increases which also occur in the area. Depending on the size and timing of treatment and the lag time for target species die-off and reestablishment of desired native riparian species, impacts could be more prolonged and greater in intensity and scope. Trout within the planning area generally reside in small mountain streams that are sensitive to changes in sediment input.

Brown trout and brook trout are fall spawning fish that lay eggs in or over appropriate stream and river substrates generally from late September-November depending on elevation. Excessive inputs of sediment in the fall could be detrimental to these fish as during the fall, streams and rivers are generally at or near base (low) flow conditions. These reduced flows would minimize the ability of streams to efficiently move increased sediments through the system. Rainbow and cutthroat trout and mottled sculpin are spring spawning fish that generally produce eggs from March-June depending on elevation. These fish generally spawn during increased spring flows associated with snowmelt which helps to scour and maintain channels and more efficiently move increased sediments through the system. Thus impacts to spawning members of these species would be reduced.

Removal of large amounts of riparian vegetation can alter the nutrient dynamics of the aquatic habitat. In areas where riparian vegetation has been lost, a shift in energy inputs from riparian organic matter to primary production by algae and vascular plants have been predicted (Minshall et al. 1989) and observed (Spencer et al. 2003). The increased solar radiation that results from the loss of streamside (or poolside, etc.) vegetation causes temperatures, light levels, and autotrophic production (i.e., plants and algae) to increase. This change in the food web of an aquatic habitat could alter the composition of food and thus energy sources that are available to

fish and aquatic invertebrates. In addition, increased stream temperatures could affect some species.

Impacts associated with potential increases in stream temperature would be to species most sensitive to changes in stream temperature-primarily the same species as addressed above for sediment. Trout generally occupy small mountain streams within the planning area. Small streams can be sensitive to changes is water temperature, which could impact fish by slowing their growth rate and increasing their susceptibility to disease. All fish species could be negatively impacted by shifts in composition of food resources, which could also reduce growth and survival.

By exposing more surface area of soil directly to rainfall, and increasing the overland flow of water into the aquatic habitat, removal of vegetation could result in decreased water storage capacity of the soil. Over the long-term, overland flow can erode the topsoil and cut rills and gullies or deepen existing gullies, concentrating runoff. As a result, sediment production is increased. Reduced infiltration and increased runoff may decrease the recharge of the saturated zone and increase peak flow discharge. Thus, the amount of water retained in the watershed to sustain base flows is reduced.

Increases in stream flow can lead to alterations in channel morphology. Doubling the speed of streamflow increases its erosive power by four times and its bedload and sediment carrying power by 64 times. Accelerated runoff can thus cause unstable stream channels to downcut or erode laterally, accelerating erosion and sediment production. Lateral erosion results in progressively wider and shallower stream channels, which can negatively affect fish populations by reducing the amount of important summer and winter thermal refugia pool habitats. Pool/riffle and width/depth ratios, which are important habitat components for many fish species, may also be altered.

Impacts associated with potential increased peak flows and reduced base flows could impact all species of fish. Lowered base flows could result in increased stream temperatures and lowered pool depths, and loss or reduced use of important micro-habitats important to many fish including backwaters, spawning areas, and undercut banks. Increased peak flows as discussed could result in stream habitat impacts as streams are widened and width to depth ratios become out of balance. This can reduce important pool habitat needed for over summer and over winter survival, and result in increased stream velocities with little holding habitat (runs and pools). This would be more pronounced on small mountain trout streams but could also affect habitat complexity in larger river habitats within the area.

The severity of the effects would vary by treatment method, location, the amount of plant material removed, and the distance from the aquatic habitat. Most of the effects would also be increased in severity if vegetation were removed prior to a period of heavy precipitation. Therefore, timing of the treatments is another important factor. The effects of vegetation removal would persist until riparian areas were adequately revegetated with desired native vegetation with root masses capable of providing good streambank stability.

Special Status Species

For the endangered Colorado pikeminnow, bonytail, humpback chub, and razorback sucker, and other sensitive species associated with the major rivers potential increased sediment loads due to short-term decreases in plant cover of adjacent riparian and upland habitats would not represent a great impact. All of these species are well adapted to the naturally high sediments loads in the Upper Colorado River Basin and its major tributaries. In general, periodic to frequent influxes of sediment are important in the creation and maintenance of important microhabitats for these species. Movement and redistribution of sediments helps to create and maintain backwater habitats important to many life stages of these fish species. Periodic inundation of floodplain areas with water/sediment provides optimal seedbed areas for native cottonwood regeneration to occur. Any increased sediment loading resulting from proposed treatments would be site specific and short-term in duration (until such time as native or other desirable vegetation reestablishes at the site) and should have no negative impact to any of these species or their habitats.

A general reduction in vegetation cover and biomass in riparian areas, which could occur by any of the treatment methods under the proposed IWM Plan, could have multiple consequences for the greenback cutthroat trout, Colorado River cutthroat trout, and other sensitive species associated with coldwater streams. Impacts of reduction in vegetation cover are described above

Increased sedimentation entering aquatic habitats as a result of destabilized streambanks and increased erosion can cover cutthroat trout spawning and rearing areas, thereby reducing the survival of fish embryos and juveniles. Excessive sedimentation effects are described above.

Cutthroat trout spawn in spring, generally producing eggs from March to June, depending on elevation. These fish generally spawn during increased spring flows associated with snowmelt which helps to scour and maintain channels and more efficiently move increased sediments through the system. Impacts to spawning members of this species would be reduced in higher gradient streams. In lower gradient streams increased sediment that settles out in occupied habitat could impact this species, as noted above.

Indirect effects to cutthroat trout from reductions in abundance of aquatic macroinvertebrate prey as a result of exposure to herbicides are not expected. The BLM-approved herbicides have low toxicity to insects, and inadvertent exposure of aquatic insects to herbicides would be limited by the buffer zones and restrictions on use of specific herbicides.

Alternative 1 – Under this alternative, the UFO would not utilize aerial spraying to treat large infestations of cheatgrass or other weeds. The UFO would treat fewer acres of weeds on an annual basis. Because fewer acres would be treated and aerial application would not be allowed, resident fish and other aquatic species would have a lower risk of toxic effects from exposure to herbicides than with the Proposed Action.

The lesser area of weed treatment annually would also reduce the potential for indirect effects from the transport of sediments off large areas treated aerially. However, this temporary benefit would be more than offset by the reduced ability to treat cheatgrass and other landscape scale weed infestations. Infestations of this species, which covers thousands of acres within the planning area, would likely remain constant or potentially expand because of the inability to use

aerial spraying. The presence of cheatgrass, which can form a dense canopy of standing biomass that is brown throughout the growing season, increases the risk for larger fires on a more frequent basis. This in turn increases the potential for adverse impacts on resident fish species from sediment transport and debris flows into aquatic habitats. This would be a greater risk for Colorado River and greenback cutthroat trout than for the big river nongame fishes, which are well adapted to higher sediment loads.

The long-term benefits to fisheries and aquatic habitats -- and to special status species and their habitats -- associated with weed treatment would be less under this alternative than under the Proposed Action. The continued proliferation of weeds throughout the UFO area would continue to degrade upland and riparian habitats important to the long-term sustainability and functionality of fisheries within the planning unit.

Cumulative Impacts – Potential adverse impacts to aquatic wildlife species from weed treatments under the IWM Plan would be minor but cumulative to impacts associated with other land uses within the planning area. On BLM lands, these include oil and gas developments, mining, and increasing recreational use, including OHVs. On adjacent or nearby private lands, these also include oil and gas development, irrigation, livestock production, as well as sand and gravel operations, a variety of industrial facilities such as ware yards, and rapid commercial and residential development expansion.

While many of these impacts on private lands are in areas of potential use by rare or specialized species. For such species, much of the development on private lands, such as subdivision and home construction in and around the Gunnison Gorge NCA, oil and gas and uranium development in the western portion of the UFO, and all developments/disturbance along the major river corridors within the planning area, parallels or occurs within high-quality or critical habitats. These developments on private land, and to a lesser extent on BLM lands, have resulted in some fragmentation of the riparian corridor which has reduced or eliminated buffers from disturbance. Therefore, any disturbance to such habitats, or negative changes in habitat quality resulting from weed treatments would exacerbate the existing habitat impacts.

Over the long term, net cumulative benefits of weed eradication and control -- including manual treatments of Russian-olive and tamarisk -- would be expected to offset the temporary impacts of additional disturbance. Furthermore, the proposed conservation measures would specifically include measures to avoid or minimize potential direct or indirect impacts on aquatic wildlife species.

No Action Alternative – Weed control would decrease, as each project would need to be analyzed prior to implementation. Herbicides approved for use on public lands by the 2007 PEIS such as imazapic would not be used to restore or remove weeds competing with or competitively excluding desirable plant species. The other tools (e.g. biological control, mechanical control) would not be available on small-acreage infestations. .

Long-term positive impacts on wildlife communities (i.e., improvements in habitat and ecosystem function) would be less under this alternative than under the proposed action or alternative 1. Invasive plant populations would likely continue to expand at the current rate or

greater, increasing damage to native plant communities and wildlife habitat and inhibiting associated ecosystem functions.

Finding on the Public Land Health Standard for plant and animal communities (partial, see also Vegetation; Wildlife, Terrestrial; and Invasive, Non-native Species): Removing or controlling invasive non-native plants would over time maintain those plant communities essential for providing necessary habitats needs for aquatic and special status wildlife currently meeting land health standards. In addition those communities not currently meeting land health standards due to invasive plants can be expected over time to shift towards meeting land health standards. Often the presence of weeds within plant communities is cause for certain species to be recognized as sensitive. Such aggressive weed management (active restoration) as proposed in the proposed action can be thought of as recovery actions which would also result in a shift towards meeting public land health standards.

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

Affected Environment: There are numerous riparian zones and a considerably lesser amount of wetland area on BLM lands. These areas typically support lush vegetation made up of obligate and facultative wetland species. These areas are a comparatively rare habitat type in the semiarid climate, and make up less than 2% of BLM land in the UFO. Riparian areas in the UFO are typically characterized by one or more of the following species: Fremont cottonwood (*Populus fremontii*), narrowleaf cottonwood (*Populus angustifolia*), sandbar willow (*Salix exigua*), other willow species (*Salix* spp.), skunkbush (*Rhus trilobata*), red-osier dogwood (*Cornus sericea*), silverleaf buffaloberry (*Shepherdia argentea*), New Mexico privet (*Foresteira pubescens*), and various sedges and rushes.

Because of the higher moisture level, seasonal flooding disturbance, and water flow which transports seeds, these areas often have weeds in them as well. Weed invasions in riparian/wetland areas degrade habitat quality and the functionality of the riparian/wetland vegetation. Examples include invasion of riparian/wetland areas by tamarisk which increases soil salt levels and discourages establishment of native riparian vegetation, and Russian knapweed which forms dense mats but does not have the woody root system adequate to protect streambanks during high flows.

Environmental Consequences:

Proposed Action – Overall, this alternative would result in mid and long term, widespread benefits to riparian and wetland areas through reduction of weeds, which are a primary source of riparian and wetland degradation. These weed control measures, in addition to the weed prevention measures, are expected to produce very short term, minor impacts to riparian areas in the form of direct disturbance, minor crushing of vegetation, some kill of non-target species, and short term chemical residue. However, the long term impacts to riparian/wetland areas are anticipated to be substantial and take the form of improved plant community composition, habitat quality, and flood buffering and channel morphology improvements.

Under the proposed action, weed control in riparian areas can be carried out in a strategic, coordinated manner, which includes a range of weed control measures to achieve eradication or control objectives. The specific impacts to non-target, desirable riparian and wetland vegetation are similar to those listed under the Vegetation Section, with some variations which are discussed further below.

Damage to non-target vegetation and saturated soils is mitigated by restricting herbicides used to those specified as suitable for use on saturated soils or near water. A list of these is included as part of the proposed action. Further instructions for appropriate application rates and measures are included on the herbicide labels and the PUPs.

Biological control may be selected for use in riparian areas more than in other areas due to the relative inaccessibility of many riparian areas. Biocontrol probably represents the least threat of non-target species damage. In many cases, biocontrol agents will be effective at reducing the level of the weed relative to the native plant community, often to the point where the riparian or wetland area regains its habitat values and flood buffering functionality.

Likewise, mechanical control will most likely be selected more for riparian areas where it has been proven effective at control of woody species like tamarisk and Russian olive when used together with herbicide. Damage to non-target species would be expected to be somewhat higher in these areas because of the larger area they can cover, and the relative imprecision of the heavy equipment. This can be mitigated somewhat by plant identification training.

Only very limited use of aerial herbicide application would be made in riparian or wetland areas. This approach would not be used to spray large acreages, but might be selected for sites which are inaccessible from the ground, and for which there is no existing biocontrol.

Alternative 1 – Impacts from this alternative would be generally similar to the Proposed Action. There would be no aerial application of herbicide, so weeds in some inaccessible riparian zones might not be treated. As a result, there would be slightly less beneficial results from this Alternative to riparian and wetland vegetation.

Cumulative Impacts – The proposed action, when combined with the past, present and reasonably foreseeable actions would reduce the potential for deterioration of riparian health in the region, and may cause conditions to improve across the region. This would occur through reducing threats of continued weed spread and establishment of new weed species, as well as increasing the amount of native species in riparian communities. Localized improvements in channel form and function would also result. These impacts would help to offset riparian and wetland degradation that is occurring from additional activities on federal lands in west central Colorado. These include: water depletion, flow alterations, wildfire, mining activities, livestock grazing and wildlife use, rights of ways, recreation and travel infrastructure. Additional impacts arise from activities on private property in the region. These include: cultivation, irrigation, livestock production, residential and commercial land development and oil and gas development.

No Action Alternative – Under the no action alternative, a coordinated weed management program would not be implemented and systematic treatment of noxious weeds

would not occur. Occasional small scale weed control projects might arise in association with other activities. These small scale projects would most likely not be maintained or result in substantial levels of weed control. Under the no action alternative, weed infestations would probably continue to increase in density and size in riparian and wetland areas. Anticipated impacts would be long term, with increasing weeds in the riparian areas, reduced habitat quality, and slow deterioration of the wetland/riparian functionality.

Finding on the Public Land Health Standard for riparian systems: In the UFO there are many riparian areas that have been evaluated for Standard 2 and rated as not meeting, or meeting with problems. In many cases, these ratings have arisen from weeds infesting the riparian areas. Under the proposed action, the acreage of streams meeting Standard 2 would increase as weed problems diminish and stream functionality improves. Under Alternative 1, there would be slightly less improvements to the ratings for Standard 2. Under the No Action alternative, there would be no change to ratings for Standard 2.

FLOODPLAINS

Affected Environment: Floodplains in the planning area vary from large drainages with headwaters at higher elevations, to small drainages with no defined floodplains and ephemeral flows. The larger drainages have high flows for several weeks from spring snowmelt and baseflow from late summer through February or March. In all area drainages, high magnitude, short duration floods can occur in summer months due to high intensity, short duration precipitation events associated with the seasonal southwest monsoonal airflow. The frequency and magnitude of these events is highly variable from year to year. Localized flooding from these events can have large impacts in ephemeral channels, as floodwaters commonly contain large amounts of accumulated vegetation debris and sediment. Additionally, watershed characteristics such as size, shape, slope, orientation, watershed cover condition, and soils can affect the magnitude of flood peaks produced by localized summer storms.

Floodplains along some reaches of higher order rivers, such as the San Miguel, Dolores, Uncompahgre, North Fork of the Gunnison, and Lower Gunnison, are mapped by the Federal Emergency Management Agency. The remaining streams in the planning areas do not have mapped floodplains. The floodplain width on these streams is partially determined by the degree of valley confinement, but even at downstream locations within the planning area, floodplains typically extend less than 50 feet from active channel banks.

Environmental Consequences:

Proposed Action – The use of fire, herbicides, and mechanical treatments and biological controls have the potential to remove woody structure on the floodplain. The absence of dense, flexible woody stems on the banks of the floodplain can increase the shear stress at the toe of the banks and lead to fluvial erosion, bank undercutting and mass failure (Vincent and others, 2009). Standard Operating Procedures (SOP) as defined in the PER (Chapter 4-Effects of Vegetation Treatments) would minimize or avoid adverse effects to floodplains as a result of treatment activities. Preservation of native vegetation such as willows and other native riparian vegetation could dramatically reduce the potential for floodplain degradation.

Prompt reestablishment of uplands vegetation would reduce runoff potential and decrease flood flows. Long-term benefit of replacing weeds with native vegetation would increase the hydrologic function of floodplains, allowing the trapping of sediment and increasing riparian habitat.

Alternative 1 – Alternative 1 would be similar to the Proposed Action. There would be no aerial application of herbicide, so weeds in some inaccessible floodplain areas might not be treated. There would be slightly less beneficial results from this alternative to floodplains.

Cumulative Impacts – The proposed action and alternative, when combined with the past, present and reasonably foreseeable actions, could improve overall floodplain function. Where invasive riparian vegetation has narrowed and stabilized the channel, removal of this vegetation may be desirable to promote a more dynamic channel and the native species a dynamic channel supports (Pollen-Bankhead and others 2009). Some of the causes of invasive species on BLM and Forest Service lands in the watersheds of the planning area include: coal mining, grazing, rights of ways, recreation and travel infrastructure. Invasive species also come from activities associated with private property in the planning area, including: cultivation, irrigation, livestock production, residential and commercial land development, coal mining, and oil and gas development. The cumulative effect of treating invasive species in the watershed could improve the floodplain and its ability to mitigate the cumulative impacts in the basin.

No Action Alternative – Under the no action alternative, systematic treatment of noxious weeds would not occur. Occasional small scale weed control projects might arise in association with other activities. These small scale projects would most likely not be maintained or result in substantial levels of weed control. Under the no action alternative, weed infestations would probably continue to increase in density and size in floodplains and in uplands.

SURFACE AND GROUNDWATER (includes a finding on Standard 5)

Affected Environment:

Hydrology

There are four major river drainages throughout the UFO. The eastern edge of the UFO includes the Gunnison River below the Gunnison Gorge and the North Fork of the Gunnison River from Paonia Reservoir to the confluence with the mainstem. The Gunnison River continues west to the Colorado River, and receives runoff from the Escalante drainages.

The Uncompahgre River flows north from the headwaters in Ouray to the northern terminus with the Gunnison River near Delta. Many major tributaries to the Uncompahgre River originate or flow through the UFO, including Roubideau, Cottonwood, Dry Creek and Spring Creek.

The San Miguel River flows northwesterly, primarily on BLM lands, from Telluride through the San Miguel Canyon to the confluence with the Dolores. Major tributaries flowing through BLM lands include Leopard, Specie, Saltado, Beaver, Naturita, Tabeguache, and Dry Creek.

The Dolores River enters from the western edge of the UFO above the town of Bedrock and

flows easterly across Paradox Valley to the confluence with the San Miguel River.

Standards and Classifications
The Clean Water Act of 1972 gives the Environmental Protection Agency (EPA), the authority to set effluent limits on discharges of pollutants into waters of the United States and regulate water quality standards for surface waters. The Clean Water Act also gives the EPA the ability to authorize state governments to administer the program while retaining oversight.

