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Record of Decision for Invasive Plant Management for the Bridger-Teton National Forest

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Cheatgrass infestation on the Bridger-Teton National Forest

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Date

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Table of Contents

Summary	1
Introduction	2
My Decision	2
Integrated Pest Management	3
Condition-Based Management Strategy	4
Rationale and Effects of Decision	7
Short-term Uses and Long-term Productivity	11
Unavoidable Adverse Effects	12
Irreversible and Irretrievable Commitments of Resources	12
Meeting Existing Law, Regulation, and Agency Policy for Treating Non-native and Invasive Plants	12
Other Alternatives Considered	14
Alternatives Considered but Eliminated from Detailed Study	15
Environmentally Preferable Alternative	16
Public Involvement	16
Other Required Disclosures	17
Implementation of this Decision	18
Attachment 1 – Resource Protection Measures to be Implemented Under My Decision	20
Protection Measures for Federally Listed Wildlife Species	20
Protection Measures for Federally Listed Plant Species	20
Protection Measures for Designated Wilderness, Wilderness Study Areas, Designated and Eligible Wild & Scenic Rivers	21
Protection Measures by Activity	22

List of Tables and Figures

Table 1. Guidelines for selecting and prioritizing treatments	5
Figure 1. Decision tree to select treatment methods	6

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Fremont, Lincoln, Park, Sublette and Teton Counties, Wyoming

Summary

This Record of Decision (ROD) documents my decision to select Alternative 2 – the preferred alternative – to treat invasive plant species on the Bridger Teton National Forest (Bridger-Teton NF) using an adaptive and integrated invasive plant treatment strategy with the modification of excluding aerial application of herbicides in designated wilderness and wilderness study areas. The rationale behind the decision is based on, and supported by, the *Invasive Plant Management Final Environmental Impact Statement for the Bridger Teton National Forest* (September 2019) and modified to be responsive to issues raised during the objection process.

My decision authorizes annual treatment of approximately 20,000 acres of invasive plant species using a combination of manual treatments, mechanical treatments, biological treatments, cultural treatments, 0F0F¹ and aerial and ground herbicide applications; treatments will be implemented over the next fifteen years. Potential treatment areas include, but are not limited to, crucial big game winter ranges and other important habitats, fuels reduction projects, roads and trails, power lines, areas of timber harvest, and beetle-killed forests where invasive plant species have already begun to proliferate. Implementing the decision requires compliance with herbicide label restrictions and comprehensive resource protection measures.

My decision broadens current management to do the following:

- Treatment of invasive species in addition to those listed as noxious farm weeds by the state of Wyoming.
- Allow the use of new, more species-specific, EPA-registered herbicides. A Bridger-Teton NF assessment team will be established to review the EPA-issued registration eligibility decision and determine the new herbicide's appropriateness for use on the Bridger-Teton NF.
- Aerial herbicide application.
- Protection measures not included in the present weed management program (the no action alternative). This includes protection measures for ground-based and aerial herbicide application. Attachment 1 are part of my decision.

Introduction

The Invasive Plant Management for the Bridger-Teton National Forest project encompasses 3.4 million acres of national forest system (NFS) land in five Wyoming counties: Fremont, Lincoln, Park, Sublette and Teton.

New direction for invasive plant management on the Bridger-Teton National Forest (Bridger-Teton NF) is needed for the following reasons:

- To meet existing law, regulation, and agency policy directing the Forest Service to treat non-native and invasive plants.
- To update existing management direction to include new invasive species and new treatments.
- To make cooperative treatment and control of invasive plant species more consistent and effective across land ownership boundaries.
- To help meet or maintain desired resource conditions on the Bridger-Teton NF. Invasive plants are threatening or dominating areas of the forest with resulting impacts to native plant communities, soil, watershed function, wildlife habitats, forage areas for wildlife and livestock, and recreational and scenic values.

My Decision

Based upon my review of the *Invasive Plant Management Final Environmental Impact Statement* (FEIS) and issues raised during the objection process, I have decided to implement Alternative 2 – the preferred alternative with the modification that aerial spraying will not occur in designated wilderness and wilderness study areas. This decision allows for ground and aerial application of herbicides to treat invasive plant species on the Bridger-Teton NF and, when compared to the other alternatives considered, best meets the purpose and need by including new invasive plant species and new treatment methods. It also improves my ability to work with other federal agencies, state agencies, county entities, and private landowners to complete cooperative treatments and control of invasive plant species across land ownership boundaries, particularly with the use of aerial herbicide application.

My decision expands current invasive plant management to include the following:

- Treatment of invasive species in addition to those listed as noxious farm weeds by the state of Wyoming.
- Allow the use of new, more species-specific, EPA-registered herbicides. A Bridger-Teton NF assessment team will review the EPA's registration eligibility decision for new herbicides and determine if the herbicides are appropriate for use on the Bridger-Teton NF.
- Aerial herbicide application.
- Protection measures not included in the present weed management program (the no action alternative). This includes protection measures for ground-based and aerial herbicide application. Attachment 1 is part of my decision. Thirteen herbicides are available for use under my decision: 2,4-D, aminocyclopyrachlor, aminopyralid, chlorsulfuron, clopyralid, glyphosate (aquatic and terrestrial), imazapic, imazapyr, indaziflam, metsulfuron methyl, picloram and rimsulfuron. All are EPA-registered and have Syracuse Environmental Research Associates (SERA) or BLM risk assessments or herbicide fact sheets. Appendix B of the FEIS and the risk assessments in the project record contain additional information on these herbicides. As noted above, my decision also allows the use of new, more species-specific, EPA-registered herbicides as they become available.