The State of Colorado passed the Colorado Water Quality Control Act, revised in 2002, granting authority to the Colorado Water Quality Control Commission to classify and assign numeric standards to state waters. State waters are classified according to present beneficial uses, or beneficial uses that may be reasonably expected in the future. Beneficial use classifications include aquatic life, recreation, agriculture, and water supplies for various purposes. Numeric standards are assigned in order to define allowable concentrations of various parameters under the following categories: physical and biological, inorganic and metals. Water quality classifications and numeric standards for surface and downstream receiving waters in the planning area are contained in the Commission's 5 CCR 1002-31, Regulation No. 35, Classifications and Numeric Standards for Gunnison and Lower Dolores River Basins (Colorado Water Quality Control Commission 2012).

It is BLM policy that agency projects should meet or exceed water quality standards established by the State of Colorado for all water bodies located on or influenced by BLM-administered lands.

Selenium
Selenium is a naturally occurring soluble non-metal found in the marine sediments of the Mancos Shale. Selenium can be easily mobilized by applying irrigation water to soils derived from Mancos Shale or from surface disturbing activities on Mancos Shale, and delivered to nearby waterways by irrigation return flow, groundwater, or overland flow. Once in the waterways, selenium can move through the aquatic environment, bio-accumulate in organisms and potentially reach toxic levels (Lemly, 2002).

Salinity
Salts are another naturally occurring component of the Mancos Shale and are easily mobilized. The soluble mineral content of the Mancos Shale can be as high as 20% but is typically more like 6%, and the major mineral is typically gypsum (Schumm and Gregory, 1986). The Bureau of Reclamation has estimated that half of the present salt concentration in the Colorado River system is due to natural sources while the remainder is human induced by sources such as agriculture. The annual salt loading above imperial dam to the Colorado River is estimated to be 10 million tons and the Gunnison River basin contributes roughly 1.1 million tons (Leib, 2008).

Groundwater
The State of Colorado regulates groundwater quality under the Colorado Water Quality Control Act. The Water Quality Control Commission is tasked with classifying and establishing standards for the protection of groundwater quality through regulation 5 CCR 1002-41. Those regulations establish the four types of standards below and in part read:

A. Narrative Standards – Groundwater shall be free from pollutants that are in concentrations shown to be:
   a. Carcinogenic, mutagenic, teratogenic, or toxic to human beings and/or,
   b. A danger to the public health, safety, or welfare.

B. Numeric Standards – Classified by the commission within a specific area
   a. Domestic Use - Quality (37 parameters)
   b. Agricultural Use - Quality (21 parameters)
   c. Surface Water Quality Protection
   d. Potentially Usable Quality
   e. Limited Use and Quality

C. Statewide Standards
   a. Radioactive material standards (7 parameters)
   b. Interim organic pollutant standards (145 parameters)

D. Site-specific radioactive materials and organic pollutant standards

Standards A and C apply statewide. Standard B, Numeric Standards, only apply to specific areas the commission specifies, and can be found in 5 CCR 1002-42. In addition to the areas specified by the commission, Standard B Domestic Use or Agricultural Use standards also apply to groundwater wells that are permitted or decreed in the state engineer's well records or by applicable court decrees.

Environmental Consequences:

Proposed Action – Invasive plants can affect streambank stability, turbidity, shade, and stream temperature. Invasive plants, such as tamarisk have the potential to reduce water quantity. Removal of upland vegetation over a large area could affect surface water by increasing surface runoff and promote erosion and sedimentation. As discussed in the soils section, mechanical, fire and herbicide treatments can decrease plant cover and increase the erosion potential of soils and sediment runoff to waterways. Design features and SOP's would include quick reestablishment of native vegetation and erosion control measures to control runoff, as well as safe handling procedures and applications. As discussed in the affected environment, many stream segments in the UFO are impacted by selenium; extra precautions should be exercised to minimize soil runoff from weed treatments located in Mancos shale selenium bearing units.

Potential groundwater effects would vary relative to the type of treatment. Mechanical treatments and removal of vegetation could potentially increase groundwater recharge due to lack of evapotranspiration. Herbicide application effects would vary dependent on location. Areas of shallow groundwater or rapid recharge due to fine textured sandy soils should be mitigated accordingly. These effects could be short lived, recovering with vegetation reestablishment or dissipation of chemical contaminants (Satterlund and Adams, 1992). The extent and duration of effects would be dependent on the geographic location, the extent of vegetation removal, as well as on revegetation practices.

The proposed action would allow for the greatest flexibility to ensure the proper vegetation treatment method is used based on site conditions. Treatments should be timed to avoid rainfall events to reduce runoff potential. Damage to non-target vegetation, saturated soils, and surface and ground water can be mitigated by restricting herbicides used to those specified as suitable for use in riparian areas or near water. Herbicides approved for use in aquatic areas are listed in Table 2.

Alternative 1 – Alternative 1 would be similar to the Proposed Action. There would be no aerial application of herbicide, so weeds in some areas might not be treated. This might result in some areas continuing to suffer from increased sediment production and delivery to water ways due to the inability to apply proper weed management.

Cumulative Impacts – The proposed action and alternative, when combined with the past, present and reasonably foreseeable actions, could improve overall surface and groundwater quality. Re-establishment of native vegetation in locations where invasive annuals dominate the area could reduce the runoff and sediment delivery to waterways. Some of the causes of invasive species on BLM and Forest Service lands in the watersheds of the planning area include: mining, grazing, rights of ways, oil and gas development, recreation and travel infrastructure. Invasive species also come from activities associated with private property in the planning area, including cultivation, irrigation, livestock production, residential and commercial land development, mining, and oil and gas development. The cumulative effect of treating invasive species in the watershed could improve the stream quality and quantity in the planning area.

No Action Alternative – Under the no action alternative invasive and noxious weeds would likely spread and continue to affect upland conditions and negatively impact water quality due to increased erosion and sediment runoff. In areas of Mancos shale, this increased erosion could potentially affect selenium loading to impaired waters. Tamarisk can also negatively affect streamflows during low flow periods due to their increased water consumption via evapotranspiration.

Finding on the Public Land Health Standard for water quality: Some areas in the planning area evaluated for Standard 5 have been rated as not meeting, or meeting with problems. Several of these cases are due to weeds infesting the upland areas and causing sediment runoff problems. Under the proposed action, the acreage of upland areas affecting water quality would decrease and allow more stream segments to meet Standard 5. Removal of invasive species in riparian areas would increase hydrologic function and result in better water quality and quantity. Under Alternative 1, there would be slightly less improvements to the ratings for Standard 5. The No Action alternative would result in no change to ratings for Standard 5.

WASTES, HAZARDOUS OR SOLID

Affected Environment: Hazardous and solid wastes are not a part of the natural environment but could be introduced as a result of implementation of the Proposed Action or Alternative. This would be in the form of spilled herbicides or wastes generated from the

improper use of herbicides.

Environmental Consequences:

Proposed Action and Alternative 1 – Chemical products used in accordance with manufacturer's instructions and applicable laws and regulations do not result in the generation of hazardous or solid wastes. The improper storage, transportation, or application of herbicides could result in the generation of hazardous and solid wastes. This would be from spills of herbicides. The resulting contaminated media (soil or water) would be a hazardous waste which would have to be handled in accordance with federal and state laws and regulations. The Proposed Action and Alternative, both of which involve the use of herbicides, specify that all personnel applying herbicides will be properly certified and will be required to follow EPA label instructions, as well as the BLM Chemical Pest Control handbook, BLM Safety Manual, and all State and Federal pesticide laws regarding pesticide use. If all applicable procedures and laws are followed, negative consequences would not be expected. In the event of an accidental spill of herbicides, prompt, effective response and cleanup would minimize any harmful environmental consequences. The amount of herbicides transported and stored should be kept to the absolute minimum necessary in order to minimize the possible impacts from an unintended of release (spill) of product.

Cumulative Impacts – With use of the herbicides in accordance with the manufacturer's directions, negative cumulative impacts would not be expected unless large amounts of product were spilled, were allowed to enter waterways, and were not promptly cleaned up. This has not been an issue in the past and would not likely be an issue in the future.

No Action Alternative – Noxious weed control for each project would be evaluated under separate analysis. There would not be potential impacts associated with hazardous waste until application is approved.

ENVIRONMENTAL JUSTICE

Affected Environment: While analyzing a federal action, BLM identifies and addresses, as appropriate, disproportionately high and adverse human health and environmental effects of program, policies, or activities on minority or low income populations. Environmental Justice involves fair treatment, which means that no group of people, including a racial, ethnic, or socio-economic group, should bear a disproportionate share of the negative environmental consequences resulting from a federal action.

Environmental Consequences:

Proposed Action and Alternative 1 – The proposed action was developed based on the need to control invasive weed species. Weeds can occur anywhere in the field office, and control would follow the weeds. The alternative has a mechanism to notify the public about larger projects. It also has buffer zones around private lands. The proposed action would not have disproportionate or adverse human health or environmental effect on minority or low-income populations.

Cumulative Impacts – Because there would not be disproportionate or adverse human health or environmental effect on minority or low-income populations, cumulative impacts to environmental justice are not expected.

No Action Alternative – No action would result in few invasive weeds treated. Invasive weeds on BLM lands adjacent to minority and majority populations would be the same. The no-action alternative would not have disproportionate or adverse human health or environmental effect on minority or low-income populations.

ACCESS and TRANSPORTATION

Affected Environment: OHV designations vary throughout the UFO. All three designations of Open, Limited and Closed are present. Maintenance of routes is completed on a priority basis annually and by several entities throughout the area such as BLM, the counties, and right-of-way holders.

Environmental Consequences:

Proposed Action and Alternative 1 – Existing or designated roads and trails would be utilized to the extent possible, or if cross country travel is necessary in Limited or Closed designated areas, prior approval would be needed from the BLM authorized officer. For safety concerns, use may be restricted in certain areas for a short time; however, both alternatives should have very little negative impact on existing or designated roads or trails. On the other hand, both alternatives could have many positive impacts on keeping existing and designated roads and trails open for public use due to lack of concern for spreading weeds.

Cumulative Impacts – This proposed action, when combined with past, present and reasonably foreseeable actions would help reduce the potential for the spread of weeds. This will come about through more effective and widespread control of invasive weeds, which is one of the principle threats for access and transportation. This should in part offset other impacts in the region that are taking place on private and federal lands. Additional impacts to access and transportation on federal lands include those associated with wildfire, vegetation treatments, mining, livestock grazing, cross-country permitted and administrative use, rights of ways, recreation, and adjacent private inholdings. Impacts to access and transportation resulting from activities on private property include livestock grazing, recreational use, residential and commercial land development, mining, and oil and gas development.

No Action Alternative – Under the no action alternative, a coordinated weed management program would not take place. Occasional small scale weed control projects might arise in association with other activities. Re-treatment of large patches may or may not happen, increasing the likelihood of vehicular weed spread and the possibility of having roads and trails closed due to the degradation of land health until those concerns can be addressed.

REALTY AUTHORIZATIONS

Affected Environment: Right-of-way authorizations including (but not limited to) roads, pipelines, ditches, powerlines and telephone lines are likely to be present within the specific project areas.

Environmental Consequences:

Proposed Action and Alternative 1 – Rights-of-way holders would continue to be required to control weeds. Weed control by BLM would take caution to ensure no damage to a facility or disruption of use occurs. Right-of-way holders will be contacted, if necessary, to coordinate activities that occur within or near their existing facilities.

Cumulative Impacts: Provided the above measures are taken, no cumulative impacts should occur to existing rights-of-way facilities.

No Action Alternative – No impacts would occur to existing land use authorizations under the No Action alternative.

RANGELAND MANAGEMENT

Affected Environment: The Uncompahgre Field Office (exclusive of GGNCA and DENCA) contains 574,609 acres of livestock allotments with 146 permittees, the Gunnison Gorge NCA has 95,781 acres of livestock allotments with 18 permittees, and the Dominguez Escalante NCA has 209,610 acres of livestock allotments with 16 permittes; collectively the UFO comprises approximately 880,000 acres of federal land with livestock allotments and 180 permittees.

Environmental Consequences:

Common to Proposed Action and Alternative 1 – Noxious weeds and invasive species reduce native habitat for livestock and wildlife by reducing the quality and quantity of native forage and browse species, thus changing the way animals use surrounding non-weed infested areas. Noxious weed infestations can displace grazing animals by reducing native vegetation causing animals to seek areas where palatable forage and browse is available. In turn, these areas are often over utilized which can weaken the vegetative community, allow for additional noxious weed establishment and potentially reduce carrying capacities.

Proposed Action – The proposed action would result in long term, widespread benefits to rangeland areas through the reduction of weeds. Noxious weed control measures along with weed prevention measures are expected to produce short term negative impacts to rangeland areas in the form of direct disturbance, minor crushing of vegetation, some kill of non-target species, and short term chemical residue. However, long term impacts should improve plant community composition, land health, and habitat quality.

Alternative 1 – Impacts are expected to the same as the proposed action but to a lesser degree. Alternative 1 would not allow for aerial application of herbicides. Small infestations of

noxious weeds would to be treated, but this alternative does not allow for effective treatment of large degraded areas. It could eventually contribute to large scale areas not meeting land health standards.

Cumulative Impacts – Other projects, including other noxious invasive weed treatments, are foreseeable; but considering past and foreseeable projects, it is not anticipated that cumulative detrimental impacts to rangelands would occur. The limited scale of activity creates minimal individual effects on rangeland and livestock grazing, as well as minimal cumulative effects when added to the existing situation of spot treatment of noxious weeds and other potential activities.

No Action Alternative – Under the no action alternative, noxious weed treatments could continue upon authorizing individual projects, including spot treatment. The coordination necessary to make an effective program using early detection rapid response would not occur. Under this alternative noxious weeds would continue to spread and new infestations would establish.

FOREST MANAGEMENT

See the "vegetation" analysis for expected impacts to woodland and forest resources.

FIRE

Affected Environment: Over the past ten years, several wildfires in the UFO have burned large expanses with high severity, including McGruder 2004 (2,800 acres), Cambell 2004 (4,200 acres), Burn Canyon 2002 (31,000 acres), and Bucktail 2002 (3,000 acres). The large, intense wildfires are creating major soil erosion problems as well as opportunities for weedy species to invade.

Based on the current state of fuels, fire regimes, and fire behavior not centered on the historic range of variability, we can reasonably expect a continuation of future fires potentially burning with high severity and covering large acreages.

Environmental Consequences:

Proposed Action – Many native and desirable species are adapted to fire and regenerate well after a burn. By controlling infestations of non-native herbaceous species with herbicide application, the ecosystem is more likely to maintain structural and biological resilience in response to naturally occurring fires and/or prescribed burns. Also, control of large infestations of weeds (e.g. cheatgrass) could reduce the incidence of fire.

Fire would be used in some instances to help control weeds or gain access to them to improve the effectiveness herbicide application control.

Alternative 1 – Impacts would be similar to the proposed action. Aerial application of herbicide would not be allowed, which would greatly increase the difficulty of controlling weeds post-wildfire should large infestations occur.

Cumulative Impacts – Cumulatively, there could be fewer large fires, or, weed infestation after a fire could be reduced.

No Action Alternative – Non-native species, such as cheatgrass (*Bromus tectorum*), are widely recognized as a cause of change in fire regimes (Brooks et al. 2004). By increasing fire frequency, non-native grasses prevent native shrubs and native grasses from reestablishing. This can create a disproportional amount of early seral vegetation structure across the landscape. Without use of herbicide control, especially in large acreages of infestations, these non-native grasses would continue to enhance their own success (Keeley 2006), thus, further degrading the ecosystem's resilience to naturally occurring fires.

NOISE

Affected Environment: The project area is generally characterized as quiet for much of the time. Noise is generated periodically when visitors drive vehicles, ATVs or motorcycles on roads through the area; this is most noticeable during the fall hunting seasons.

Environmental Consequences:

Proposed Action – There would be short-term noise associated from the use of UTV/ATV, but not noticeably more than the normal public use on BLM roads and trails. There would be a short-term generation of noise from a helicopter or fixwing aircraft while applying herbicide, which would be heard in the immediate vicinity, possibly up to a distance of 3 miles. Work using aircraft would proceed primarily during weekday, early morning hours, just after sunrise. It is assumed that helicopter spraying operations can achieve roughly 50 acres/hour. Noise would only be generated for the duration of the project, and would not have an impact beyond project completion.

Alternative 1 – This alternative would not use aircraft in the application of herbicides; noise would not be expected from aircraft. There would be short-term noise associated from the use of UTV/ATV, but not noticeably more than the normal public use on BLM roads and trails.

Cumulative Impact – Noise generated from ATV/UTV and aircraft would add cumulatively to background noise generated from other activity in vicinity of the work. Noise level would increase for the short time the source is operating, and then background noise levels would resume.

No Action Alternative – There would be not be noise generated.

RECREATION

Affected Environment: Recreation opportunities in the UFO vary by season, topography, and vegetative cover. The diversity of settings defined by terrain, scenic beauty, and types of access available offers outstanding recreation opportunities to users of these public lands. The

diverse types of recreation that occur in the UFO include hunting, fishing, hiking, dispersed and developed camping, picnicking, horseback riding, mountain bike riding, motorcycle and ATV riding, 4WD touring and extreme driving, rafting, and cross-country skiing/snowshoeing.

Environmental Consequences:

Proposed Action and Alternative 1 – The BLM has defined recreation activities in various categories such as big game hunting, motorized and mechanized use, horseback riding, hiking, fishing, camping, etc. Using these definitions, no recreation activities would be eliminated by either the proposed action or alternative 1; however, for safety concerns, use may be restricted in certain areas for a short time. Some of the recreation opportunities within an activity may positively or negatively change depending on the area and the treatment used to accomplish the project.

Cumulative Impact – The proposed action and alternative, when combined with past, present and reasonably foreseeable actions would help reduce the potential for the spread of weeds, which are a threat to recreation. Additional impacts to recreation on federal lands include those associated with wildfire, vegetation treatments, mining, livestock grazing, rights of ways, oil and gas development and adjacent private inholdings. Impacts to recreation resulting from activities on private property include adjacent residential and commercial land development as well as agricultural development.

No Action Alternative – Under the no action alternative, weed treatments could continue to occur after separate NEPA analysis, but without the coordination necessary to make an effective program using early detection rapid response. Re-treatment of large patches may or may not happen increasing the likelihood of weed spread and the possibility of having areas closed due to the degradation of land health until those concerns can be addressed.

VISUAL RESOURCES

Affected Environment: The UFO lies in western Colorado and is within parts of Montrose, Delta, Mesa, Gunnison, Ouray, and San Miguel Counties. Notable areas of the Field Office include the newly designated Dominguez-Escalante National Conservation Area and Wilderness, Gunnison Gorge National Conservation Area and Wilderness, the Unaweep Tabeguache Scenic and Historic Byway, San Juan Skyway, Grand Mesa Scenic and Historic Byway, and West Elk Loop Scenic Byway. Also included in the area are four notable river systems: the Gunnison, San Miguel, Dolores, and Uncompahgre.

The area falls into two physiographic provinces (the Colorado Plateau and Southern Rocky Mountains) and as a result has varied topography, geology, soil, and fauna and flora, including desert scrub, riparian, sagebrush parks, pinyon/juniper woodlands, mountain shrub, ponderosa pine, and spruce/fir forests. The topography within the UFO is varied and ranges from lowland riparian along the Dolores River (4,706 feet) to red rock desert to pinyon/juniper woodland up to sub-alpine forest on Storm King Mountain (11,412 feet). The UFO has extensive areas of rugged terrain, deep canyons, spectacular river valleys, dramatic cliff s and mesas, and other prominent geologic features.

The BLM's visual resource management system is used to help ensure that proposed man-made features or surface-disturbing activities on public lands are constructed properly and consider the existing landscape character and inherent visual resources. The BLM Manual 8410-1 (Visual Resource Management) defines and categorizes visual resource management classes that provide objectives for these resources as projects are proposed and implemented in the landscape. These Visual Resource Management (VRM) classes are determined through an inventory process described in the manual mentioned above, and are used to provide guidance to BLM and project proponents when contemplating proposed surface disturbing activities. Class I areas are intended to protect an area from visible change, Class II areas allow for visible changes that do not attract attention, Class III areas allow for visible changes that attract attention but are not dominant, and Class IV areas allow for visible changes that can dominate the landscape. The VRM Classes for the Uncompahgre Field Office can be found in the Uncompahgre Basin Resource Management Plan (RMP) which range from Class I to IV.

Environmental Consequences:

Proposed Action and Alternative 1 – Assuming that treatments would be effective in reducing or eliminating invasive species populations and promoting conditions that favor the development of native plant communities, the visual quality of degraded landscapes would improve over the long term. Landscapes would have more capability to sustain natural communities and have positive visual impacts.

Cumulative Impact – Long term impacts to visual resources are expected. There could be short term impacts while native vegetation establishes.

No Action Alternative – Under the no action alternative, weed treatments could continue to occur after separate NEPA analysis, but without the coordination necessary to make an effective program using early detection rapid response. Many weed infestations would be left untreated or would be invaded in the future by invasive plants. Landscapes containing a large component of invasive species often contrast with surrounding natural landscapes and have a negative visual impact.

CUMULATIVE IMPACTS SUMMARY

Cumulative impacts are the environmental impacts that could result from the implementation of the Proposed Action or alternative, when added to the impacts from all other past, present, and reasonably foreseeable activities (herbicide application, mechanical removal of vegetation, manual vegetation control, fire), regardless of who is conducting such activities. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

Cumulative impacts for each element or resource are discussed within each of the sections. Impacts resulting from the proposed Integrated Weed Management Program (IWMP) could add incrementally to impacts from other activities, resulting in a short-term low-level increase in impacts already discussed. Cumulative impacts associated with IWM activities were analyzed in greater detail in the PEIS (BLM 2007a).

Past, Present and Reasonably Foreseeable Future Actions

The primary vegetation management (past, existing and foreseeable) within the proposed project boundary are associated with recreation, mining, oil and gas, vegetation treatments, prescribed fire, wildfire, livestock grazing, wildlife projects, municipal infrastructure, county/state roads/HWYs and residential/agricultural development. Past, present and foreseeable actions are expected to be similar.

Recreational activities have occurred across the UFO although the most concentrated recreation activity has been in the GGNCA and localized areas within the UFO and DENCA. The localized areas within the UFO include three areas within Dry Creek Basin, Escalante Creek, and the San Miguel river corridor. Weed control has occurred in association with approved recreation activities.

Mining activity has been an important part of the local economies throughout the past and continues to play an important role in local economies at the present time. Weed introduction and spread will continue to be addressed through stipulations and conditions of approval on authorized activities.

Oil and gas activity within the region has included coal-bed methane wells and conventional gas wells. These have generally been located in the North Fork area, and the west end above Paradox Valley. Noxious weeds introduction and establishment will continue to be addressed through site specific NEPA and local weed plans and through stipulation and or conditions of approval on authorized activities.

Vegetation treatments have been completed in the past for livestock, wildlife, wildland fire mitigation, and overall land health. With these treatments the introduction of weeds and weed establishment has been a concern. Weed control efforts have been implemented and monitoring continues.

Prescribed fire has occurred across the field office in the past and will continue to occur in the future. Introduction and spread of weeds will continue to be a concern where prescribed fire is used. In addition, mitigation and short and long term monitoring are part of the burn plan.

Wildfire is a natural occurrence in the arid west. The UFO experiences wildland fire and will continue to experience wildfire into the future. Weed control and continued monitoring has been implemented post fire when needed.

Livestock grazing is one of the multiple uses within the BLM. Public land grazing will continue to be a multiple use on public lands. Weed control and continued monitoring has been implemented in areas of high spread potential.

Municipal infrastructure such as power lines, transmission lines, phone lines, fiber optics and other buried lines have occurred in the past and will continue to occur in the future with human development in and around the valley. Right of way authorizations require the operator to control weeds.

County/State Roads/HWYs these are part of the human infrastructure that has been developed over the years to support growth in the cities/towns and urban interface areas of the area. Maintenance of these improvements, including controlling weeds is occurring and will continue into the future.

Residential/agricultural development has occurred steadily and will continue to occur in the valley and urban interface areas adjacent to BLM managed lands. Increased agriculture and residential development in the past has introduced weeds that are persisting at the present time, resulting in the need for weed control.

With this development irrigation canals were built to support agriculture products from farming and livestock to supporting lawns, gardens, and irrigated pastures at the expense of native rangeland. With these water delivery systems weeds have been a major concern in the past and are continuing to be a concern at the present time. BLM continues to work collaboratively with the affected counties to combat the weed infestations.

PERSONS / AGENCIES CONSULTED

Colorado Division of Wildlife (Colorado Parks and Wildlife)
Ouray County Weed Department
Montrose County Weed Department
San Miguel Weed Department
Delta County Weed Department
Grazing Permittees

INTERDISCIPLINARY REVIEW: The following BLM personnel have contributed to and have reviewed this environmental assessment.

Name	Title	Area of Responsibility
J. Sondergard	Hydrologist	Soils, Floodplains, Water Quality, Farmlands Prime and Unique
L. Rogers	Rangeland Mgt. Specialist	Invasive species, Noxious Weeds, Livestock Management, ACEC
J. Jackson	Outdoor Recreation Planner	Recreation, VRM, Noise, Transportation
E. Franz	Outdoor Recreation Planner	Wilderness Character, Wild and Scenic Rivers
G. Hadden	Archaeologist	Cultural Survey, Native American Religious Concerns
A. Clements	Ecologist	Wetlands & Riparian Zones, Vegetation
T. Pfifer	Realty Specialist Supervisor	Realty Authorizations
B. Krickbaum	Planner, Environmental Coord.	NEPA review, Environmental Justice
K. Homstad	Fuels Specialist	Fire, Fuels
K. Holsinger	Botanist	Threatened and Endangered Species, Migratory Birds, Wildlife (Terrestrial and Aquatic)
A. Kraus	Hazdarous Materials Specialist	Waste, Hazardous or Solid

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APPENDIX A

Standard Operating Procedures for
Weed Treatments on BLM Lands in the UFO Area

Resource Element	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. • 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 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 revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Clean OHVs to remove seeds. • A buffer zone between private land and BLM land would be a minimum of 100 feet for aerial application, 25 feet for vehicle application, and 10 feet for hand application (as with a wand or backpack) (BLM manual H-9011-1), or by label requirements whichever is more restrictive. BLM may take into account a higher degree of sensitivity in an area and may make buffers larger than suggested to account for local concerns.
Resource Element	Standard Operating Procedure
Air Quality See Manual 7000 (Soil, Water, and Air Management)	• Consider the effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks. • Apply herbicides in favorable weather conditions to minimize drift. For example, do not treat when winds exceed 10 mph (6 mph for aerial applications) or rainfall is imminent. • Use drift reduction agents, as appropriate, to reduce the drift hazard. • Select proper application equipment (e.g., spray equipment that produces 200- to 800-micron diameter droplets [spray droplets of 100 microns and less are most prone to drift]). • Select proper application methods (e.g., set maximum spray heights, use appropriate buffer distances between spray sites and non-target resources).
Soil See Manual 7000 (Soil, Water, and Air Management)	• Minimize treatments in areas where herbicide runoff is likely, such as steep slopes when heavy rainfall is expected. • Minimize use of herbicides that have high soil mobility, particularly in areas where soil properties increase the potential for mobility. • Do not apply granular herbicides on slopes of more than 15% where there is the possibility of runoff carrying the granules into non-target areas.
Water Resources See Manual 7000 (Soil, Water, and Air Management)	• Consider climate, soil type, slope, and vegetation type when developing herbicide treatment programs. • Select herbicide products to minimize impacts to water. This is especially important for application scenarios that involve risk from active ingredients in a particular herbicide, as predicted by risk assessments. • Use local historical weather data to choose the month of treatment. • Considering the phenology of the target species, schedule treatments

	based on the condition of the water body and existing water quality conditions. • Plan to treat between weather fronts (calms) and at appropriate time of day to avoid high winds that increase water movements, and to avoid potential stormwater runoff and water turbidity. • Review hydrogeologic maps of proposed treatment areas .Note depths to groundwater and areas of shallow groundwater and areas of surface water and groundwater interaction. Minimize treating areas with high risk for groundwater contamination. • Conduct mixing and loading operations in an area where an accidental spill would not contaminate a water body. • Do not rinse spray tanks in or near water bodies. Do not broadcast pellets where there is danger of contaminating water supplies. • Maintain buffers between treatment areas and water bodies. Buffer widths should be developed based on herbicide- and site-specific criteria to minimize impacts to water bodies. • Minimize the potential effects to surface water quality and quantity by stabilizing terrestrial areas as quickly as possible following treatment.
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 10 feet for hand-spray applications.
Resource Element	• Standard Operating Procedure
Vegetation See Handbook H-4410-1 (National Range Handbook) and Manuals 5000 (Forest Management) and 9015 (Integrated Weed Management)	• Refer to the herbicide label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Use native or sterile species for revegetation 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 revegetation 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. • 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.
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 either avoid using formulations with the surfactant POEA or seek to use the formulation with the lowest amount of POEA available to reduce risks to amphibians and aquatic organisms.
Resource Element	Standard Operating Procedure
Threatened, Endangered, and Sensitive Species See Manual 6840 (Special Status Species)	• Survey for special status species before treating an area. 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.
Livestock	• Whenever possible and whenever needed, schedule treatments when livestock are not present in the treatment area. Design treatments to take advantage of normal livestock grazing rest periods, when possible. • As directed by the herbicide label, remove livestock from treatment

See Handbook H-4120-1 (Grazing Management)	sites prior to herbicide application, where applicable. • Use herbicides of low toxicity to livestock, where feasible. • Take into account the different types of application equipment and methods, where possible, to reduce the probability of contamination of non-target food and water sources. • Avoid use of diquat in riparian pasture while pasture is being used by livestock. • Notify permittees of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. • Notify permittees of livestock grazing, feeding, or slaughter restrictions, if necessary. • Provide alternative forage sites for livestock, if possible.
Visual Resources See Handbooks H-8410-1 (Visual Resource Inventory) and H-8431-1 (Visual Resource Contrast Rating) and Manual 8400 (Visual Resource Management)	• Minimize the use of broadcast foliar applications in sensitive watersheds to avoid creating large areas of browned vegetation. • Consider the surrounding land use before assigning aerial spraying as an application method. • Minimize offsite drift and mobility of herbicides (e.g., do not treat when winds exceed 10 mph; minimize treatment in areas where herbicide runoff is likely; establish appropriate buffer widths between treatment areas and residences) to contain visual changes to the intended treatment area. • If the area is a Class I or II visual resource, ensure that the change to the characteristic landscape is low and not easily seen (Class I) or, if seen, does not attract the attention of the casual viewer (Class II). • Lessen visual impacts by 1) designing projects to blend in with topographic forms, 2) leaving some low-growing trees or planting some low-growing tree seedlings adjacent to the treatment area to screen short-term effects, and 3) revegetating the site following treatment. • When restoring treated areas, design activities to repeat the form, line, color, and texture of the natural landscape character conditions to meet established Visual Resource Management (VRM) objectives.
Wilderness and Other Special Areas See Handbooks H-8550-1 (Management of WSAs) and H-8560-1 (Management of Designated WSAs) and Manual 8351 (WSRs)	• Encourage backcountry pack and saddle stock users to feed their livestock only weed-free feed for several days before entering a wilderness area. • Encourage stock users to tie and/or hold stock in such a way as to minimize soil disturbance and loss of native vegetation. • Revegetate disturbed sites with native species if there is no reasonable expectation of natural regeneration. • Provide educational materials at trailheads and other wilderness entry points to educate the public on the need to prevent the spread of weeds.

Resource Element	Standard Operating Procedure
Wilderness and Other Special Areas (cont.)	• Use the "minimum tool" to treat noxious and invasive vegetation, relying primarily on use of ground-based tools, including backpack pumps, hand sprayers, and pumps mounted on pack and saddle stock. • Use chemicals when they are the minimum method to control weeds that are spreading within the wilderness or threaten lands outside the wilderness. • Give preference to herbicides that have the least impact on non-target species and the wilderness environment. • Implement herbicide treatments during periods of low human use, where feasible. • Address wilderness and special areas in management plans. • Within 0.25 mile on either side of the river of all eligible or suitable WSRs, proposed treatments must preserve the identified Outstanding Remarkable Values and preliminary classifications.
Recreation See Handbook H-1601-1 (Land Use Planning Handbook, Appendix C)	• Schedule treatments to avoid peak recreational use times, while taking into account the optimum management period for the targeted species. • Notify the public of treatment methods, hazards, times, and nearby alternative recreation areas. • Adhere to entry restrictions identified on the herbicide label for public and worker access. • Post signs noting exclusion areas and the duration of exclusion, if necessary. • Use herbicides during periods of low human use, where feasible.
Social and Economic Values	• Consider surrounding land use before selecting aerial spraying as a method, and avoid aerial spraying near agricultural or densely populated areas. • Post treated areas and specify reentry or rest times, if appropriate. • Notify grazing permittees of livestock feeding restrictions in treated areas, if necessary, as per label instructions. • Notify the public of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. • Control public access until potential treatment hazards no longer exist. • Observe restricted entry intervals specified by the herbicide label. • Notify local emergency personnel of proposed treatments. • Use spot applications or low-boom broadcast applications where possible to limit the probability of contaminating non-target food and water sources, especially vegetation over areas larger than the treatment area. • Consult with Native American tribes and Alaska Native groups to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments.

	• To the degree possible within the law, hire local contractors and workers to assist with herbicide application projects and purchase materials and supplies, including chemicals, for herbicide treatment projects through local suppliers. • To minimize fears based on lack of information, provide public education on the need for vegetation treatments and the use of herbicides in an Integrated Pest Management program for projects proposing local use of herbicides.
Rights-of-Way	• Coordinate vegetation management activities where joint or multiple use of a ROW exists. • Notify other public land users within or adjacent to the ROW proposed for treatment. • Use only herbicides that are approved for use in ROW areas.
Resource Element	• Standard Operating Procedure
Human Health and Safety	• A buffer zone between private land and BLM land would be a minimum of 100 feet for aerial application, 25 feet for vehicle application, and 10 feet for hand application (as with a wand or backpack) (BLM manual H-9011-1), or by label requirements whichever is more restrictive. BLM may take into account a higher degree of sensitivity in an area and may make buffers larger than suggested to account for local concerns. • Use protective equipment as directed by the herbicide label. • Post treated areas with appropriate signs at common public access areas. • Observe restricted entry intervals specified by the herbicide label. • Provide public notification in newspapers or other media where the potential exists for public exposure. • Have a copy of MSDSs at work site. • Notify local emergency personnel of proposed treatments. • Contain and clean up spills and request help as needed. • Secure containers during transport. • Follow label directions for use and storage. • Dispose of unwanted herbicides promptly and correctly.
Cultural Resources and Native American Religious Concerns See Handbooks H-8120-1 (Guidelines for Conducting Tribal	• Follow standard procedures for compliance with Section 106 of the NHPA, as implemented through the Colorado State protocol. • Consult with tribes to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments. • Work with tribes to minimize impacts to these resources. • Follow guidance under Human Health and Safety in areas that may be visited by Native peoples after treatments. • Native American Traditional Cultural Properties (TCPs) are to be considered in the planning and completion of Federal actions in accordance with Section 106 of the NHPA, as amended (Guidelines of Bulletin 38 of the National Register). Physically affecting the integrity of traditional cultural properties, including plant collecting

Consultation) and Manuals 8100 (The Foundations for Managing Cultural Resources), 8120 (Tribal Consultation Under Cultural Resource Authorities).	places, should be avoided when possible. To protect and preserve Native American religious practices, the Executive Order of May 24, 1996 requires the implementation of "procedures to ensure reasonable notice of Proposed Actions or land management policies that may restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites." This notice further states, "where appropriate, agencies shall maintain the confidentiality of sacred sites." The UFO will protect TCPs in consultation with the appropriate tribal representatives. • Any person who, without a permit, injures, destroys, excavates, appropriates or removes any historic or prehistoric ruin, artifact, object of antiquity, Native American remains, Native American cultural item, or archaeological resources on public lands is subject to arrest and penalty of law (16 USC 433, 16 USC 470, 18 USC 641, 18 USC 1170, and 18 USC 1361). • See also: Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act.

APPENDIX B

Best Management Practices (BMPs) for Preventing Infestations of Noxious and Invasive Weeds

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 revegetated 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 revegetation 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 revegetation 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.

B. Roads and Utilities

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 revegetation. 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 are 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
    - Revegetation
    - 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 are 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**

Fire Management Plans

- Prescribed fire plans should include pre-burn invasive weed inventory and risk assessment components as well as post-burn mitigation components.
- Integrate prescribed fire and other weed management techniques to achieve best results. This may involve post-burn herbicide treatment or other practices that require careful timing.
- Include weed prevention and follow-up monitoring in all prescribed fire activities. Include in burn plans the possibility for post-burn weed treatment.

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-suppression

- 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.

Post-fire Rehabilitation

- Have a weed specialist review burned area rehabilitation reports to ensure proper and effective weed prevention and management is addressed.
- Thoroughly clean the undercarriage and tires of vehicles and heavy equipment before entering a burned area.
- Treat weeds in burned areas. Weeds can recover as quickly as 2 weeks following a fire.