The following nine herbicides would not be available for use under my decision: atrazine, bromacil, dicamba, diuron, hexazinone, mefluidide, simazine, sulfometuron methyl, tebuthiuron and triclopyr. They were not included in my decision because they are not currently being used in the weed management program and the proposed herbicides are more effective with less risk.

My decision authorizes annual treatment of approximately 20,000 acres. This includes an estimated 5,000 to 15,000 acres that could be treated using aerial application of herbicides. Aerial treatment would primarily target cheatgrass, and the herbicide initially proposed for use is imazapic and rimsulfuron.

Integrated Pest Management

Integrated pest management is a key part of my decision and includes the methods listed below, either alone or in combination. With the exception of aerial herbicide application, all of these listed integrated pest management treatments and prevention methods are part of the current weed management program (the no action alternative).

- Mechanical treatment, such as hand-pulling, grubbing, mowing or cutting.
- Revegetation, where competitive vegetation is seeded to reduce invasive species, possibly after other treatments.
- Grazing with livestock.
- Biological control using most effective application method.
- Herbicide control using ground-based application methods.
- Herbicide control using aerial application methods.
- Prescribed fire in conjunction with other treatment methods.
- Education to inform people of the effects of invasive plant infestations, methods of spread and preventative management opportunities and practices.
- Prevention practices that reduce invasive plant spread, including a weed-free forage program and washing vehicles to remove seeds.

My decision does not choose one treatment tool over another but rather selects a combination of tools that would be most effective on target species for a particular location. Reliance on one method or restricting use of one or more tools may prove less effective. Effectiveness and applicability of each tool vary and depend on invasive plant biology and ecology, location and size of the infestation, environmental factors, management objectives, and management costs. Appendix C of the FEIS identifies example treatments for target invasive plant species using the treatment methods listed above.

My decision will use the strategy outlined in Table 1 to help select the most appropriate and effective control method. However, based on site-specific conditions and circumstances, strategies may change. Following EPA labels and APHIS direction (for biological control agents) and implementing resource protection measures will ensure that treatment methods are properly used.

Condition-Based Management Strategy

My decision also includes the concept of condition-based management to deal with infestations that are constantly changing. Condition-based management offers a way to describe and evaluate the consequences of changing or new infestations and new treatment options while still addressing other resource concerns.

The condition-based management strategy consists of two principle components:

1. Use of a decision tree (Figure 1) to select methods to quickly and effectively treat new infestations. The decision tree is based on infestation size, location, site characteristics, and consultation with specialists.
2. Evaluation of new technology, biological controls, or herbicides to improve treatment effectiveness and reduce impacts.

New technology, biological controls, herbicide formulations and supplemental labels are likely to be developed within the life of this project. New treatments would be considered if they are more species-specific than methods currently used, less toxic to non-target vegetation, less toxic to people, less persistent and less mobile in the soil, or more effective. A condition-based management strategy allows use of new treatment methods if they meet the following criteria:

- The new or existing herbicide must have an EPA-approved herbicide label. Application must adhere to label specifications.
- A Forest Service assessment team would evaluate new herbicides that become available after this analysis. The team would review the EPA's registration eligibility decision for new herbicides and determine if the herbicides are appropriate for use on forests and rangelands.
- New biological agents must be detrimental to the target plants and virtually harmless to native or desirable non-native plants. Non-native biological control will not be used in or adjacent to designated wilderness, wilderness study areas, or research natural areas.
- New biological agents must be approved by USDA Animal, Plant Health Inspection Service (APHIS) and the State of Wyoming prior to their introduction.
- When a new treatment is determined to be appropriate for use, an interdisciplinary review will be conducted to determine if the scope and range of effects of the new treatment are consistent with those identified in the original analysis.
- Mechanical methods of treatments must be cost effective. These methods would be reviewed before use to determine if other resource quality standards can be maintained.