- Schedule inventories 1 month and 1 year post-fire to identify and treat infestations. Eradicate or contain newly emerging infestations.
- Restrict travel to established roads to avoid compacting soil that could hinder the recovery of desired plants.
- Determine soon after a fire whether revegetation is necessary to speed recovery of a native plant community, or whether desirable plants in the burned area will recover naturally. Consider the severity of the burn and the proportion of weeds to desirable plants on the land before it burned. In general, more severe burns and higher pre-burn weed populations increase the necessity of revegetation. Use a certified weed-free native seed mix.
- Inspect and document weed infestations on fire access roads, equipment cleaning sites, and staging areas. Control infestations to prevent spread within burned areas.
- Seed and straw mulch to be used for burn rehabilitation (for wattles, straw bales, dams, etc.) should be certified weed-free.
- Replace soil and vegetation right side up when rehabbing fire line.

APPENDIX C

UFO/GGNCA/DENCA
Conservation Measures for Listed, Proposed or Candidate
Threatened or Endangered Species

A. GENERAL

- The BLM will identify appropriate application methods, including rate, time, and mode of application (source characterization) for projects involving the use of herbicides.

- The BLM will provide all weed applicators with pertinent information developed during preparation of the ERAs cited in the PEIS and PBA (BLM 2007a, c) to evaluate the potential for deleterious chemical exposures to plant and animal species of special concern from use of herbicides to treat weed infestations. Information on the chemical characteristics of the herbicide, the mode and rate of application of the herbicide, and local environmental conditions (e.g., soil type, rainfall) will be considered in this evaluation. The resultant exposure risks can then be compared to a table listing risk levels to determine the potential for an acute or chronic risk to the species of interest. Risk levels for TEPC species are provided in the ERAs.

- The BLM will incorporate SOPs, mitigation measures, and conservation measures identified in the PEIS and PBA or in future ERAs and BAs that address herbicides, TEPC species, and site conditions similar to those for projects in the UFO area.

- The BLM will use herbicides in a manner consistent with labeling instructions, design criteria, and any issued reasonable and prudent measures with terms and conditions to ensure that unlawful taking of a TEPC species does not occur. In the unanticipated and unlikely event of an adverse effect on any TEPC species, formal consultation will be initiated with the USFWS pursuant to ESA Section 7 for species not considered for formal consultation under this BA/BO. The biological opinion (BO) issued by the USFWS at the conclusion of that process will include a statement exempting the BLM from the prohibitions against the "take" of a listed species under the incidental take provisions of ESA Section 9.

B. PLANTS

The following must be included with all weed management plans involving Herbicides Proposed for Use within 600 Feet or Less of TEPC Plant Species:

- An inventory will be conducted to determine presence/absence and map the locations of TEPC plant species prior to conducting any chemical control within 600 Feet or Less of TEPC Plant Species.

- The Fish and Wildlife Service would be apprised of all planned herbicide treatments, with the potential for detrimental impacts, within occupied habitat prior to application.

- Manual control (pulling weeds) would be the preferred method of control within occupied habitat unless: the weed infestation is too large to economically preform, or if the weed species cannot be controlled with manual methods.

- The UFO will use only the five herbicides listed in Table 6 to manage weeds within 600 feet or less of TEPC terrestrial plants or populations.

- All herbicides proposed for use within 600 feet of TEPC plants with the exception of Glyphosate and Imazapic will be applied by spot application only.

- Monitoring will be established prior to herbicide treatments within occupied TEPC plant habitat. Monitoring will be designed to assess impacts to TEPC individuals or populations, efficacy of weed management, as well as aid in adapting future weed management within occupied TEPC plant habitats to limit impacts.

- Seasonal timing of weed treatments will be conducted with the least potential to adversely affect TEPC plant species.

- BLM Applicators, cooperators, and contractors will be trained to recognize TEPC plant species, and will be familiar with the locations of occupied habitat within the UFO. Weed application crews would be provided with maps of known TEPC plant locations.

- Herbicides would be applied as per label instructions and restrictions.

- Mixing and cleaning of herbicides will not occur within occupied TECP plant habitats.

- Motorized herbicide application equipment would be restricted to existing roads and trails within 600 feet of known TEPC individuals or populations.

- The lowest herbicide application rate proven to be effective for species control/eradication will always be utilized.

- To minimize drift, application of all herbicides would follow label directions for reducing drift.

- Application would not occur if there is a threat of precipitation within 24 hours.

- To further limit the potential for damaging TEPC plants, application equipment and calibrations (i.e. spray pressure and droplet size) will be selected to deliver sprays which minimize atomized drift in situations where herbicide could potentially contact herbaceous surfaces of TEPC plants.

- Where practical TEPC plants would be covered to prevent herbicide contact from ground based herbicide application within 15 feet of individuals or populations.

- Where practical when noxious weeds are interspersed with TEPC plants wicking will be the

preferred application method used.

- Chlorsulfuron and Metsulfuron Methyl will only be used for hoary cress (whitetop) control, currently not within occupied habitat but within 600 feet of occupied habitat.

- Only non-ionic surfactants would be utilized within 600 feet of TEPC plants or populations.

- Within 600 feet of TEPC plants or populations Imazapic will only be utilized at the maximum rate for fall treatment of Russian knapweed.

- Aerial application of Glyphosate or Imazapic will not exceed the application rates described in Table 6 within occupied habitats.

- For active restoration of occupied cactus habitats aerial application of Glyphosate or Imazapic will be considered for plant communities that have ≥ 50% composition invasive nonnative annuals. Only nonionic surfactants would be utilized in these scenarios.

- For fire disturbances in occupied cactus habitats aerial application of Glyphosate or Imazapic will be considered for plant communities that have ≥ 15% composition invasive nonnative annuals. The full array of approved surfactants would be available for use.

- Herbicide application records where TEPC plants are involved would be provided to the Service annually.

- The UFO in coordination and cooperation with the Fish and Wildlife Service and Denver Botanic Gardens would seek to actively reestablish TEPC plant populations degraded by weed management activities. A full array of reestablishment actions or experiments would be pursued i.e. direct reseeding, green house raised transplants etc.

Table 6. Herbicides Proposed for Use within 600 Feet of TEPC Plant Species [1, 2, 3]

Active Ingredient	Buffer Width	Method(s) to Which Applied
Chlorsulfuron	<600 feet	Ground, ≤ 1oz./acre3 equal to 0.047 lbs acid equivalent/acre
	1,500 feet	Aerial
Clopyralid	<600 feet/ Within Occupied Habitat	Ground, ≤ 16 oz./acre3 equal to 0.37 lbs acid equivalent/acre
	0.5 mile	aerial
Glyphosate	Within Occupied Habitat	Ground, ≤ 12oz./acre3 equal to 0.281 lbs acid equivalent/acre
	Within Occupied Habitat	Ground, maximum rate; aerial ≤ 12 oz./acre3
Imazapic	Within Occupied Habitat	Ground, typical or maximum rates
	Within Occupied Habitat	Aerial ≤ 6oz./acre3 equal to 0.093 lbs acid equivalent/acre
	900 feet	Aerial, maximum rate
Metsulfuron Methyl	<600 feet	Ground ≤ 1.5 oz./acre3 equal to 0.056 lbs acid

		equivalent/acre
	0.5 mile	Ground or aerial, maximum rate

1 Source: BLM 2007a
2 See Appendix A for information related to aquatic species and other specific situations (e.g., areas vulnerable to wind erosion of treated soil.
3. Source: Herbicide Handbook Weed Science Society of America 9th Edition 2007

At a minimum, the following must be included with all weed management plans:

- Survey all proposed treatment areas within potential TEPC habitat by a botanically qualified biologist, botanist, or ecologist to determine the presence/absence of the species.

- Establish pre-treatment monitoring programs to track the size and vigor of TEPC populations and the state of their habitats. These monitoring programs would help in anticipating the future effects of vegetation treatments on TEPC plant species.

- Assess the need for site re-vegetation post treatment to minimize the opportunity for noxious weed invasion and establishment.

The following considerations must also be addressed in the plans:

- Because of high risk for damage to TEPC plants and their habitat from use of domestic animals to contain weeds, avoid this method within 330 feet of sensitive plant populations UNLESS the grazing treatment is specifically designed to maintain or improve existing populations of desirable species.

- Avoid use of OHVs (ATVs and 4WD vehicles) for ground treatments in suitable or occupied habitat.

- Do not use biological control agents (except for domestic animals) that affect target plants in the same genus as TEPC species present or potentially present in the area. Establish buffer distances based on the dispersal distance of the biocontrol agent.

- Prior to using biological control agents that effect target plants in the same family as TEPC species, evaluate the specificity of the agent with respect to factors such as physiology and morphology and determine risks to the TEPC species.

- Conduct post-treatment monitoring to determine the effectiveness of the project.

In addition, the following guidance must be considered in all weed management plans in which herbicide treatments are proposed to minimize or avoid risks to TEPC species. The exact conservation measures to be included in management plans would 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 TEPC species on lands not administered by the BLM would need to be considered if they are located near proposed herbicide treatment sites.

- Do not use herbicide treatments in areas where TEPC plant species may be subject to direct spray if using herbicides or techniques not previously discussed above.

- Ensure that applicators review, understand, and conform to the "Environmental Hazards" section on herbicide labels (this section warns of known pesticide risks and provides practical ways to avoid harm to organisms or the environment).

- To avoid negative effects to TEPC plant species from offsite drift, surface runoff, and/or wind erosion, establish suitable buffer zones between treatment sites and known or suspected of TEPC plants and apply the site-specific precautions outlined below.

- Follow all instructions and standard operating procedures (SOPs) to avoid spill or direct spray of herbicides into aquatic habitats that support TEPC plant species.

- Follow all BLM operating procedures for avoiding herbicide treatments during climatic conditions that would increase the likelihood of spray drift or surface runoff.

- The buffer distances listed below for broadcast spraying of the BLM-approved herbicides are conservative estimates compiled from ERAs cited in the PEIS and PBA (BLM 2007a, c). In most cases, a suggested buffer represents the first modeled distance from an application site for which no risks were predicted. Manual or spot treatments of undesirable vegetation may occur within the listed buffer zones if it is determined that TEPC plants would not be affected. Additional precautions during spot treatments within buffer distances from TEPC plants or their habitat would be considered while planning local.

- Note that the buffer distances for aquatic TEPC plants reported in ERAs are typically smaller than those for terrestrial TEPC plants, indicating less susceptibility to injury or mortality from direct spray or aerial drift. The buffer distances for aquatic plants refer only to emergent or submergent species (i.e., that occur in seasonally or permanently inundated sites). Buffer distances used by the UFO for herbicide treatments in proximity to riparian plants or non-aquatic wetland plants would be the same as for terrestrial TEPC plants.

2,4-D

- Do not apply within 0.5 mile of terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants.
- Do not use aquatic formulations in aquatic habitats containing aquatic TEPC plants.

Bromacil

- Do not apply aerially.
- Do not apply within 1,200 feet of terrestrial TEPC plants.
- Do not apply within 100 feet of aquatic habitat containing aquatic TEPC plants when using a low boom at the typical rate.
- Do not apply within 900 feet of aquatic habitat containing aquatic TEPC plants when using a low boom at the maximum rate or a high boom at either rate.

- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

Chlorsulfuron

- Do not apply aerially within 1,500 feet of terrestrial TEPC plants.
- Do not apply aerially at the typical application rate within 1500 feet of aquatic habitats containing aquatic TEPC plants.
- Do not apply aerially at the maximum application rate within 0.5 mile of aquatic habitats containing aquatic TEPC plants.
- Do not apply by ground methods within 25 feet of terrestrial TEPC plants in soils with a pH >6, 100 feet for soils with a pH < 6.
- Do not apply by ground methods within 25 feet of aquatic habitats containing aquatic TEPC plants.

Clopyralid

- Do not apply aerially within 0.5 mile of terrestrial TEPC plants.
- Do not apply within 600 feet of terrestrial TEPC plants when using a low boom at the typical rate.
- Do not apply within 0.5 mile of terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants when using a high boom at the rate maximum rate.
- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

Dicamba

- Do not apply within 1,050 feet of terrestrial TEPC plants.
- Do not apply within 25 feet of aquatic habitats containing aquatic TEPC plants.
- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

Diflufenzopyr

- Do not apply aerially.
- Do not apply within 100 feet of terrestrial TEPC plants using a low boom at the typical rate.
- Do not apply within 900 feet of terrestrial TEPC plants using a low boom at the maximum rate.
- Do not apply within 500 feet of terrestrial TEPC plants using a high boom at either rate.
- Do not apply within 25 feet of aquatic habitats containing aquatic TEPC plants.
- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

Diquat

- Do not apply aerially within 1,200 feet of terrestrial TEPC plants.
- Do not apply by ground methods within 900 feet of terrestrial TEPC plants at the typical rate.

- Do not apply by ground methods within 1,000 feet of terrestrial TEPC plants at the maximum rate.
- Do not use in aquatic habitats containing aquatic TEPC plants.

Diuron

- Do not apply aerially.
- Do not apply within 1,100 feet of terrestrial TEPC plants.
- Do not apply within 900 feet of aquatic habitats containing aquatic TEPC plants when using a low boom at the typical rate.
- Do not apply within 1,100 feet of aquatic habitats containing aquatic TEPC plants when using a low boom at the maximum rate or a high boom at either rate.
- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

Fluridone

- Do not apply within 0.5 mile of terrestrial TEPC plants.

Glyphosate

- Do not apply aerially within 300 feet of terrestrial TEPC plants unless the rate is less than or equal to 12oz/acre and outside the primary growing season.
- Do not apply within 50 feet of terrestrial TEPC plants when using a low boom at the typical rate.
- Do not apply within 100 feet of terrestrial TEPC plants when using a low boom at the maximum rate or a high boom at either rate.
- Do not apply within 300 feet of terrestrial TEPC plants unless the rate is less than or equal to 12oz/acre and outside the primary growing season. .

Hexazinone

- Do not apply aerially within 0.5 mile of terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants.
- Do not apply within 300 feet of terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants when using a low boom at the typical rate.
- Do not apply within 900 feet of terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants when using a low boom at the maximum rate.
- Do not apply within 0.5 mile of terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants when using a high boom at either rate.
- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

Imazapic

- Do not apply aerially within 600 feet of terrestrial TEPC plants unless the rate is less than or equal to 6 oz/acre.
- Do not apply aerially at the maximum rate within 900 feet of terrestrial TEPC plants.
- Do not apply aerially at the typical rate within 100 feet of aquatic habitats containing aquatic TEPC plants.
- Do not apply aerially at the maximum rate within 300 feet of aquatic habitats containing aquatic TEPC plants.
- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

Imazapyr

- Do not apply within 900 feet of terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants at the typical rate when using aerial or ground methods at the typical rate.
- Do not apply within 0.5 mile of terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants when using aerial or ground methods at the maximum rate.
- Do not use aquatic formulations in aquatic habitats containing aquatic TEPC plants.
- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

Metsulfuron Methyl

- Do not apply aerially within 1,500 feet of terrestrial TEPC plants.
- Do not apply aerially at the typical application rate within 1500 feet of aquatic habitats containing aquatic TEPC plants.
- Do not apply aerially at the maximum application rate within 0.5 mile of aquatic habitats containing aquatic TEPC plants.
- Do not apply by ground methods within 25 feet of terrestrial TEPC plants.
- Do not apply by ground methods within 25 feet of aquatic habitats containing aquatic TEPC plants.

Overdrive® (dicamba + diflufenzopyr)

- Do not apply aerially.
- Do not apply within 100 feet of terrestrial TEPC plants when using a low boom at the typical rate.
- Do not apply within 900 feet of terrestrial TEPC plants when using a low boom at the maximum rate or a high boom at either rate.
- Do not apply within 25 feet of aquatic habitats containing aquatic TEPC plants.
- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

Picloram

- Do not apply within 0.5 mile of terrestrial TEPC plants.
- Do not apply aerially.

Sulfometuron Methyl

- Do not apply within 1,500 feet of terrestrial TEPC plants.
- Do not apply aerially within 1,500 feet of aquatic habitats containing aquatic TEPC plants.
- Do not apply by ground methods within 900 feet of aquatic habitats containing aquatic TEPC plants.
- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

Tebuthiuron

- Do not apply within 25 feet of terrestrial TEPC plants when using a low boom at the typical rate.
- Do not apply within 50 feet of terrestrial TEPC plants when using a low boom at the maximum rate or a high boom at the typical rate.
- Do not apply within 900 feet of terrestrial TEPC plants when using a high boom at the maximum rate.
- Do not apply within 25 feet of aquatic habitats containing aquatic TEPC plants.
- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

Triclopyr Acid

- Do not apply aerially at the typical rate within 500 feet of terrestrial TEPC plants at the typical rate.
- Do not apply aerially at the maximum rate within 0.5 mile or terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants.
- Do not apply within 300 feet of terrestrial TEPC plants using a low boom at the typical rate.
- Do not apply within 0.5 mile of terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants when using a low boom at the maximum rate or a high boom at either rate.
- If applying to aquatic habitats containing aquatic TEPC plants occur, do not exceed the targeted water concentration on the product label.
- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

Triclopyr BEE

- Do not apply aerially at the typical rate within 500 feet of terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants.
- Do not apply aerially at the maximum rate within 0.5 mile of terrestrial TEPC plants or

aquatic habitats containing aquatic TEPC plants.

- Do not apply within 300 feet of terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants when using a low boom at the typical rate.
- Do not apply within 0.5 mile of terrestrial TEPC plants or aquatic habitats containing aquatic TEPC plants when using a low boom at the maximum rate or a high boom at either rate.
- Do not use aquatic formulations in aquatic habitats containing aquatic TEPC plants.
- Do not apply within 0.5 mile of TEPC plants in areas where wind erosion is likely.

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 UFO would also consider measures to prevent the spread of weeds in occupied or suitable habitat conjunction with weed treatments and all projects involving ground-disturbing activities. 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 bare sites as soon as appropriate after treatment, and at a time of year when it is likely to be successful.
- In suitable habitat for TEPC species, avoid the use of non-native species for re-vegetation.
- Use only seed that is certified free of noxious weed seed in suitable TEPC species habitat.
- Use only certified weed-free straw and hay bales for erosion control in suitable TEPC 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.

In addition, the UFO would develop and implement additional conservation measures, as necessary, during project-level analysis at the project level.

C. AQUATIC ANIMALS

Conservation Measures for Site Access and Fueling/Equipment Maintenance

- For treatments occurring in watersheds with TEPC species or designated critical habitat, or in undesignated critical habitat (i.e., unoccupied habitat critical to species recovery):
- Where feasible, access work site only on existing roads, and limit all travel on roads when damage to the road surface will result or is occurring.
- Where TEPC aquatic species occur, consider ground-disturbing activities on a case by case basis, and implement SOPs to ensure minimal erosion or impact to the aquatic habitat.
- Do not conduct biomass removal (harvest) activities that will alter the timing, magnitude, duration, or spatial distribution of peak, high, and low flows outside the range of natural variability.
- **Within riparian areas**, do not drive vehicles off established roads; do not land

helicopters except in emergencies.

- **Outside riparian areas**, do not drive vehicles off established roads on slopes steeper than 20%.
- **Within 150 feet of wetlands or riparian areas**, do not fuel/refuel equipment, store fuel, or perform equipment maintenance (locate all fueling and fuel storage areas, as well as service landings outside protected riparian areas).
- Prior to helicopter fueling operations, prepare transportation, storage, and emergency spill plan and obtain the appropriate approvals; for other heavy equipment fueling operations use a slip-tank not greater than 250 gallons; prepare spill containment and cleanup provisions for maintenance operations.