Table 1. Guidelines for selecting and prioritizing treatments

BIOLOGICAL CONTROLS WILL BE EMPHASIZED ON / IN
<ul style="list-style-type: none"> • Large infestations of weeds for which there is an effective biocontrol available that are in stream, riparian and wetland areas, • Rough terrain and/or areas where herbicide use is restricted or problematic (highly permeable soils, high water tables) • Non-native biological control will not be utilized near or within designated Wilderness, Wilderness Study Areas, or Research Natural Areas.
GROUND HERBICIDE APPLICATION WILL BE EMPHASIZED ON
<ul style="list-style-type: none"> • Weeds for which no accepted and effective biological controls are known • New infestations • Small infestations • Easily accessed infestation sites • Edges of large infestations • Ownership boundaries • Oil well sites (producing and rehabilitated) • Sites where biological controls are not effective
AERIAL HERBICIDE APPLICATION WILL BE EMPHASIZED ON
<ul style="list-style-type: none"> • Large infestations of weeds that do not have effective biological controls available, especially those in inaccessible or remote areas • Infestations in areas of critical habitat where ground application is less effective or hazardous.
MECHANICAL TREATMENTS WILL BE EMPHASIZED ON
<ul style="list-style-type: none"> • Infestations where other treatments are not effective • Small infestations where it is effective and practical
GRAZING WILL BE EMPHASIZED FOR USE
<ul style="list-style-type: none"> • On infestation areas where other methods are not effective or allowed • Where herbicide application is not practical • Where biological control methods are ineffective
REVEGETATION WILL BE EMPHASIZED FOR USE
<ul style="list-style-type: none"> • In combination with other treatments to revegetate bare ground or where native species are not present
FIRE WILL BE EMPHASIZED FOR USE
<ul style="list-style-type: none"> • To enhance the effectiveness of other treatments (biological, herbicides and in revegetation efforts)
PREVENTION AND EDUCATION
<ul style="list-style-type: none"> • Prevention and education are ongoing programs.
PRIORITY FOR TREATMENT
<ul style="list-style-type: none"> • Threatened, endangered, candidate, or sensitive species habitats • New infestations of new species • New infestations of existing species (outside currently infested areas) • Fast spreading species • Areas with high probability of success • Perimeters of existing infested sites • Sensitive plant habitat and rare plant communities • Ownership boundaries • Areas likely to accelerate weed spread (for example trails, trailheads, roads) • Areas where adjacent landowners are actively working to control infestations • Wilderness, Wilderness Study Areas, Wild and Scenic River corridors, and Research Natural Areas, where natural integrity and ecological processes are at high risk from invasive plant species.

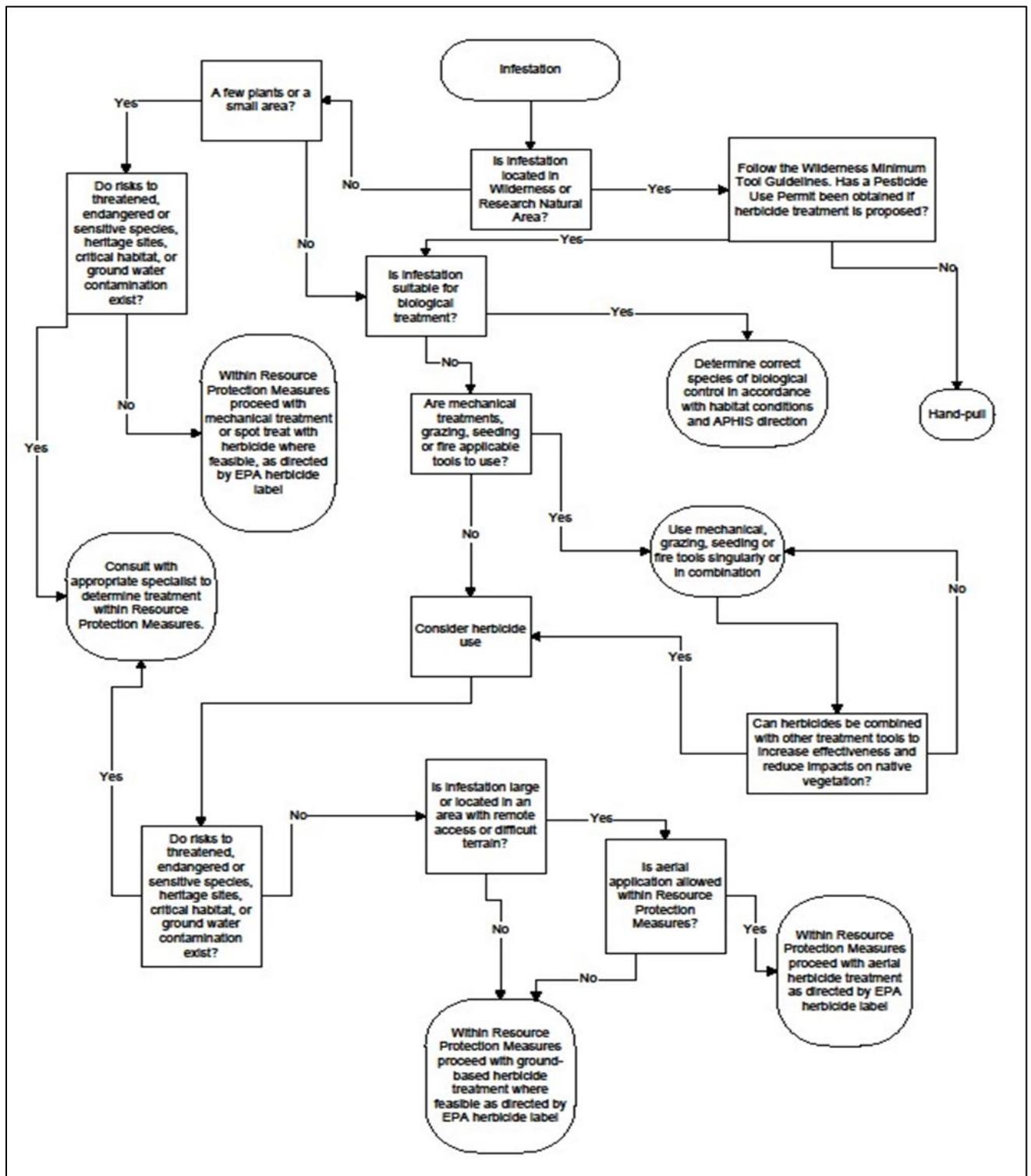


Figure 1. Decision tree to select treatment methods.

Rationale and Effects of Decision

I have reviewed the FEIS and the project record, including the forest plan. I am familiar with the scope of the project area and I understand the resource and human impacts of selecting the preferred alternative – Alternative 2 with the modification of excluding aerial application of herbicides in designated wilderness and wilderness study areas.

I decided to implement a modified Alternative 2 for the following reasons:

- It enables the Bridger-Teton NF to effectively treat non-native and invasive plants as required by existing law, regulation, and Forest Service policy, and it is consistent with the forest plan.
- It updates existing management direction to include new treatment methods and treatment of new invasive species that cannot be treated under the existing 2004 direction.
- It makes cooperative treatment and control of invasive plant species more consistent and effective across land ownership boundaries. Without an adequate plan for lands managed by the Bridger-Teton NF, invasive species control efforts on adjacent lands under other federal, state, and private ownership may not be effective.
- It helps meet or maintain desired resource conditions on the Bridger-Teton NF, including limiting the spread of invasive plants into areas with little or no infestation to help reduce fire hazard and/or risk. Invasive plants are threatening or dominating areas of the forest with resulting impacts to native plant communities, soil, watershed function, wildlife habitats, foraging areas for domestic livestock, and recreational and scenic values.
- Although aerial spraying of herbicides is effective at treating large infestations of weeds in inaccessible areas, I have decided to exclude the use of aerial spraying from designated wilderness and wilderness study areas to be responsive to the concern raised by objectors regarding wilderness intrusions and because large infestations of weeds do not currently occur in these areas.

In making my decision, I also considered the following issues identified by the public and resource concerns identified by the interdisciplinary team.

ISSUE #1: Effects on native vegetation, biological diversity, production, and structure.

My decision protects native plant communities by improving the efficiency of invasive plant treatment and increases the number and acres of invasive plants that can be treated. In particular, it addresses the proliferation of cheatgrass documented on the Bridger-Teton NF since 2000.

I recognize that all of the herbicides considered for use are likely to kill or damage some native plant species immediately adjacent to, or interspersed with, target weed species. However, negative effects to native plants can be reduced by selecting the appropriate herbicide application method, rate, timing, and surfactant. My decision includes the laws, regulations, standards, and guidelines that apply to herbicide use, as well as the protection measures listed in Attachment 1, to minimize negative effects to native plant communities and other resources.

My decision allows aerial herbicide application which is most likely to affect non-target native plants because this method applies herbicide to all plants in the treatment area, and drift can affect plants outside the treatment area. Protection measures in Attachment 1 will minimize the risk of drift, and recent advances in computer-controlled aerial application technology allow more precise application in terms of the area where the herbicide is applied and the application rate.

ISSUE #2: Effects of herbicides on threatened, endangered, or sensitive species and their habitats.

Plant Species: My decision results in a biological determination of ‘*No Effect*’ for Ute ladies’-tresses (**threatened**) and Whitebark Pine (**candidate**).

Ute ladies’-tresses has not been documented anywhere on the Bridger-Teton NF. The potential for suitable habitat was analyzed on the Bridger-Teton NF. Habitat analysis and field surveys have determined that suitable habitat may exist in select wet areas; however, no populations of Ute ladies’-tresses have been discovered to date. In the unlikely event of an occurrence, protective measures outlined in Attachment 1 will be employed in wet meadows and would mitigate any potential impacts to Ute ladies’-tresses.

Whitebark pine is a long-lived, fire-resistant tree and occurs as seral to subalpine fir as a climax species. Individual whitebark pine may also occur as a very minor component of lower-elevation conifer forests. Whitebark pine is well documented on the Bridger-Teton NF. Exotic weed species are not thought to pose a serious threat to the species viability given the high elevations at which it is generally found (typically above 8,500 ft.). Treatments in high, subalpine, alpine and boreal environments are unlikely. Individuals are well documented and the likelihood of weed treatments in known stands are limited. In the event that a treatment is required, protective measures as outlined in Attachment 1 will be employed to ensure that whitebark pine are not impacted by treatments.

My decision results in a biological determination of ‘*No Effect*’ for most sensitive plant species. Despite this determination, some species received a ‘*May Impact Individuals or their Habitat, but Will Not Likely Contribute To A Trend Towards Federal Listing or Loss of Population Viability*’ determination, as follows: Sweet-flowered rock jasmine, Starveling milkvetch, Payson’s milkvetch, Peculiar moonwort, Payson’s bladderpod, Naked-stemmed parrya, Creeping twinpod, Aster mollis, and Narrowleaf goldenweed. These communities would be widely treated for the control of cheatgrass, which could make significant long-term improvements in their habitats.