Conservation Measures Related to Revegetation Treatments

- **Outside riparian areas**, avoid hydromulching within buffer zones established at the local level. This precaution will limit adding sediments and nutrients which increase water turbidity.
- **Within riparian areas**, engage in consultation at the local level to ensure re-vegetation activities incorporate knowledge of site-specific conditions and project design.

Conservation Measures Related to Herbicide Treatments

- Maintain equipment used for transportation, storage, or application of chemicals in a leak-proof condition.
- Do not store or mix herbicides, or conduct post-application cleaning within riparian areas.
- Ensure trained personnel monitor weather conditions prior to herbicide application.
- Strictly enforce all herbicide labels as they are the **LAW**.
- Follow all instructions and SOPs to avoid spilling or directly spraying herbicides into aquatic habitats.
- Do not broadcast spray when wind velocity exceeds 10 mph or label restrictions.
- Do not broadcast spray within 100 feet of open water when wind velocity exceeds 5 mph.
- Do not broadcast spray if precipitation is occurring or is expected within 24 hours.
- Do not broadcast spray if air turbulence is sufficient to affect the normal spray pattern.
- Do not spray aerial or ground-based broadcast methods within designated critical habitat (Colorado River and 100-year floodplain of riparian systems).
- Do not broadcast spray in upland habitats within 0.5 mile of aquatic habitat when the potential exists for runoff from the treated area into the aquatic habitat.
- Use only herbicides approved for use in aquatic systems when treating weeds in riparian areas, 100-year floodplains, or Designated Critical Habitat for TEPC fish species.
- Treat the smallest area that will achieve the desired level of weed control.
- Use the typical application rate, rather than the maximum application rate, whenever practicable based on the weed species, site conditions, application method, and desired level of weed control.

The special restrictions and buffer distances provided below are based on the information provided by ERAs and are designed to provide protection to TEPC plants. Observe the following buffers or restrictions on application methods for specific herbicides:

- Do not use diquat, terrestrial formulations of glyphosate, or triclopyr BEE to treat aquatic vegetation where aquatic vertebrates or TEPC aquatic invertebrates occur or may occur.
- Do not use chlorsulfuron, imazapic, imazapyr, metsulfuron methyl, or sulfometuron methyl to treat upland sites with the potential for transport by runoff or aerial drift into streams, ponds, or lakes where aquatic vertebrates or TEPC aquatic invertebrates occur or may occur.
- Do not broadcast spray diquat, glyphosate, picloram, or triclopyr BEE by either aerial or ground methods to treat upland sites adjacent to aquatic habitats that support or may support aquatic vertebrates or TEPC aquatic invertebrates.
- Do not use glyphosate formulations that include R-11 and either avoid formulations with the surfactant POEA or use the formulation with the lowest amount of POEA available.
- Do not apply diuron within 100 feet of aquatic habitat using a low boom or a high boom at the typical application rate, or within 900 feet of aquatic habitat using a high boom at the maximum rate.
- Do not apply diuron where the potential exists for aerial drift into fish-bearing waters.

Conservation Measures Related to Biological Control Treatments using Livestock

For treatments in **watersheds** that support TEPC species or in critical habitat:

- Where terrain permits, locate stock handling facilities, camp facilities, and improvements at least 300 feet from lakes, streams, and springs.
- Educate stock handlers about at-risk fish species and how to minimize negative effects to the species and their associated habitat.
- Employ appropriate dispersion techniques to range management, including judicial placement of salt blocks, troughs, and fencing, to prevent damage to riparian areas but increase weed control.
- Equip each watering trough with a float valve.
- For treatments within riparian areas, more protective measures are required:
- Do not conduct weed treatments involving domestic animals, except where it is determined that these treatments will not damage the riparian system, or will provide long-term benefits to riparian and adjacent aquatic habitats.
- Do not locate troughs, storage tanks, or guzzlers near streams with TEPC species, unless their placement will enhance weed-control effectiveness without damaging the riparian system.

In addition, the UFO/GGNCA/DENCA would develop and implement additional conservation measures, as necessary, during project-level analysis at the project level.

D. WILDLIFE

Conservation Measures – Canada Lynx

To minimize or avoid impacts to Canada lynx, the UFO/GGNCA/DENCA would apply the following measures:

- Prior to vegetation treatments, map lynx habitat within areas in which treatments are proposed to occur. Identify potential denning and foraging habitat, and topographic features that may be important for lynx movement (major ridge systems, prominent saddles, and riparian corridors).
- Design vegetation treatments in lynx habitat to approximate historical landscape patterns and disturbance processes.
- Avoid the construction of permanent firebreaks on ridges or saddles in lynx habitat.
- Where possible, keep linear openings out of mapped potential habitat and away from key habitat components, such as denning areas.
- When planning vegetation treatments, minimize the creation of linear openings (fire lines, access routes, and escape routes) that could result in permanent travel ways for competitors and humans.
- Obliterate any linear openings constructed within lynx habitat in order to deter future uses by humans and competitive species.
- Design burn prescriptions to regenerate or create snowshoe hare habitat (e.g., regeneration of aspen and lodgepole pine).
- If deemed necessary, defer livestock grazing following vegetation treatments to ensure the re-establishment of key plant species. Bureau of Land Management personnel should use resource goals and objectives to determine the need for this restriction and the length of deferment on a case by case basis.
- Give particular consideration to amounts of denning habitat, condition of summer and winter foraging habitat, as well as habitat linkages, to ensure that that treatments do not negatively impact lynx. If there is less than 10% lynx habitat in an LAU, defer vegetation treatments that would delay development of denning habitat structure. Protect habitat connectivity within and between LAUs.
- Do not apply any herbicide by aerial methods directly over forested subalpine spruce-fir habitats.
- Do not use 2,4-D in lynx habitat; do not aerially spray or broadcast spray 2,4-D within 0.25 mile of lynx habitat.
- Where feasible, avoid use of the following herbicides in lynx habitat: bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, and triclopyr.
- Do not aerially spray or broadcast spray clopyralid, diuron, glyphosate, hexazinone, picloram, or triclopyr in lynx habitat, or in areas adjacent to lynx habitat under conditions when spray drift onto the habitat is likely.
- If broadcast spraying bromacil, diquat, imazapyr, or metsulfuron methyl in or near lynx habitat, apply at the typical, rather than the maximum, application rate.
- If conducting manual spot applications of glyphosate, hexazinone, or triclopyr to vegetation in lynx habitat, utilize the typical, rather than the maximum, application rate.

In addition, the UFO would develop and implement additional conservation measures, as necessary, during project-level analysis at the project level.

Conservation Measures – Mexican Spotted Owl

To minimize or avoid impacts to Mexican Spotted Owl, the UFO/GGNCA/DENCA would apply the following measures:

- Survey for Mexican spotted owls (and their nests or roosts) in occupied or suitable habitat before developing a treatment plan.
- Avoid treatment activities within 0.5 mile of known or suspected nest sites or roost sites during the period February 1 to April 31.
- Protect and retain the structural components of known or suspected nest sites during treatments; evaluate each nest site prior to treatment and protect it in the most appropriate manner.
- Do not conduct treatments that alter forest structure in old-growth stands.
- Do not use 2,4-D in Mexican spotted owl habitats; do not aerially spray or broadcast spray 2,4-D within 0.25 mile Mexican spotted owl habitat.
- Where feasible, avoid use of the following herbicides in Mexican spotted owl habitat: bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, and triclopyr.
- Do not broadcast spray or aerially spray clopyralid, diuron, glyphosate, hexazinone, picloram, or triclopyr in Mexican spotted owl habitat, or in areas adjacent to Mexican spotted owl habitat under conditions when spray drift onto the habitat is likely.
- If broadcast spraying bromacil, diquat, imazapyr, or metsulfuron methyl in or adjacent to Mexican spotted owl habitat, apply at the typical, rather than the maximum application rate.
- If conducting manual spot applications of glyphosate, hexazinone, or triclopyr to vegetation Mexican spotted owl habitat, utilize the typical, rather than the maximum application rate.
- In addition, the UFO would develop and implement additional conservation measures, as necessary, during project-level analysis at the project level.

Conservation Measures –Bald Eagle

To minimize or avoid impacts to the bald eagle, the UFO/GGNCA/DENCA would apply the following measures:

- Conduct surveys prior to vegetation treatments within potential or suitable habitat.
- Avoid treatment activities within 0.5 mile of active nest sites or active roost sites.
- For any treatments that must occur within 1 mile of a winter roost during the roosting season, limit activities to the period from 9 a.m. to 3 p.m.
- Do not allow helicopter/aircraft activity within 1 mile of bald eagle nest sites or winter roost sites during the breeding or roosting period.
- Do not cut trees within 0.25 mile of any known nest trees.

- Do not use 2,4-D in bald eagle habitat; do not aerially spray or broadcast spray 2,4-D within 0.25 mile of bald eagle habitat.
- Where feasible, avoid use of the following herbicides in bald eagle habitat: bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, and triclopyr.
- Do not broadcast spray or aerially spray clopyralid, diuron, glyphosate, hexazinone, picloram, or triclopyr in bald eagle habitat, or in areas adjacent to bald eagle habitat under conditions when spray drift onto the habitat is likely.
- If broadcast spraying bromacil, diquat, imazapyr, or metsulfuron methyl in or adjacent to bald eagle habitat, apply at the typical, rather than the maximum application rate.
- If conducting manual spot applications of glyphosate, hexazinone, or triclopyr to vegetation in bald eagle habitat, utilize the typical, rather than the maximum application rate.

In addition, the UFO/GGNCA/DENCA would develop and implement additional conservation measures, as necessary, during project-level analysis at the project level.

Conservation Measures – Western Yellow-billed Cuckoo

To minimize or avoid impacts to the western yellow-billed cuckoo, the UFO/GGNCA/DENCA would apply the following measures:

- Conduct surveys prior to vegetation treatments within potential or suitable habitat.
- Where surveys detect cuckoos, do not broadcast spray herbicides or use manual or domestic livestock methods.
- Do not conduct vegetation treatments within 0.5 mile (or farther if deemed necessary to prevent smoke from inundating the nest area) of known nest sites or un-surveyed suitable habitat during the breeding season (as determined by a qualified wildlife biologist).
- Adjust spatial and temporal scales of treatments so not all suitable habitat is affected in a year.
- Following treatments replant or reseed treated areas with native species, if needed.
- Closely follow all application instructions and use restrictions on herbicide labels; in wetland habitats use only those herbicides that are approved for use in wetlands.
- Do not use 2,4-D in yellow-billed cuckoo habitats; do not aerially spray or broadcast spray 2,4-D within 0.25 mile of yellow-billed cuckoo habitat.
- Where feasible, avoid use of the following herbicides in yellow-billed cuckoo habitat: bromacil, clopyralid, diquat, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, tebuthiuron, and triclopyr.
- Do not broadcast spray or aerially spray clopyralid, diquat, diuron, glyphosate, hexazinone, picloram, or triclopyr in yellow-billed cuckoo habitat, or in areas adjacent to yellow-billed cuckoo habitat under conditions when spray drift onto the habitat is likely.
- If broadcast spraying imazapyr or metsulfuron methyl in or adjacent to yellow-billed cuckoo, apply at the typical, rather than the maximum application rate.
- If conducting manual spot applications of glyphosate, hexazinone, or triclopyr to vegetation in yellow-billed cuckoo habitat, utilize the typical, rather than the maximum

application rate.

In addition, the UFO will develop and implement additional conservation measures, as necessary, during project-level analysis at the project level.

Conservation Measures – Gunnison Sage-grouse

To minimize or avoid impacts to the Gunnison Sage-grouse, the UFO/GGNCA/DENCA would apply the following measures:

- The only herbicides that will be considered by the UFO/GGNCA/DENCA for aerial application within occupied or suitable sage-grouse habitat would be glyphosate and imazapic. Application rate for glyphosate would not exceed 12oz/acre, for imazapic rates would not exceed 6oz/acre.
- For active restoration of occupied Gunnison Sage-grouse aerial application of Glyphosate or Imazapic will be considered for plant communities that have ≥ 50% composition invasive nonnative annuals. Only nonionic surfactants would be utilized in these scenarios.
- For fire disturbances in occupied Gunnison Sage-grouse aerial application of Glyphosate or Imazapic will be considered for communities that have ≥ 15% composition invasive nonnative annuals. The full array of approved surfactants would be available for use.
- Herbicide application records where Gunnison sage-grouse are involved would be provided to the Service annually.
- Do not conduct herbicide treatments during the lekking or nesting season.
- Following treatments replant or reseed treated areas with native species, if needed.
- Do not use 2,4-D in Gunnison Sage-grouse habitats; do not aerially spray or broadcast spray 2,4-D within 0.25 mile of Gunnison Sage-grouse habitat.
- Where feasible, avoid use of the following herbicides in Gunnison Sage-grouse habitat: bromacil, clopyralid, diquat, diuron, hexazinone, imazapyr, metsulfuron methyl, picloram, tebuthiuron, and triclopyr.
- Do not broadcast spray or aerially spray clopyralid, diquat, diuron, hexazinone, picloram, or triclopyr in Gunnison Sage-grouse habitat, or in areas adjacent to Gunnison Sage-grouse habitat under conditions when spray drift onto the habitat is likely.
- If broadcast spraying imazapyr or metsulfuron methyl in or adjacent to Gunnison Sage-grouse, apply at the typical, rather than the maximum application rate.
- If conducting manual spot applications of glyphosate, hexazinone, or triclopyr to vegetation in Gunnison Sage-grouse habitat, utilize the typical, rather than the maximum application rate.

In addition, the UFO/GGNCA/DENCA will develop and implement additional conservation measures, as necessary, during project-level analysis at the project level.

APPENDIX D THREATENED AND ENDANGERED SPECIES OF THE UFO [1]									
SPECIES	STATUS	HABITAT DESCRIPTION [2]	CRITICAL HABITAT? [3]	KNOWN? [4]	RANGE? [5]	HABITAT? [6]	NO EFFECT? [7]	MENLAE [8]	MELAE [9]
FISH									
Bonytail *Gila elegans*	E	Warm-waters of the Colorado River mainstem and tributaries, some reservoirs; flooded bottomlands for nurseries; pools and eddies over rocky substrates with silt-boulder mixtures for spawning	No	None	☒	☒	☐	☒	☐
Humpback chub *Gila cypha*	E	Warm-water, canyon-bound reaches of Colorado River mainstem and larger tributaries; turbid waters with fluctuating hydrology; young require low-velocity, shoreline habitats such as eddies and backwaters	No	None	☒	☒	☐	☒	☐
Razorback sucker *Xyrauchen texanus*	E	Warm-water reaches of the Colorado River mainstem and larger tributaries; some reservoirs; low velocity, deep runs, eddies, backwaters,	No	None	☒	☒	☐	☒	☐

APPENDIX D THREATENED AND ENDANGERED SPECIES OF THE UFO [1]									
SPECIES	STATUS	HABITAT DESCRIPTION [2]	CRITICAL HABITAT? [3]	KNOWN? [4]	RANGE? [5]	HABITAT? [6]	NO EFFECT? [7]	MENLAE [8]	MELAE [9]
		sidecanyons, pools, eddies; cobble, gravel, and sand bars for spawning; tributaries, backwaters, floodplain for nurseries							
Colorado pikeminnow *Ptychocheilus lucius*	E	Warm-waters of the Colorado River mainstem and tributaries; deep, low velocity eddies, pools, runs, and nearshore features; uninterrupted streams for spawning migration and young dispersal; also floodplains, tributary mouths, and side canyons; highly complex systems	No	None	☒	☒	☐	☒	☐
Greenback cutthroat trout *Oncorhynchus clarki stomias*	T	Cold water streams and lakes with adequate spawning habitat (riffles), often with shading cover; young shelter in shallow backwaters	No	None	☒	☒	☐	☒	☐

APPENDIX D THREATENED AND ENDANGERED SPECIES OF THE UFO [1]									
SPECIES	STATUS	HABITAT DESCRIPTION [2]	CRITICAL HABITAT? [3]	KNOWN? [4]	RANGE? [5]	HABITAT? [6]	NO EFFECT? [7]	MENLAE [8]	MELAE [9]
MAMMALS									
Black-footed ferret [10] *Mustela nigripes*	E	Prairie dog colonies for shelter and food; >200 acres of habitat with at least 8 burrows/acre	No	None	☐	☐	☒	☐	☐
Canada lynx *Lynx canadensis*	T	Spruce-fir, lodgepole pine, willow carrs, and adjacent aspen and mountain shrub communities that support snowshoe hare and other prey	No	None	☒	☒	☐	☒	☐
North American Wolverine *Gulo gulo luscus*	C	Alpine and arctic tundra, boreal and mountain forests (primarily coniferous). Limited to mountains in the south, especially large wilderness areas.	No	None	☐	☐	☒	☐	☐

APPENDIX D THREATENED AND ENDANGERED SPECIES OF THE UFO [1]									
SPECIES	STATUS	HABITAT DESCRIPTION [2]	CRITICAL HABITAT? [3]	KNOWN? [4]	RANGE? [5]	HABITAT? [6]	NO EFFECT? [7]	MENLAE [8]	MELAE [9]
Gunnison's prairie dog *Cynomys gunnisoni*	C	Level to gently sloping grasslands, semi-desert shrublands, and montane shrublands, from 6,000'- 12,000 in elevation	No	None	☒	☒	☐	☒	☐
BIRDS									
Mexican spotted owl [11] *Strix occidentalis*	T	Mixed-conifer forests and steep-walled canyons with minimal human disturbance	No	None	☒	☒	☐	☒	☐
Southwestern willow flycatcher [11] *Empidonax traillii extimus*	E	For breeding, riparian tree and shrub communities along rivers, wetlands, and lakes; for wintering, brushy grasslands, shrubby clearings or pastures, and woodlands near	No	None	☒	☒	☐	☒	☐

APPENDIX D THREATENED AND ENDANGERED SPECIES OF THE UFO [1]									
SPECIES	STATUS	HABITAT DESCRIPTION [2]	CRITICAL HABITAT? [3]	KNOWN? [4]	RANGE? [5]	HABITAT? [6]	NO EFFECT? [7]	MENLAE [8]	MELAE [9]
Gunnison sage grouse *Centrocercus minimus*	C	Sagebrush communities (especially big sagebrush) for hiding and thermal cover, food, and nesting; open areas with sagebrush stands for leks; sagebrush-grass-forb mix for	No	None	☒	☒	☐	☒	☐
Western yellow-billed cuckoo *Coccyzus americanus*	C	Riparian, deciduous woodlands with dense undergrowth; nests in tall cottonwood and mature willow riparian, moist thickets, orchards, abandoned pastures	No	None	☒	☒	☐	☒	☐
PLANTS									
Clay-loving wild buckwheat *Eriogonum pelinophilum*	E	Mancos shale badlands in salt desert shrub communities, often with shadscale, black sagebrush, and mat saltbush; 5200' – 6400' in elevation	No	None	☒	☒	☐	☐	☒

APPENDIX D THREATENED AND ENDANGERED SPECIES OF THE UFO [1]									
SPECIES	STATUS	HABITAT DESCRIPTION [2]	CRITICAL HABITAT? [3]	KNOWN? [4]	RANGE? [5]	HABITAT? [6]	NO EFFECT? [7]	MENLAE [8]	MELAE [9]
Colorado hookless cactus *Sclerocactus glaucus*	T	Salt-desert shrub communities in clay soils on alluvial benches and breaks, toe slopes, and deposits often with cobbled, rocky, or graveled surfaces; 4500' – 6000' in elevation	No	None	☒	☒	☐	☐	☒
INVERTEBRATES									
Uncompahgre fritillary butterfly [11] *Boloria acrocnema*	E	Restricted to moist, alpine slopes above 12,000' in elevation with extensive snow willow patches; restricted to San Juan Mountains	No	None	☐	☐	☒	☐	☐

[1] U.S. Fish and Wildlife Service. 2009. Federally listed species in Colorado. Official correspondence, February.
[2] Van Reyper G. 2006. Bureau of Land Management TES [threatened, endangered, sensitive] species descriptions. Uncompahgre Field Office, Montrose, CO, updated 2009/2010.Unpublished document.
[3] Designated Critical Habitat in Project Area?
[4] Potential and/or known occurrences in Project Area? Assessment based on UFO files and GIS data, partner data, and local knowledge.
[5] Project area is within the current known range of the species?
[6] Project area contains suitable habitat for the species?
[7] Project activities will have "No Effect" to the species or it's habitat
[8] Project activities "May Effect, Not Likely to Adversley Effect" to the species or it's habitat
[9] Project activities "May Effect, Likely to Adversley Effect" to the species or it's habitat
[10] Black-footed ferret believed to be extirpated from this portion of its range.
[11] Species not known to occur within UFO boundaries, but known to occur in close proximity.

APPENDIX E BLM SENSITIVE SPECIES OF THE UFO [1]							
SPECIES	HABITAT DESCRIPTION [2, 3]	KNOWN [4]	RANGE? [5]	HABITAT? [6]	NO EFFECT? [7]	MAI[8]	LFL[9]
FISH							
Roundtail chub *Gila robusta*	Warm-water rocky runs, rapids, and pools of creeks and small to large rivers; also large reservoirs in the upper Colorado River system; generally prefers cobble-rubble, sand-cobble, or sand-gravel substrate	None	☒	☒	☐	☒	☐
Bluehead sucker *Catostomus discobolus*	Large rivers and mountain streams, rarely in lakes; variable, from cold, clear mountain streams to warm, turbid streams; moderate to fast flowing water above rubble-rock substrate; young prefer quiet shallow areas near shoreline	None	☒	☒	☐	☒	☐
Flannelmouth sucker *Catostomus latipinnis*	Warm moderate- to large-sized rivers, seldom in small creeks, absent from impoundments; pools and deeper runs often near tributary mouths; also riffles and backwaters; young usually in shallower water than are adults	None	☒	☒	☐	☒	☐
Colorado River cutthroat trout *Oncorhynchus clarki pleuriticus*	Cool, clear streams or lakes with well-vegetated streambanks for shading cover and bank stability; deep pools, boulders, and logs; thrives at high elevations	None	☒	☒	☐	☒	☐
MAMMALS							
Desert bighorn sheep *Ovis canadensis nelsoni*	Steep, mountainous or hilly terrain dominated by grass, low shrubs, rock cover, and areas near open escape and cliff retreats; in the resource area, concentrated along major river corridors and canyons	None	☒	☒	☐	☒	☐
White-tailed prairie dog [14] *Cynomys leucurus*	Level to gently sloping grasslands and semi-desert grasslands from 5,000' – 10,000' in elevation	None	☒	☒	☐	☒	☐

APPENDIX E BLM SENSITIVE SPECIES OF THE UFO [1]							
SPECIES	HABITAT DESCRIPTION [2, 3]	KNOWN [4]	RANGE? [5]	HABITAT? [6]	NO EFFECT? [7]	MAI[8]	LFL[9]
Kit fox *Vulpes macrotis*	Semi-desert shrublands of saltbrush, shadscale and greasewood often in association with prairie dog towns	None	☒	☐	☒	☐	☐
Allen's (Mexican) big-eared bat *Idionycteris phyllotis*	Ponderosa pine, pinyon-juniper woodland, oak brush, riparian woodland (cottonwood); typically found near rocky outcrops, cliffs, and boulders; often forages near streams and ponds. Thought to be in the West End.	None	☒	☒	☐	☒	☐
Big free-tailed bat *Nyctinomops macrotis*	Rocky areas and rugged terrain in desert and woodland habitats; roosts in rock crevices in cliffs and in buildings caves, and occasionally tree holes	None	☒	☒	☐	☒	☐
Spotted bat *Euderma maculatum*	Desert shrub, ponderosa pine, pinyon-juniper woodland, canyon bottoms, open pasture, and hayfields; roost in crevices in cliffs with surface water nearby	None	☒	☒	☐	☒	☐
Townsend's big-eared bat *Corynorhinus townsendii*	Mesic habitats including coniferous forests, deciduous forests, sagebrush steppe, juniper woodlands, and mountain; maternity roosts and hibernation in caves and mines; does not use crevices or cracks; caves, buildings, and tree cavities for night roosts	None	☒	☒	☐	☒	☐
Fringed myotis *Myotis thysanodes*	Desert, grassland, and woodland habitats including ponderosa pine, pinyon/juniper, greasewood, saltbush, and scrub oak; roosts in caves, mines, rock crevices, and buildings	None	☒	☒	☐	☒	☐
BIRDS							
Bald eagle [5] *Haliaeetus leucocephalus*	Nests in forested rivers and lakes; winters in upland areas, often with rivers or lakes nearby	None	☒	☒	☐	☒	☐

APPENDIX E BLM SENSITIVE SPECIES OF THE UFO [1]							
SPECIES	HABITAT DESCRIPTION [2, 3]	KNOWN [4]	RANGE? [5]	HABITAT? [6]	NO EFFECT? [7]	MAI [8]	LFL [9]
American peregrine falcon [5] *Falco peregrines anatum*	Open country near cliff habitat, often near water such as rivers, lakes, and marshes; nests on ledges or holes on cliff faces and crags	None	☒	☒	☒	☐	☐
Northern goshawk *Accipiter gentilis*	Nests in a variety of forest types including deciduous, coniferous, and mixed forests including ponderosa pine, lodgepole pine, or in mixed-forests with fir and spruce; also nest in aspen or willow forests; migrants and wintering individuals can be observed in all coniferous forest types	None	☒	☒	☒	☐	☐
Ferruginous hawk *Buteo regalis*	Open, rolling and/or rugged terrain in grasslands and shrubsteppe communities; also grasslands and cultivated fields; nests on cliffs and rocky outcrops	None	☒	☐	☒	☐	☐
Burrowing owl [15] *Athene cunicularia*	Level to gently sloping grasslands and semi-desert grasslands; Prairie dog colonies for shelter and food	None	☒	☒	☐	☒	☐
Columbian sharp-tailed grouse *Tympanuchus phasianellus columbian*	Native bunchgrass and shrub-steppe communities for nesting; mountain shrubs including serviceberry are critical for winter food and escape cover. Thought to be extirpated from UFO.	None	☐	☐	☒	☐	☐
Long-billed curlew *Numenius americanus*	Lakes and wetlands and adjacent grassland and shrub communities	None	☐	☐	☒	☐	☐
White-faced ibis *Plegadis chihi*	Marshes, swamps, ponds and rivers	None	☒	☒	☐	☒	☐
American white pelican *Pelecanus erythrorhynchos*	Typically large reservoirs but also observed on smaller water bodies including ponds; nests on islands	None	☒	☒	☐	☒	☐

APPENDIX E BLM SENSITIVE SPECIES OF THE UFO [1]							
SPECIES	HABITAT DESCRIPTION [2, 3]	KNOWN [4]	RANGE? [5]	HABITAT? [6]	NO EFFECT? [7]	MAI[8]	LFL[9]
Brewer's sparrow *Spizella berweri*	Breeds primarily in sagebrush shrublands, but also in other shrublands such as mountain mahogany or rabbitbrush; migrants seen in wooded, brushy, and weedy riparian, agricultural, and urban areas; occasionally observed in pinyon-juniper	None	☒	☒	☐	☒	☐
Black swift [15] *Cypseloides niger*	Nests on precipitous cliffs near or behind high waterfalls; forages from montane to adjacent lowland habitats	None	☒	☐	☒	☐	☐
REPTILES AND AMPHIBIANS							
Longnose leopard lizard *Gambelia wislizenii*	Desert and semidesert areas with scattered shrubs or other low plants; e.g., sagebrush; areas with abundant rodent burrows, typically below 5,000' in elevation	None	☒	☒	☐	☒	☐
Midget faded rattlesnake [13] *Crotalus viridis concolor*	Rocky outcrops for refuge and hibernacula, often near riparian; upper limit of 7500'-9500' in elevation	None	☒	☒	☐	☒	☐
Milk snake *Lampropeltis triangulum taylori*	Variable types including shrubby hillsides, canyons, open ponderosa pine stands and pinyon-juniper woodlands, arid river valleys and canyons, animal burrows, and abandoned mines; hibernates in rock crevices	None	☒	☐	☒	☐	☐
Northern leopard frog [14] *Rana pipiens*	Springs, slow-moving streams, marshes, bogs, ponds, canals, flood plains, reservoirs, and lakes; in summer, commonly inhabits wet meadows and fields; may forage along water's edge or in nearby meadows or fields	None	☒	☒	☐	☒	☐
Canyon treefrog *Hyla arenicolor*	Rocky canyon bottoms along intermittent or perennial streams in temporary or permanent pools or arroyos ; semi-arid grassland, pinyon-juniper, pine-oak woodland, scrubland, and montane zones; elevation 1000' - 10,000'	None	☒	☒	☐	☒	☐

APPENDIX E BLM SENSITIVE SPECIES OF THE UFO [1]							
SPECIES	HABITAT DESCRIPTION [2, 3]	KNOWN [4]	RANGE? [5]	HABITAT? [6]	NO EFFECT? [7]	MAI[8]	LFL[9]
Boreal toad *Anaxyrus boreas boreas*	Mountain lakes, ponds, meadows, and wetlands in subalpine forest (e.g., spruce, fir, lodgepole pine, aspen); feed in meadows and forest openings near water but sometimes in drier forest habitats	None	☐	☐	☒	☐	☐
PLANTS							
Debeque milkvetch *Astragalus debequaeus*	Varicolored, fine-textured, seleniferous, saline soils of the Wasatch Formation-Atwell Gulch Member; elevation 5100' – 6400'	None	☒	☒	☐	☒	☐
Grand Junction milkvetch *Astragalus linifolius*	Sparsely vegetated habitats in pinyon-juniper and sagebrush communities, often within Chinle and Morrison Formation and selenium-bearing soils; elevation 4800' – 6200'	None	☒	☒	☐	☒	☐
Naturita milkvetch *Astragalus naturitenis*	Cracks and ledges of sandstone cliffs and flat bedrock area typically with shallow soils, within pinyon-juniper woodland; elevation 5400' – 6700'	None	☒	☒	☐	☒	☐
San Rafael milkvetch *Astragalus rafaelensis*	Banks of sandy clay gulches and hills, at the foot of sandstone outcrops, or among boulders along dry watercourses in seleniferous soils derived from shale or sandstone formations; elevation 4500'– 5300'	None	☒	☒	☐	☒	☐
Sandstone milkvetch *Astragalus sesquiflorus*	Sandstone rock ledges (Entrada formation), domed slickrock fissures, talus under cliffs, sometimes in sandy washes; elevation 5000' – 5500'	None	☒	☒	☐	☒	☐
Gypsum Valley cateye *Cryptantha gypsophila*	Confined to scattered gypsum outcrop and grayish-white, often lichen-covered, soils of the Paradox Member of the Hermosa Formation; often the dominant plant at these sites; elevation 5200' – 6500'	None	☒	☒	☐	☒	☐
Fragile (slender) rockbrake *Cryptogramma stelleri*	Cool, moist, sheltered calcareous cliff crevices and rock ledges	None	☒	☒	☒	☐	☐

APPENDIX E BLM SENSITIVE SPECIES OF THE UFO [1]							
SPECIES	HABITAT DESCRIPTION [2, 3]	KNOWN [4]	RANGE? [5]	HABITAT? [6]	NO EFFECT? [7]	MAI[8]	LFL[9]
Kachina daisy (fleabane) [15] *Erigeron kachinensis*	Saline soils in alcoves and seeps in canyon walls; elevation 4800' – 5600'	None	☒	☒	☐	☒	☐
Montrose (Uncompahgre) bladderpod *Lesquerella vicina*	Sandy-gravel soil mostly of sandstone fragments over Mancos Shale (heavy clays) mainly in pinyon-juniper woodlands or in the ecotone between it and salt desert scrub; also in sandy soils derived from Jurassic sandstones and in sagebrush steppe communities; elevation 5800' – 7500'	None	☒	☒	☐	☒	☐
Colorado (Adobe) desert parsley *Lomatium concinnum*	Adobe hills and plains on rocky soils derived from Mancos Formation shale; shrub communities dominated by sagebrush, shadscale, greasewood, or scrub oak; elevation 5500' – 7000'	None	☒	☒	☐	☒	☐
Paradox Valley (Payson's) lupine *Lupinus crassus*	Pinyon-juniper woodlands, or clay barrens derived from Chinle or Mancos Formation shales, often in draws and washes with sparse vegetation; elevation 5000' – 5800'	None	☒	☒	☐	☒	☐
Dolores skeleton plant [15] *Lygodesmia doloresenis*	Reddish purple, sandy alluvium and colluviums of the Cutler Formation between the canyon walls and the river in juniper, shadscale, and sagebrush communities; elevation 4000' – 5500'	None	☒	☒	☐	☒	☐
Eastwood's monkey-flower *Mimulus eastwoodiae*	Shallow caves and seeps on steep canyon walls; elevation 4700' – 5800'	None	☒	☐	☒	☐	☐
Paradox (Aromatic Indian) breadroot *Pediomelum aromaticum*	Open pinyon-juniper woodlands in sandy soils or adobe hills; elevation 4800' – 5700'	None	☒	☒	☐	☒	☐
INVERTEBRATES							
Great Basin silverspot butterfly *Speyeria nokomis nokomis*	Found in streamside meadows and open seepage areas with an abundance of violets	None	☒	☒	☐	☒	☐

[1] Based on Colorado BLM State Director's Sensitive Species List (Last update: April 15, 2011).
[2] Van Reyper G. 2006. Bureau of Land Management TES [threatened, endangered, sensitive] species descriptions. Uncompahgre Field Office, Montrose, CO, updated 2009/ 2010. Unpublished document.
[3] Spackman SB, JC Jennings, C Dawson, M Minton, A Kratz, C Spurrier. 1997. Colorado rare plant field guide. Prepared for the BLM, USFS, and USFWS by the Colorado Natural Heritage Program.
[4] Potential and/or known occurrences in Project Area? Assessment based on UFO files and GIS data, partner data, and local knowledge.
[5] Project area is within the current known range of the species?
[6] Project area contains suitable habitat for the species?
[7] Project activities will have no effect to the species or it's habitat
[8] Project activities may effect individuals of the species or it's habitat, but not likely to result in a trend toward federal listing
[9] Project activities are l ikely to result in a trend toward federal listing for the species
[10] ESA delisted species.
[11] Federal candidate species; in accordance with BLM policy and Manual 6840, candidate and proposed species are to be managed and conserved as BLM sensitive species. For the Gunnison prairie dog, candidate status includes only those populations occurring in the "montane" portion of the species' range.
[12] Species not known to occur in UFO.
[13] Validity of subspecies designation is in question by taxonomists.
[14]Species was petitioned for listing and is currently under status review by FWS, and a 12-month finding is pending; i.e., listing of the species throughout all or a significant portion of its range may be warranted.
[15] Species not on BLM Colorado State Director's Sensitive List; included at the Field Office level to account for recent sightings, proximate occurrences, and/or potential habitat.