Wildlife Species: My decision results in a biological determination of ‘*No Effect*’ for Canada lynx and lynx critical habitat (**threatened**), yellow-billed cuckoo (**threatened**), grizzly bear (**threatened**) or North American wolverine (**proposed threatened**).

No direct effects to Canada lynx and lynx critical habitat are anticipated. Recent intensive surveys conducted from 2015 to present indicate no presence of lynx on the Bridger-Teton NF. Critical habitat for the Canada lynx is designated on the Bridger-Teton NF but will not be impacted by the proposed invasive species treatments.

The available literature suggests that the breeding population of the yellow-billed cuckoo within Wyoming is extremely low, numbering in the single digits and potential nesting habitat is very limited and nesting has not been confirmed on the Bridger-Teton NF and is not expected due to inadequate nesting habitat. With the protection measures in Attachment 1 and additional measures listed in the FEIS, yellow-billed cuckoos or suitable cottonwood, riparian habitat will not be impacted by the proposed invasive species treatments.

No direct effects to grizzly bears and grizzly bear critical habitat are anticipated after being delisted in 2017, the grizzly bear was re-listed to threatened status on September 24, 2018. While grizzly bears occur over much of the northern areas of the Bridger-Teton, neither ground-based nor aerial weed treatment activities pose a threat to the species. As with lynx and wolverines, treatments that may take place will be both temporally and spatially small in scale relative to the grizzly’s wide-spread habitat use and movement patterns.

Threats to the wolverine include loss of habitats with persistent snow cover resulting from climate change and increasing temperatures. Neither ground-based nor aerial weed treatment activities pose a threat to the

low-density and wide-ranging species. As with the lynx and grizzly bear, treatments that take place will be both temporally and spatially small in scale relative to by the proposed invasive species treatments.

For **Region 4 sensitive species**, my decision results in a determination of ‘*No Impact*’ or ‘*May Impact Individuals or their Habitat, but Will Not Likely Contribute to a Trend towards Federal Listing or Loss of Population Viability*’. The ‘*No Impact*’ determination applies to the following species: spotted bat, boreal toad, trumpeter swan, common loon, harlequin duck, Columbia spotted frog, northern goshawk, boreal owl, fisher, three-toed woodpecker, flammulated owl, and great gray owl. The ‘*May Impact Individuals or their Habitat, but Will Not Likely Contribute to a Trend towards Federal Listing or Loss of Population Viability*’ determination applies to the following species: bighorn sheep, peregrine falcon, Townsend’s big-eared bat, bald eagle, greater sage-grouse, and migratory birds. In selecting a modification to Alternative 2, I considered the short-term impacts from disturbance associated with herbicide application (ground/aerial) as well as the long-term beneficial impacts by improving forage and habitat and reducing potential disturbance from fire.

ISSUE #3: Effects of herbicides on soils, water, and aquatic resources.

My decision is expected to have a beneficial effect on soils in the project area by increasing groundcover and reducing surface erosion. Under my decision, invasive species populations would decrease and native plant populations would increase. Native plants generally provide more effective groundcover than invasive plants, and more effective groundcover reduces surface erosion. Reduced surface erosion benefits soil and aquatic ecosystems.

I recognize that the herbicide use in my decision has the potential to affect soil microorganisms, water quality, and aquatic organisms. However, I am confident that the resource protection measures (see Attachment 1) in my decision will reduce or prevent potential effects of herbicide use on these features. There are general measures to prevent the potential contamination of waterways and wetlands; protection measures specific to water resources; protection measures for wildlife/aquatics and water and woodlands; and protection measures for environmentally sensitive areas. My decision also includes buffer zones on each side of aquatic, streamside, or wetland areas and multiple measures designed to reduce spray drift for aerial herbicide application and resource protection measures requiring a surface water quality risk assessment during the contract preparation for aerial application of herbicides, adding another layer of protection for surface water.

ISSUE #4: Effects of herbicides on human health.

I considered potential health risks to herbicide applicators (workers), to the public, and to those who are more sensitive to chemical exposure. As discussed in the FEIS, no significant human health effects are anticipated from manual or mechanical removal of weeds because required personal protection equipment (PPE) (gloves, long-sleeved shirts, long pants, boots and safety glasses) and proper washing of contaminated PPE would prevent injuries or irritation.

I am familiar with the risk assessments for the herbicides that could be used under my decision. Based on my review of the FEIS and the human health report, I note the following potential effects:

- The risks are based on projected exposure and EPA’s Reference Dose (RfDs) reported in the risk assessments. Five of the herbicides have estimated chronic¹ or acute² exposures less than the RfDs which means there is little risk to workers or the public from exposure.
- Nine herbicides exceed the RfDs for chronic or acute exposure for the public or workers or both. Implementing the protection measures in Attachment 1 would reduce the risk of exposure to both groups.
- In particular, workers applying hexazinone or 2,4-D could be exposed to doses in excess of the RfDs, making the requirements for PPE and proper handling of contaminated PPE particularly important.