APPENDIX F BIRDS OF CONSERVATION CONCERN OF THE UFO [1]								
SPECIES	HABITAT DESCRIPTION [2]	RANGE/STATUS [2, 3]	KNOWN [4]	RANGE [5]	HABITAT? [6]	NO EFFECT? [7]	MAI[8]	LFL[9]
Gunnison sage grouse *Centrocercus minimus*	Sagebrush communities (especially big sagebrush) for hiding and thermal cover, food, and nesting; open areas with sagebrush stands for leks; sagebrush-grass-forb mix for nesting; wet meadows for rearing chicks	Year-round resident, breeding	See assessment under Sensitive Species Section					
American bittern *Botaurus lentiginosus*	Marshes and wetlands; ground nester	Spring/ summer resident, breeding confirmed in the region but not within the UFO	None	☒	☒	☒	☐	☐
Bald eagle [10] *Haliaeetus leucocephalus*	Nests in forested rivers and lakes; winters in upland areas, often with rivers or lakes nearby	Fall/winter resident, no confirmed breeding	See assessment under Sensitive Species Section					
Ferruginous hawk *Buteo regalis*	Open, rolling and/or rugged terrain in grasslands and shrubsteppe communities; also grasslands and cultivated fields; nests on cliffs and rocky outcrops	Fall/ winter resident, non-breeding	See assessment under Sensitive Species Section					

APPENDIX F BIRDS OF CONSERVATION CONCERN OF THE UFO [1]								
SPECIES	HABITAT DESCRIPTION [2]	RANGE/STATUS [2, 3]	KNOWN [4]	RANGE [5]	HABITAT? [6]	NO EFFECT? [7]	MAI[8]	LFL[9]
Golden eagle *Aquila chrysaetos*	Open country, grasslands, woodlands, and barren areas in hilly or mountainous terrain; nests on rocky outcrops or large trees	Year-round resident, breeding	None	☒	☒	☐	☒	☐
Peregrine falcon [10] *Falco peregrinus*	Open country near cliff habitat, often near water such as rivers, lakes, and marshes; nests on ledges or holes on cliff faces and crags	Spring/summer resident, breeding	See assessment under Sensitive Species Section					
Prairie falcon *Falco mexicanus*	Open country in mountains, steppe, or prairie; winters in cultivated fields; nests in holes or on ledges on rocky cliffs or embankments	Year-round resident, breeding	None	☒	☒	☒	☐	☐
Long-billed curlew *Numenius americanus*	Lakes and wetlands and adjacent grassland and shrub communities	Spring/ fall migrant, non-breeding	See assessment under Sensitive Species Section					
Snowy plover [11] *Charadrius alexandrines*	Sparsely vegetated sand flats associated with pickleweed, greasewood, and saltgrass	Spring migrant, non-breeding	None	☐	☐	☒	☐	☐

APPENDIX F BIRDS OF CONSERVATION CONCERN OF THE UFO [1]								
SPECIES	HABITAT DESCRIPTION [2]	RANGE/STATUS [2, 3]	KNOWN [4]	RANGE [5]	HABITAT? [6]	NO EFFECT? [7]	MAI [8]	LFL [9]
Mountain plover *Charadrius montanus*	High plain, cultivated fields, desert scrublands, and sagebrush habitats, often in association with heavy grazing, sometimes in association with prairie dog colonies ; short vegetation	Spring/ fall migrant, non-breeding	None	☒	☒	☒	☐	☐
Yellow-billed cuckoo [12] *Coccyzus americanus*	Riparian, deciduous woodlands with dense undergrowth; nests in tall cottonwood and mature willow riparian, moist thickets, orchards, abandoned pastures	Summer resident, breeding	See assessment under Sensitive Species Section					
Flammulated owl *Otus flammeolus*	Montane forest, usually open and mature conifer forests; prefers ponderosa pine and Jeffrey pine	Summer resident, breeding	None	☒	☒	☒	☐	☐
Burrowing owl *Athene cunicularia*	Open grasslands and low shrublands often in association with prairie dog colonies; nests in abandoned burrows created by mammals; short vegetation	Summer/ fall resident, breeding	See assessment under Sensitive Species Section					

APPENDIX F BIRDS OF CONSERVATION CONCERN OF THE UFO [1]								
SPECIES	HABITAT DESCRIPTION [2]	RANGE/STATUS [2, 3]	KNOWN [4]	RANGE [5]	HABITAT? [6]	NO EFFECT? [7]	MAI [8]	LFL [9]
Lewis's woodpecker *Melanerpes lewis*	Open forest and woodland, often logged or burned, including oak, coniferous forest (often ponderosa), riparian woodland, and orchards, less often in pinyon-juniper	Year-round resident, breeding	None	☒	☒	☒	☐	☐
Willow flycatcher [11] *Empidonax traillii*	Riparian and moist, shrubby areas; winters in shrubby openings with short vegetation	Summer resident, breeding	None	☒	☒	☐	☒	☐
Gray vireo *Vireo vicinior*	Pinyon-juniper and open juniper-grassland	Summer resident, breeding	None	☒	☒	☐	☒	☐
Pinyon jay *Gymnorhinus cyanocephalus*	Pinyon-juniper woodland	Year-round resident, breeding	None	☒	☒	☐	☒	☐
Juniper titmouse *Baeolophus griseus*	Pinyon-juniper woodlands, especially juniper; nests in tree cavities	Year-round resident, breeding	None	☒	☒	☐	☒	☐
Veery *Catharus fuscescens*	Deciduous forests, riparian, shrubs	Possible summer resident, observed recently in Gunnison County, possible breeding	None	☒	☒	☐	☒	☐
Bendire's thrasher *Toxostoma bendirei*	Desert, especially areas of tall vegetation, cholla cactus, creosote bush and yucca, and in juniper woodland	UFO is outside known range	None	☐	☐	☒	☐	☐

APPENDIX F BIRDS OF CONSERVATION CONCERN OF THE UFO [1]								
SPECIES	HABITAT DESCRIPTION [2]	RANGE/STATUS [2, 3]	KNOWN [4]	RANGE [5]	HABITAT? [6]	NO EFFECT? [7]	MAI[8]	LFL[9]
Grace's warbler *Dendroica graciae*	Mature coniferous forests	Summer resident, breeding	None	☐	☐	☒	☐	☐
Brewer's sparrow *Spizella breweri*	Sagebrush-grass stands; less often in pinyon-juniper woodlands	Summer resident, breeding	See assessment under Sensitive Species Section					
Grasshopper sparrow *Ammodramus savannarum*	Open grasslands and cultivated fields	UFO is outside known range	None	☐	☐	☒	☐	☐
Chestnut-collared longspur *Calcarius ornatus*	Open grasslands and cultivated fields	Spring migrant, non-breeding	None	☐	☐	☒	☐	☐
Black rosy-finch *Leucosticte atrata*	Open country including mountain meadows, high deserts, valleys, and plains; breeds/ nests in alpine areas near rock piles and cliffs	Winter resident, non-breeding	None	☒	☐	☒	☐	☐
Brown-capped rosy-finch *Leucosticte australis*	Alpine meadows, cliffs, and talus and high-elevation parks and valleys	Summer residents, breeding	None	☐	☐	☒	☐	☐
Cassin's finch *Carpodacus cassinii*	Open montane coniferous forests; breeds/ nests in coniferous forests	Year-round resident, breeding	None	☒	☐	☒	☐	☐

[1] U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. [Online version available at <http://www.fws.gov/migratorybirds/>].
[2] Cornell Lab of Ornithology. All about birds: bird guide. < http://www.allaboutbirds.org/guide/> Accessed 05/15/2009.
[3] Status within the UFO. San Juan Institute of Natural and Cultural Resources. Colorado Breeding Bird Atlas. Fort Lewis College, Durango, Colorado. <http://www.cobreedingbirdatlasii.org/> Accessed: 05/15/2009.

[4] Potential and/or known occurrences in Project Area? Assessment based on UFO files and GIS data, partner data, and local knowledge.
[5] Project area is within the current known range of the species?
[6] Project area contains suitable habitat for the species?
[7] Project activities will have no effect to the species or it's habitat
[8] Project activities may effect individuals of the species or it's habitat, but not likely to result in a trend toward federal listing
[9] Project activities are l ikely to result in a trend toward federal listing for the species

[10] ESA delisted species.
[11] Non-listed subspecies/ population.
[12] ESA candidate species.

APPENDIX I CONT. BIG GAME HABITAT OF THE UFO [1]

SPECIES	Severe winter range	Winter concentration	Winter range	Production area	Concentration area	Migration Corridors	Highway crossing
Mule deer	☒	☒	☒	☒	☒	☒	☐
Elk	☒	☒	☒	☐	☒	☒	☐
Pronghorn	☒	☒	☒	☒	☒	☒	☐
Desert Bighorn	☒	☒	☒	☒	☒	☒	☐
Rocky Mountain Bighorn	☒	☒	☒	☒	☒	☒	☐
Moose	☒	☒	☒	☐	☒	☒	☐
Mountain goat	☐	☐	☐	☐	☐	☐	☐

[1] Based on CDOW big game data and maps

Appendix G

Key Terrestrial Wildlife and Terrestrial Special Status Species

Key Terrestrial Wildlife (Herpetiles, Birds, Mammals) and Special Status Species (Reptiles, Birds, Mammals) is described. Also see Appendices D, E, and F.

Key Terrestrial Wildlife

The key terrestrial wildlife includes primarily herpetiles, birds, and mammals. Adequate populations of terrestrial invertebrates are assumed when populations of the vertebrate groups that prey on invertebrates are healthy.

Herpetiles

There are approximately 30 species of herpetiles that have been historically documented within the planning area, which includes 6 frogs, 3 toads, 1 salamander, 9 lizards and 11 snakes. Population numbers are not well understood. The majority of reptiles occur in lower elevations and in dryer habitats such as sagebrush, greasewood, and piñon/ juniper. Amphibians are associated with rivers, streams, ponds, and springs.

Reptiles that occur in the planning area include collared lizard, sagebrush Lizard, tree lizard, side blotched lizard, prairie plateau lizard, short-horned lizard, plateau striped whiptail, western whiptail, desert striped whipsnake, smooth green snake, bull/gopher snake, western terrestrial garter snake, western blackneck garter snake, wandering garter snake, western yellow-belly racer, corn snake, mesa verde night snake, and Utah blackhead snake.

Birds

Key bird species for which habitat is provided in the planning area can be separated into four groups: water birds, raptors, grouse and turkeys, and passerine bird species.

Water Birds
The key water bird species include great blue herons, geese, several species of ducks and sandhill cranes. Great blue heron foraging and breeding areas are primarily along the San Miguel, Dolores, and Gunnison Rivers though individual herons visit small streams and stock ponds throughout the planning area. Canada geese and other waterfowl species winter along the San Miguel, Dolores, and Gunnison rivers. Important foraging areas occur on private lands in agricultural areas and within the river corridors. Important production areas extend along much of the San Miguel, Dolores, and Gunnison rivers, with brood concentration areas reflecting the location of the important foraging areas. Sandhill cranes use areas within the planning area as a migratory stopover in the fall and spring. The majority of the areas used occur on private agricultural lands; however ponds and reservoirs managed by BLM, such as Fruit Growers reservoir provides a migratory stopover for the species.

Raptors
Raptors in the planning area include eagles, falcons, hawks, and owls. Because they are at the top of food chains and therefore present in fewer numbers than their prey, they serve as important indicators of overall ecosystem health. Data are maintained by CPW on observations of most raptor species and several species are tracked individually. Of particular note with regard to BLM habitat management policies are the concentrations of raptors (particularly eagles and peregrine falcons) along the San Miguel, Dolores, and Gunnison Rivers.

Grouse and Wild Turkeys
The blue grouse, wild turkey, and the Gunnison sage-grouse (discussed below) occur in the planning area. High elevation forested zones in the upper elevations of the planning area provide habitat for nesting blue grouse. Turkeys occur throughout the planning area primarily in higher elevation areas or along the rivers. Chucker and introduced game birds occur throughout the planning area primarily around or near agricultural fields or towns.

Other Important Bird Species
Various species of migratory birds summer, winter, and/or migrate through the planning area. The habitat diversity provided by the broad expanses of piñon juniper, sagebrush, oak brush, ponderosa pine, and saltbush vegetation zones support numerous species of birds. The most characteristic species include mourning doves, horned larks, gray vireos, pinion jays, and sage sparrows. Birds of Conservation Concern (designated by the US Fish and Wildlife Service in 2008) that occur in the planning area include bald eagle, brewer's sparrow, burrowing owl, cassin's finch, ferruginous hawk, flammulated owl, grace's warbler, gray vireo, gunnison sage-grouse, juniper titmouse, lewis's woodpecker, long billed curlew, peregrine falcon, piñon jay, and prairie falcon.

Mammals

The distributions of key mammal species and the locations they use within the planning area are also documented by BLM Land Health Analysis (LHA) data, big game monitoring transects, and CPW GIS data. The CPW databases track population trends for selected species as well.

Big Game Species

Elk
The overall range of elk occupies the majority of the planning area, except for the lower semi-desert scrub valleys of the Uncompahgre, Gunnison and Dolores Rivers. Summer range is found at the top of the Cimarron Ridge, along the Uncompahgre plateau, along Grand Mesa, Muddy Creek, and on Carpenter Ridge near the Utah border. Production occurs in concentrated areas within the summer range on the Grand Mesa, Gunnison, Uncompahgre, and Manti La Sal national forests, and in the upper elevations North Fork of the Gunnison River. Winter range includes the majority of the BLM lands in the planning area with the exception of the salt desert communities. Three major migration corridors have been identified within the planning area including Black Mesa to the North Rim of the Gunnison above Crawford, from the Lizard Head and Sneffels Ranges down to the benches and mesas above the San Miguel, and from the West

Elks to the low elevations of the North Fork of the Gunnison all on a mix of BLM, Park Service, and private lands. Several Data Analysis Units overlap the planning area. These units are designated and surveyed by the CPW and intended to encompass one herd's range throughout the year. By utilizing the most recent CPW population estimates for elk in overlapping Data analysis Units (DAU's) and calculating the percentage of the DAU within the planning area there are an estimated 42,000 elk that fulfill all or portions of their life processes in the planning area.

Deer

The overall range of mule deer includes the entire planning area, except for areas of high human concentration like downtown Montrose and Delta. Summer range is found on the Grand Mesa, along the Uncompahgre plateau and the mesas on the west end of the planning area. Production occurs in concentrated areas within summer range on the Uncompahgre Plateau, on the Grand Mesa, and on the mesas on the west end. Winter range includes the majority of the BLM managed lands within the planning area below 7000 feet. No major migration corridors have been identified within the planning area. By utilizing the most recent CPW population estimates for mule deer in DAU's overlapping the planning area and calculating the percentage of the DAU within the area there are an estimated 49,000 mule deer that fulfill all or portions of their life processes in the planning area.

Bighorn Sheep

The UFO planning area contains both desert bighorn sheep (west of the Gunnison River and within the Dolores River Canyon south of Paradox Valley) and Rocky Mountain bighorn sheep (within the Black Canyon and Gunnison River Gorge and West of highway 550 between Ouray and Ridgway and into the Sneffels range). The desert bighorn is a BLM sensitive species and is discussed below. The planning area contains two Rocky Mountain bighorn sheep populations in the Gunnison River Gorge and the areas between the Uncompahgre and Mt. Sneffels wilderness areas. The primary factor currently influencing, and that will continue to influence, the growth and establishment of these herds is the introduction of disease primarily associated with intermingling of domestic sheep with wild sheep.

Pronghorn Antelope

Pronghorn antelope occur in the planning area in the lower elevation desert areas in the Gunnison River Valley. The Herd has recently been augmented by CPW and is now estimated at around 100 individuals.

Other Key Mammal Species

White-tailed prairie dogs and the many species that are associated with this keystone species are present in the lower elevations in the planning area; this sensitive species is described further in the special status species section below. Numerous bats use the abandoned mines and natural caves in the planning area. The CPW has reintroduced moose onto US Forest Service lands at the top of the Grand Mesa. Though they generally occur at higher elevations than those found in the planning area they are known to use BLM lands in the Le Roux and Terror Creek drainages. Additional species of management concern in the planning area are Black Bear and Mountain Lion, both of which occur throughout the field office.

Special Status Species

There are 6 federally listed species that have been documented in the planning area, including the Gunnison sage-grouse which was proposed for listing as endangered on 1/15/2013. Many of these federally listed species are also listed by the State of Colorado (CPW 2007a). Other species that are only on the BLM sensitive species list (BLM 2009) or that are listed by the State of Colorado (CPW 2007a) are also discussed below. Information on the distribution of special status species in the planning area is derived from project-related biological surveys, CNHP data, Land Health Assessment comments, CPW GIS data, and other sources. Inventories have been completed for some of the listed and candidate fish, and wildlife species. Specific management direction to influence habitat components, leading to species recovery, is integrated into BLM management plans. Designated critical habitat for two big river fish species exists within the planning area (USFWS 2011).

Reptiles

No federally listed reptile species are known to occur in any of the counties in the planning area (USFWS 2011).

Long-Nosed Leopard Lizard
Habitat for this BLM sensitive lizard includes desert and semidesert areas with scattered shrubs or other low plants such as shadscale and sagebrush, especially areas with abundant rodent burrows (Stebbins 1985).

Midget Faded Rattlesnake
Habitat for this BLM sensitive snake is high, cold desert dominated by sagebrush with an abundance of rock outcrops and exposed canyon walls. Greasewood, juniper, and other woody plants may occur in some areas (Travsky and Beauvais 2004).

Milk snake
Variable habitat types including shrubby hillsides, canyons, open ponderosa pine stands and piñon-juniper woodlands, arid river valleys and canyons, animal burrows, and abandoned mines; hibernates in rock crevices.

Birds

<u>Federally Listed or Candidate Species</u>

The Mexican spotted owl is a species listed under the ESA that have never been documented on BLM- administered lands within the planning area but that have some potential to occur. The western yellow-billed cuckoo and Gunnison sage-grouse are candidate species that occur in the planning area.

Mexican Spotted Owl
The Mexican spotted owl can be found in the forested mountains and canyons of central and western Colorado and southern Utah south through Arizona and New Mexico into Central

Mexico. The owl's distribution in this range is not contiguous but occurs in patches of suitable habitat. Mexican spotted owl uses mixed-conifer forests throughout most of their range (USFWS 1995). The Mexican spotted owl occurs in southwestern Colorado but has never been recorded on BLM- Administered lands within the planning area. While potential habitat for the species does occur in the GFJO planning area, the closest designated critical habitat for the species occurs approximately 30 miles southwest of the field office boundary in the San Juan Mountains of Utah (USFWS 2004).

Western Yellow-Billed Cuckoo

The yellow-billed cuckoo nests in large blocks of mature riparian forests dominated by plains or narrowleaf cottonwoods (*Populus deltoides, P. angustifolia*) with a dense understory of tall shrubs (Kingery 1998). Suitable habitat for this species is present in the UFO, primarily on private lands in the North Fork Valley area near Hotchkiss and Paonia. Since 2003, this species has been confirmed every year in the North Fork of the Gunnison Valley. In 2008, Rocky Mountain Bird Observatory conducted surveys for yellow-billed cuckoo within the UFO. Survey areas included the San Miguel River, North Fork Valley, and several drainages on the east slope of the Uncompahgre Plateau. Based on broadcast call surveys, yellow-billed cuckoos were detected in the North Fork Valley on private land near Hotchkiss in Delta County. Breeding was also confirmed that year in the same area. Surveys at that time also detected this species near the town of Nucla, Colorado, again on private lands but near BLM lands. There have also been reports of this species on private lands along the Uncompahgre River in the Montrose, Colorado area. Although not yet detected, it is likely that the species occurs on adjacent BLM lands. In the recent past, yellow-billed cuckoos were often seen along the Colorado, Uncompahgre, and Gunnison Rivers near Delta. Sightings declined substantially after the 1980's, suggesting population declines. However, recent sightings/ detections may indicate an upward trend for this species in the planning area.

BLM Sensitive Species

Eleven BLM sensitive bird species have potential to occur in the planning area (Appendix I).

Gunnison Sage-grouse

The Crawford population occurs within the Gunnison Gorge National Conservation Area planning area west of the town of Crawford. A portion of the Cerro Summit-Cimarron-Sims Mesa and San Miguel Basin populations occurs within the planning area. The Crawford population of Gunnison sage-grouse occurs entirely within the GGNCA planning area and Gunnison Sage-grouse Area of Critical Environmental Concern west of the town of Crawford. There are currently ten active and historic leks all occurring on UFO managed lands. Lek counts were first conducted in this area in 1978, and have continued annually. The annual lek attendance remained around 30 males until the mid-80s, and then it declined through 1993 to a low count when 12 males were observed. In 1994, three new leks sites were developed by brush beating (mowing vegetation with a brush-hog). Lek attendance returned to 30+ males in 1997 with a high count of 64 in 1999. Since then there has been a steady decline in the lek count numbers through 2010. The 2010 count of four is the lowest ever recorded, resulting in the three year average in 2009 at an all-time low. Lek attendance increased to nine birds in 2011. The conservation plan for this population was first completed in 1998 and has since been updated in 2011. The BLM has been actively managing public lands in the GGNCA and Gunnison Sage-

grouse Area of Critical Environmental Concern area to improve Gunnison sage-grouse habitat through mechanical treatments, prescribed fire, and artificial wetland development.

The Sims Mesa and a portion of the Cerro Summit population occur within the UFO south of the town of Montrose and along US highway 50 east of Montrose. There are currently six historic leks for this population with only a portion of one lek in the Sims Mesa area occurring on UFO managed lands. Historically, leks occurred on BLM lands; however, the birds now primarily use private land in the Cerro Summit area, and all active leks are on private property. The UFO has very limited land ownership within the Cerro Summit population and the Sims Mesa portion of the population is believed to be extirpated as no birds have been observed on this portion of the population range for several years with only a lone male observed in the early 2000's (personal communication with Potter).