It is important to note the difference between EPA's reference dose and the exposure that is likely to occur from herbicide treatment of invasive plants on the Bridger-Teton NF. A reference dose (RfD) is a dose the EPA estimates to be without an appreciable risk of adverse effects over a lifetime of daily exposure. On the Bridger-Teton NF, the maximum a worker could conceivably apply herbicides would be 100 days in a given year over a career of 20 years, which is considerably less than a lifetime of daily exposure.

I recognize that there are potential health risks associated with herbicide use – both ground-based and aerial – under my decision. My decision includes protection measures (see Attachment 1) to minimize health risks to workers, the public, and sensitive subgroups.

Aerial spraying could expose the public to herbicide drift; however, this potential exposure would be reduced by following the herbicide label instructions and implementing the protection measures shown in Attachment 1. Herbicide labels describe conditions in which ground or aerial spraying should not be done, and Attachment 1 lists the protection measures for aerial herbicide application, including use of buffer zones and drift reduction agents and application restrictions for particular weather conditions.

My decision to allow aerial application of herbicides carries a higher risk of accidental spills and there is greater concern with storage, transport, and disposal because more acres are proposed for treatment so more herbicide would be used. To mitigate these potential effects, my decision includes direction outlined in Forest Service Handbook 2109.14 - Pesticide-Use Management and Coordination.

In contrast, my decision to allow aerial spraying poses less risk to workers because it reduces exposure to the herbicide. The person who mixes and loads the herbicide has less contact time and the pilot who applies it is protected by the enclosed cockpit of the helicopter/ fixed-wing aircraft. Because aerial herbicide application is more efficient than backpack or vehicle spraying for control of cheatgrass (Haas 2011), my decision could reduce the number of treatments and thus the likelihood of exposure over the long-term. It is estimated that a helicopter can spray about 200 acres per day (50 acres/hour x 4 hours of flight time). A person can hand treat about 2 acres per day under optimal conditions. At this application rate, multiple treatments would be necessary.

Based on my review of the potential human health effects disclosed in the FEIS, I am confident my decision contains the necessary protection measures to mitigate adverse impacts to workers, the public, and sensitive subgroups.

RESOURCE CONCERN #1: Effects on wilderness, recommended wilderness, inventoried roadless areas, wild and scenic rivers, and research natural areas.

Under this decision the Bridger-Teton NF will continue to treat weeds in the wilderness. However, my decision will not authorize aerial treatment in designated wilderness or wilderness study areas.

My decision will have negligible effects on the outstandingly remarkable river values of the designated and eligible wild and scenic rivers. Because my decision includes the option of using newer, more selective, and more effective herbicides, it could reduce the potential adverse effects of invasive species introduction and spread from recreation activities in the river corridors.

My decision allows for herbicide use in Special Interest Areas (SIAs) and Research Natural Areas (RNSs); however, it would be controlled, and herbicides would only be used when deemed necessary by specialists from multiple disciplines and/or outside agencies. The aerial spraying option that is available under my decision is unlikely to be frequently used in these special emphasis areas. However, when it is used, it has the potential to effectively treat infestations before they threaten local vegetation on a large scale which may be vital to preserving native vegetation and high-value plant communities.

As disclosed in the FEIS, aerial spraying is not recommended in any SIA or RNA with high wetland cover or abundant sensitive species because spray buffers may be hard to administer and windy conditions may cause excessive herbicide drift.

RESOURCE CONCERN #2: Effects on recreation users.

My decision includes ground-based and aerial application of herbicides which could result in a short-term loss of recreation opportunity if the treatments occur at the same time and place that visitors are recreating. My decision could also have a beneficial impact by reducing or eliminating invasive plants that impede travel, cause discomfort, or cause changes in the perceived environment.

Closures for chemical treatments would typically last less than 48 hours and might occur at a handful of sites each year. As an extreme example, if 25% of all the developed recreation sites on the Bridger-Teton NF experienced a 48-hour closure for weed treatment every year, the result would be a less than 1% reduction in persons at one time (PAOT) days (PAOT days are objective measures of the quantity of opportunities and visitor satisfaction is a measure of the quality of opportunities). My decision includes protection measures (Attachment 1) to mitigate adverse effects of herbicide application in public recreation areas.

RESOURCE CONCERN #3: Effects on social and economic considerations, including effects on partnerships/cooperators.

My decision will have a beneficial impact on the land and resource values in the analysis area. My decision includes more effective treatment options than the other alternatives considered and would reduce the economic impacts of invasive species and help improve the quantity and quality of native vegetation. This would maintain and/or increase the value of the land and resources in the analysis area. Weeds would spread onto fewer adjacent and intermingled private and state acres.

I recognize that my decision may have short-term economic impacts as noxious and invasive plants begin to die off and native plant populations recover. Some areas may require additional, short-term expenditure to prevent or reduce the risk of erosion and to hasten the restoration of native plants, where appropriate. These impacts should decrease as native plant populations recover.

My decision would allow the Bridger-Teton NF to continue building partnerships with federal, state and county agencies and cooperators such as grazing associations and oil and gas companies as part of an integrated invasive species and noxious weed treatment program.

Short-term Uses and Long-term Productivity

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). As declared by Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

My decision may result in the short-term loss of non-target species and localized biodiversity in areas where herbicides, some mechanical treatment, and fire treatment methods are used. Grazing and some mechanical treatments may affect non-target species through temporary loss of biomass but these plants are generally not killed by these treatment actions. Biological agents are host-specific and do not have an effect on non-target species. In this analysis, the overall the long-term effect of all identified noxious weed treatments is increased biodiversity and restoration of the natural productivity through the eradication of noxious weeds.

Unavoidable Adverse Effects

Under my decision, herbicide treatments could have some unavoidable environmental impacts. Adverse effects would primarily involve localized, short-term impacts to non-target plants. Although it is possible that small amounts of herbicide could migrate from treatment sites, the resource protection measures in Attachment 1 would prevent environmentally significant concentrations of herbicide from reaching surface or groundwater. Following label instructions and the use of prescribed personal protection equipment would protect applicators and the public from unacceptable exposure to herbicides and threats to human health.

Mechanical, biological, and cultural treatments under the selected alternative have no known unavoidable adverse effects. Thus, under reasonably foreseeable circumstances, there would be no significant environmental effects.

Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. My decision will not result in irreversible commitments of resources.

Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road.

My decision may result in some short-term irretrievable commitments of resources as some non-target species of vegetation could be affected by herbicide use in the short-term but would be regained in the long-term. These commitments would be localized and would not have significant effects on biodiversity, wildlife habitat, or forage production.

My decision would not cause an irretrievable commitment of resources involving threatened, endangered, proposed, or sensitive wildlife species or other wildlife species of concern. There could be short-term impacts from treatment options available under my decision; however, no long-term loss of plant species is predicted from herbicide applications, and native forb species reduced by herbicide applications are expected to recover within a few years after treatment and thrive after competition with invasive plants is reduced.

Meeting Existing Law, Regulation, and Agency Policy for Treating Non-native and Invasive Plants

My decision is consistent with law, regulation, and agency policy to treat non-native and invasive plants. Several laws and regulations specifically address control of such species.

- Carlson-Foley Act of 1968 (PL 90-583) authorizes and directs federal agencies to permit control of noxious weeds on federal lands by state and local governments on a re-imbusement basis in connection with similar weed control programs carried out on adjacent nonfederal land.
- Federal Noxious Weed Act of 1974 (PL 93-629) defines weeds, and authorizes the Secretary of Agriculture to cooperate with other agencies, organizations, or individuals to control and prevent noxious weeds.
- The Federal Land Policy Management Act of 1976 (PL 94-579) authorizes control of weeds on rangeland.
- The National Forest Management Act of 1976 (PL-94-588) authorizes removal of deleterious plant growth through forest plans.

- The Wilderness Act of 1964, as amended (October, 1978). The management goal for wilderness areas is to retain their primitive character and influence, without permanent improvements or human habitation, so as to preserve natural condition.
- U.S. Forest Service Pesticide Use Management and Coordination Handbook (FSH 2109.14) provides Forest Service personnel with direction for proper use of, and containment and safety procedures for, pesticides.
- FSM 2100, Chapter 2150. Pesticide-Use Management and Coordination directs the Forest Service to plan, evaluate, and review pesticides and their use, as well as provide for safety in pesticide use, storage, transportation, and disposal.
- FSM 2900, Invasive Species Management lists laws and regulations for the Forest Service to adhere to. Additionally, the manual states that the Forest Service invasive species policy and management objectives will be based on integrated pest management.
- Code of Federal Regulations, 36 CFR 222.8 directs the Forest Service to cooperate with local weed control districts to analyze and develop noxious weed control programs where there are national forests and grasslands.
- Forest Service Manual 2259.03 states, “Forest officers shall cooperate fully with State, County and Federal officials in implementing 36 CFR 222.8 and Sections 1 and 2 of Public Law 90-583. Within budgetary constraints, the Forest Service shall control to the extent practical, noxious farm weeds on all NFS lands.”
- Wyoming Weed and Pest Control Act of 1973 (W.S. 11-5-101-11-5-119), the purpose of which is to control designated weeds and pests regardless of land ownership.
- Wyoming Weed and Pest Special Management Program (W.S. 11-5-301-11-5-303) authorizes development of county weed and pest control districts and an “integrated management system” for planning and implementation of a coordinated program utilizing all proven methods of control.
- Existing Weed Control Plan - 2004 Bridger-Teton NF Environmental Assessment for Management of Noxious Weeds is in place for the control of weeds on NFS lands by setting priorities, developing a prevention plan, continuing weed inventory and implementing a noxious weed control program.
- Executive Order 13112 Invasive Species (64 FR 6183; February 8, 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.”