A small portion of the San Miguel population occurs within the UFO on 867 acres of very small fringe habitats on Beaver Mesa, Monogram Mesa, and Hamilton Mesa. There are no current leks for this population occurring on UFO managed lands. The majority of the occupied habitat for this population on BLM managed lands occurs in the Tres Rios Field Office. In 2010 there were no active leks for the population located on UFO managed public lands. From 2001-2007 male lek attendance has fluctuated between 50-80 males. Beginning in 2008 lek attendance began to decline to an all-time low of 25males in 2010. The conservation plan for this population was recently updated in 2009. Habitat improvements are being conducted on Tres Rios and private lands to improve habitat suitability and thirty birds were transplanted from the Gunnison basin population to augment the declining population in the spring of 2011. Additionally, APHIS (Animal and Plant Health Inspection Service) with support from CPAW has been conducting predator control since 2010 in an effort to facilitate greater reproductive success.

American Peregrine Falcon
Peregrine falcons use cliff and canyon habitats for breeding. Foraging areas include riparian zones and nearshore environments where waterfowl and riparian birds may be found. The species was removed from the Endangered Species List in 1999. There are many documented pairs of breeding Peregrine Falcons in the planning area though formal surveys have not been conducted since the early 1990's.

American White Pelican
This species generally breeds in colonies on islands in large bodies of water and forages up to 30 miles away in marshes, rivers, and lakes (Potter 1998).

Bald and Golden Eagles
Bald eagles generally nest in large trees near rivers and lakes with abundant fish. In winter they are more transient and occur where food, including fish, waterfowl, and carrion, is available. The bald eagle was removed from the endangered species list in 2007. Bald and golden eagles are both protected by the Bald and Golden Eagle Protection Act. Bald eagles nest on the Dolores Uncompahgre, North Fork and Gunnison Rivers and winter along the Uncompahgre, San Miguel, North Fork, Gunnison, and Dolores Rivers and along several creeks in the planning area. Golden eagles generally nest on cliffs and forage on small- to medium-sized mammals, such as rodents and rabbits, in open habitats.

Black swift
Nests on precipitous cliffs near or behind high waterfalls; forages from montane to adjacent lowland habitats. Only known occurrence in the planning area occurs above the town of Ouray on private lands.

Brewer's Sparrow
This sparrow occurs primarily in sagebrush habitats, particularly big sagebrush, and arrives on breeding grounds in April.

Burrowing Owl
This owl occurs in sparsely vegetated grasslands, shrublands, and deserts and nests primarily in rodent burrows. In western Colorado, they use burrows of prairie dogs and ground squirrels (Jones 1998). The UFO contracted the Rocky Mountain Bird Observatory to conduct a burrowing owl surveys in the summer of 2009.

Columbian sharp-tailed grouse
Native bunchgrass and shrub-steppe communities for nesting; mountain shrubs including serviceberry are critical for winter food and escape cover. Thought to be extirpated from the planning area.

Ferruginous Hawk
This hawk inhabits ungrazed or lightly grazed grasslands and shrublands with varied topography. They tend to nest on hilltops in trees or other structure when available but also nest on the ground (Preston 1998).

Long-Billed Curlew
This large shorebird occurs primarily in shortgrass prairie with nearby standing water for feeding and drinking (Nelson 1998). In Colorado it primarily occurs on the eastern plains but is believed to exist in Montrose County (Nelson 1998).

Northern Goshawk
This raptor requires large blocks of forest for nesting and foraging and tends to be intolerant of human disturbance around nests. Most nests occur in coniferous forests. However, details of habitat types used vary considerably (Barrett 1998).

White-Faced Ibis
This species nests primarily in marshes with tall emergent vegetation such as cattails and rushes. They feed in marshes, other shallow water bodies, and flooded agricultural lands (Ryder 1998).

Mammals

Ten special status mammal species occur or have some potential to occur in the planning area (Appendices D and E).

Federally Listed or Candidate Species

Black-footed ferret
The black-footed ferret depends on prairie dogs (Cynomys spp.) for food and their burrows for shelter. Historically, ferret habitat largely coincided with habitats of the black-tailed prairie dog (*C. ludovicianus*), Gunnison's prairie dog (*C. gunnisoni*) and white-tailed prairie dog (*C. leucurus*). The black-footed ferret historic range spanned much of the western North America's intermountain and prairie grasslands extending from Canada to Mexico. The black-footed ferret is considered extirpated in this region, and there have been no possible sightings or reports in the last 30+ years. The species depends on prairie dog colonies for food and shelter. Based on the best available information, there are no known prairie dog colonies in the UFO that meet this species' bioenergetic requirements ($\geq$ 200 acres of active prairie dog colonies with a density of $\geq$ 8 burrows/ acre) (VanReyper 2006).

Canada Lynx
Lynx occurrence is highly correlated with the habitat of their primary prey, snowshoe hare. They occur in uneven-aged coniferous stands with relatively open canopies and well-developed understories (Fitzgerald et al. 1994). The CDOW began reintroducing lynx to Colorado in 1999 (CPW 2009). Canada Lynx has been recorded on US Forest Service-administered lands adjacent to the planning area. Several lynx analysis units have been designated in the McClure Pass, West Elks, Black Mesa, Cimarron Ridge, Sneffels Range, and the Uncompahgre Plateau which provide habitat for the lynx. Primary habitat for the species occurs only in small pockets on high-elevation BLM lands. As the species' range in Colorado continues to expand, BLM lands are more likely to be used for dispersal and foraging.

Gunnison's prairie dog
The GPD habitat includes level to gently sloping grasslands and semi-desert and montane shrublands, at elevations from 6,000 to 12,000. The GPDs occupy grass–shrub areas in low valleys and mountain meadows within this habitat. No known populations of the "montane subspecies" of Gunnison's prairie dog occur within the UFO with the exception of an isolated colony southeast of the town of Ridgway, Colorado on private lands. The montane portion of the species' range in Colorado is composed of the Gunnison, San Luis Valley, South Park, and Southeast population areas. However, a number of "prairie" colonies are present. In the UFO, as elsewhere across Colorado, there appears to be a general decline in the total number of prairie dogs. Some surveys have shown periodic die-offs not associated with damage control. Still, some colonies seem to rebounding, and some sites have been recolonized. This cyclic trend may be the result of sylvatic plague outbreaks, although recreational shooting, habitat loss, and other diseases are likely exacerbating factors.

North American Wolverine
It is highly unlikely that wolverine currently occupy any lands encompassed by the planning areas as there have been no documented occurrences since the early 20th century in Colorado. Additionally, the UFO manages very little habitat (high alpine) considered suitable for wolverine with the only potential habitat being a few hundred acres in the Storm King area east of Colona. The first documented wolverine in the state of Colorado since 1919 occurred in June 2009 as a

lone male fitted with a GPS collar trekked from the Teton National Forest in northwest Wyoming into northern Colorado likely in search of a suitable home range.

BLM Sensitive Species and State-Listed Species

Allen's (Mexican) big-eared bat
Ponderosa pine, piñon-juniper woodland, oak brush, riparian woodland (cottonwood); typically found near rocky outcrops, cliffs, and boulders; often forages near streams and ponds. Thought to be present in the western portion of the planning area.

Big Free-Tailed Bat
The largest bat in Colorado roosts in crevices on cliff faces or in buildings. Its habitat requirements are not well known (Fitzgerald et al. 1994).

Townsend's Big-Eared Bat
This bat occurs in semidesert shrublands, pinyon-juniper woodlands, and open montane forests. It roosts in caves, mines, abandoned buildings, and cliffs (Fitzgerald et al. 1994). The Townsend's big-eared bat is known to occur in the western portion of the planning area. The largest known maternity roost on BLM managed lands occurs within an abandoned uranium mine on Carpenter Ridge within the planning unit.

Spotted Bat
This bat has been documented in ponderosa pine, mixed conifer, alpine meadows, piñon-juniper woodlands, and open semidesert shrublands. They roost in crevices in cliffs (Fitzgerald et al. 1994).

Fringed Myotis
This bat occupies ponderosa pine woodlands, greasewood, oakbrush and saltbush shrublands in the Dominguez and Tabeguache areas. Caves, mines, and buildlings are used as both day and night roosts (Fitzgerald et al. 1994).

Desert Big Horn Sheep
Bighorn sheep prefer steep areas with good visibility, grass cover, and low shrubs (Fitzgerald et al. 1994). This subspecies of bighorn occurs south of the Colorado River and west of the Gunnison River. There are two populations of desert bighorn sheep in the planning area. These include the Uncompahgre or Dominguez population, and the Middle Delores River population. Uncompahgre population primarily occurs within the Dominguez-Escalante NCA and poritons of Roubideaux Canyon. The middle Dolores population occurs within the Dolores River Canyon wilderness study area south of Paradox Valley.

Kit Fox
This state endangered species occurs in semidesert shrubland and margins of piñon-juniper woodlands, including mixed juniper-sagebrush communities and rimrock (Fitzgerald et al. 1994). Kit fox historically occurred in the planning area. The last known den site was just northeast of Montrose in the Peach Valley area, observed in the early 1990s.

White-Tailed Prairie Dog.
This colonial rodent occurs primarily in semidesert shrublands in Colorado (Fitzgerald et al. 1994). Their colonies provide habitat for numerous other species. White-tailed prairie dogs and the many species that are associated with this keystone species are present in the lower elevations of the planning area. The prairie dog populations in the Uncompahgre Valley seem to be recovering from a large plague event in the in the early 1990s.

Appendix H

Aquatic Wildlife and Aquatic Special Status Species

Sport and Native Fish
Higher-elevation waters located generally above 5,200 feet support cold water fisheries, consisting largely of non-native sport fish including brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), and brown trout (*Salmo trutta*), as well as the native cutthroat trout (*Oncorhynchus clarkii*). Higher elevation non-game species include mottled sculpin (*Cottus bairdii*) and speckled dace (*Rhinichthys osculus*). Waters generally below 6,500 feet support primarily cool water and warm water fisheries, including the native bluehead sucker (*Catostomus discobolus*), Colorado roundtail chub (*Gila robusta*) flannelmouth sucker (*Catostomus latipinnis*), razorback sucker(*Xyrauchen texanus*), Colorado pikeminnow (*Ptychocheilus lucius*), bonytail chub (*Gila elegans*), and humpback chub (*Gila cypha*).

Invasive/Nonnative/Competitive Fish
Fish species that occur but are not native to the planning area include, but are not limited to, several warm water sport fish, such as common carp (*Cyprinus carpio*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), crappie (*Pomoxis spp.*), bluegill (*Lepomis macrochirus*), northern pike (*Esox lucius*), fathead minnow (*Pimephales promelas*), and channel catfish (*Ictalurus punctatus*). All of these species compete either directly or indirectly with native species.

Amphibians
Six species of frogs, three toads, and one salamander are known to occur in or near aquatic and riparian habitats within the planning area. CPW and BLM surveys have documented the presence of tiger salamander (*Ambystoma tigrinum*), bullfrog (*Rana catesbeiana*), northern leopard frog (*Rana pipiens*), red spotted toad (*Bufo punctatus*), Canyon treefrog (*Hyla arenicolor*), Great Basin Spadefoot (*Spea intermontana*) and woodhouse toad (*Bufo woodhousii*) across portions of the planning area.

Boreal toad habitat is located in the highest elevation areas within the planning area, generally in areas above 8,500 feet that contain suitable aquatic habitat. Lower-elevation amphibians include the Great Basin spade-foot toad and canyon treefrog. Northern leopard frog, woodhouse toad, and tiger salamander use various aquatic habitats and are found at varying elevations throughout the planning area.

Special Status Fish and Aquatic Wildlife

Native Trout Species
Two cutthroat trout subspecies native to Colorado are known to exist in the planning area -- Colorado River cutthroat trout (*Oncorhynchus clarkii pleuriticus*) and greenback cutthroat trout (*Oncorhynchus clarkii stomias*). Threats to these trout include introduction of nonnative trout species, which results in competitive exclusion and/or hybridization, disease, poor livestock

grazing practices, energy development, and water diversions, among others (CRCT Coordination Team, 2006).

Colorado River Cutthroat Trout

Colorado River cutthroat trout is a native to the Colorado River Basin. The Colorado River cutthroat trout is designated as a special status species by the states of Colorado, Utah, and Wyoming. In addition, it is classified as a sensitive species by Regions 2 and 4 of the US Forest Service and by the BLM in Colorado and Utah. This fish historically occurred in portions of the Colorado River drainage in Wyoming, Colorado, Utah, Arizona, and New Mexico (Behnke 1992). In Colorado, this fish was found in most of the larger rivers, including the White, Yampa, Colorado, Gunnison, and San Juan. Today, remaining Colorado River cutthroat trout populations are primarily limited to small headwater streams and lakes within their historic range. Young (1995) determined that most lotic populations reside in streams with average daily flows less than 0.85 cubic meters per second (30 cubic feet per second). Stream gradients usually exceeded four percent, and all populations were found above 2,290 meters (7,500 feet). Behnke (1979) stated that Colorado River cutthroat trout occupy less than one percent of its historical range, though a more rigorous assessment indicates that the true number lies closer to 14 percent (Hirsch et al. 2006). Within the UFO planning area, conservation populations of Colorado River cutthroat trout have been documented in Doug Creek, and Anthracite Creek. Numerous other streams within the planning unit support Colorado River cutthroat trout but have not been designated as conservation populations.

Greenback Cutthroat Trout

Terror Creek & West Fork of Terror Creek, Hubbard Creek, Deep Creek, and possibly a newly discovered Greenback liniage in Kelso Creek within the UFO planning area contain genetically pure cutthroat trout that were previously thought to be Colorado cutthroat trout. However, recent genetic work conducted on these populations indicates they are more closely related to greenback cutthroat trout, a federally threatened species native to the eastern slope of the Rocky Mountains. Therefore, based on the best available science, these four populations are currently being considered greenback cutthroat trout for the purposes of ESA compliance.

<u>Big River Fish Species</u>

Big river fish species found in the planning area include roundtail chub (*Gila robusta*), bluehead sucker (*Catostomus discobolus*), flannelmouth sucker (*Catostomus latipinnis*), Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), bonytail (*Gila elegans*), and humpback chub (*Gila cypha*).

Roundtail Chub

This species inhabits pools and rapids of moderate to large rivers and large reservoirs and selects cobble-rubble, sand-cobble, or sand-gravel substrate in association with undercut banks, fallen logs, or other overhead cover (Rees et al. 2005a). Within the planning area, roundtail chub have been observed in the Dolores, Gunnison, and San Miguel Rivers and their major tributaries, including but not limited to Escalante Creek, Tabeguache Creek and Roubideau Creek.

Bluehead Sucker
This species inhabits a variety of habitats from headwater streams to large rivers, in moderate to fast-flowing water above a rubble-rock substrate (Ptacek et al. 2005). Young fish prefer quiet, shallow areas near the shoreline. In the planning area, bluehead suckers have been observed in the Dolores, Gunnison, and San Miguel Rivers and their major tributaries, including Escalante Creek, Tabeguache Creek, Monitor Creek, Potter Creek, and Roubideau Creek.

Flannelmouth Sucker
This species is found in a wide variety of habitats, ranging from riffles to backwater areas to large pools, in larger rivers and streams (Rees et al. 2005b). Within the planning area, these fish are found primarily in the Dolores, San Miguel, and Gunnison Rivers and portions of the major tributaries to these rivers where no barriers preclude movement between the river and the streams. Some tributary streams may be used seasonally for spawning. Threats to flannelmouth sucker, bluehead sucker, and roundtail chub include impairment of water quality, disease, introductions of nonnative fish, predation, hybridization, reductions in flow, and physical changes and loss of important habitats.

Colorado Pikeminnow, Razorback Sucker, Bonytail, and Humpback Chub
Within the planning area, the 100-year floodplain of the Gunnison River from the southern Grand Junction Field Office boundary upstream to the confluence with the Uncompahgre River is designated critical habitat for the Colorado pikeminnow (squawfish) and razorback sucker (USFWS 1994). The Gunnison River and Dolores River are believed to be historical habitat for all four species. All four species require a diversity of habitats at varying life stages. Colorado pikeminnow generally prefer swift flowing turbid rivers with quiet, warm backwaters and adequate spawning substrates (USFWS 1994). The humpback chub prefers deep turbid pool habitats often found in canyon-bound portions of the Upper Colorado River system (USFWS 1994). This species is found in the Black Rocks area near the Colorado-Utah border and in Westwater Canyon west into Utah along the Colorado River (USFWS 1994). The razorback sucker is most often found in quiet, muddy backwaters along the Colorado River but uses main channel habitats as well (USFWS 1994) and has been found within the planning area on the Gunnison River approximately 20 miles upstream form the confluence with the Colorado River. The bonytail chub is extremely rare in Colorado, and no self-sustaining populations exist throughout the Colorado River Basin (USFWS 1994). This species prefers swift turbid reaches of the Colorado River basin but is now found only in portions of the Green River and Lake Mohave (USFWS 1994). The alteration of habitats due to construction and operation of large dams that capture sediment, reduce water temperatures, change river morphology below the dams, and cut off migration corridors is one of the major factors that have contributed to the decline of these species (USFWS 1994). Other factors that have contributed to their decline include reductions in water flow caused by water diversions and other water-depleting activities, and introductions of nonnative predatory game fish species such as smallmouth bass, northern pike, and channel catfish. A recovery program managed by USFWS has been underway for several years. Threats to these fish include impairment of water quality, disease, introduction of nonnative fish, hybridization, reductions in flow, physical changes to, and loss of important habitats.

Amphibians

One federal candidate species and three BLM sensitive amphibian species occur in the UFO planning area (BLM 2009) Two of these species also have state designations. No amphibians listed as threatened or endangered under the ESA are known to exist in the planning area (USFWS 2011).

Boreal Toad

This federal candidate, BLM sensitive and state endangered toad species inhabits a variety of wet habitats, including marshes, wet meadows, streams, beaver ponds, glacial kettle ponds, and lakes interspersed in subalpine forest at altitudes primarily between 8,000 and 11,500 feet (USFWS 2009b). Unlikely on BLM managed lands within the planning area. There are numerous observations of the species on the Grand Mesa, West Elks, and Uncompahgre Wilderness on National Forest lands (Lampert 2006).

Northern leopard frog

Springs, slow-moving streams, marshes, bogs, ponds, canals, flood plains, reservoirs, and lakes; in summer, commonly inhabits wet meadows and fields; may forage along water's edge or in nearby meadows or fields.

Canyon tree frog

Rocky canyon bottoms along intermittent or perennial streams in temporary or permanent pools or arroyos, semi-arid grassland, piñon-juniper, pine-oak woodlands, scrublands, and montane zones at elevation ranges between 1000’ - 10,000’. Within the planning area, it is found in rocky canyons east of the San Miguel and Dolores Rivers and west of the Gunnison River.