Direction and support for non-native and invasive plant species management is also provided in the following:

- The 1998 Forest Service Natural Resource Agenda placed a strong emphasis on conserving and restoring degraded ecosystems as a management priority for the 21st Century, including actions to “attain desirable plant communities and prevent exotic organisms from entering or spreading in the United States.”
- The 1998 Forest Service Strategy for Noxious and Non-native Invasive Plant Management provided a “roadmap into the future for preventing and controlling the spread of noxious weeds and non-native invasive plants.”
- The 2004 National Strategy and Implementation Plan for Invasive Species Management identifies the Forest Service as one of the lead agencies in the effort to control non-native and invasive plants. It provides long-term direction to reduce, minimize, or eliminate invasive species across all landscapes and ownerships by improving the management of invasive species using science-based technology, by emphasizing partnerships, and by increasing performance and accountability, as well as communication and education.

Other Alternatives Considered

I considered two other alternatives in addition to the Alternative 2 – the preferred alternative. They are discussed below. A more detailed comparison of these alternatives can be found in the FEIS in Chapter 2.

Under the No Action alternative (Alternative 1), the current weed management program would continue. Herbicides would only be applied using ground-based methods; aerial application would not be used.

Ten herbicides identified in the 2004 NF Environmental Assessment (EA) for Management of Noxious Weeds would be available for routine weed control: 2,4-D, chlorsulfuron, clopyralid, dicamba, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram and sulfometuron methyl. An additional six herbicides have been approved and incorporated into weed management since the 2004 EA, these would also be available for routine weed control: aminocyclopyrachlor, aminopyralid, aquatic glyphosate, imazapic, indaziflam and rimsulfuron. Furthermore, seven herbicides have been approved but have not been used in the past and would not be used under this alternative: atrazine, bromacil, diuron, mefluidide, simazine, tebuthiuron and triclopyr. No additional herbicides that are developed in the future to achieve more species-specific treatments would be used under this alternative.

Integrated pest management – mechanical, cultural, biological and herbicide treatments – would continue. Condition-based management strategies would include the treatment of any newly introduced invasive plant species that are classified as noxious weeds by the State of Wyoming, treatment of weed infestations in new areas and use of new biological agents as they are approved by the USDA Animal and Plant Health Inspection Service (APHIS). More species-specific, EPA-registered herbicides that are developed in the future would not be available for use under this alternative.

Alternative 1 would allow treatment of approximately 3,000-5,000 acres annually. Many of these acres are re-treatment acres, since some infestations require repeated treatment for 5 to 8 years to ensure effective control or provide containment.

I did not select Alternative 1, the current weed management program, for the following reasons:

- The lack of aerial treatment limits the Bridger-Teton NF's opportunities to work with surrounding landowners in a landscape approach to invasive species management.
- It is less effective because it does not allow new herbicides, aerial application, and treatment of weed species not listed by Wyoming.
- Few, if any, cheatgrass infestations would be treated because the Bridger-Teton NF has no authorized selective herbicide to treat it, and aerial treatment is not an option. Many native grasses and forbs eventually die out on a heavily infested cheatgrass site that remains untreated.
- The reduced ability to effectively treat invasive species, cheatgrass in particular, has the potential for adverse soil and water impacts. A monoculture of cheatgrass can also increase the incidence of wildfire and subsequent erosion and sedimentation which can degrade water quality and kill aquatic biota.
- Because new herbicides would not be available, the broad-spectrum herbicides glyphosate, hexazinone, and imazapyr may be used more frequently with greater potential damage to nontarget vegetation.
- Lack of effective treatment options may result in more acres of native plant communities becoming infested, with resulting, indirect adverse impacts on naturalness in wilderness and on scenic, wildlife, and fisheries values in wilderness, recommended wilderness, and eligible wild and scenic river corridors.
- Lack of effective treatment options may result in unchecked weed invasions which could cause vegetation shifts in some SIAs and RNAs. Changes in species composition and related effects on

soils and fire regimes could compromise the utility of SIAs and RNAs for conservation, research, education, and as reference landscapes.

- Lack of effective treatment options would likely result in weeds spreading onto adjacent non NFS lands. The economic impacts of this invasive species spread could be reduced forage for livestock and wildlife, lower land values, and an inability to participate in, or maintain, effective weed control partnerships with adjacent landowners.
- Failure to effectively treat invasive species can make it more difficult for minerals and special uses permit holders to meet weed treatment terms and conditions in their permits.

Alternative 3 is the same as Alternative 2, except that it would not include aerial herbicide application. Alternative 3 allows treatment of approximately 3,000 – 5,000 acres per year on the Bridger-Teton NF using a combination of ground-based herbicide application plus manual, mechanical, biological, and cultural control methods. The integrated and condition-based management strategies for the preferred alternative would also be available.

I did not select Alternative 3 for the following reasons:

- Without the option of aerial application, Alternative 3 would treat a very small percentage of the over 25,000 cheatgrass-infested acres estimated on the Bridger-Teton NF.
- Lack of aerial treatment under this alternative would limit our opportunities to work with surrounding landowners for a landscape approach to invasive species management.
- Lack of effective cheatgrass management has the potential to negatively affect soil, water quality, and aquatic organisms due to wildfire as discussed under Alternative 1.
- Less effective control increases the chance that invasive species would invade suitable habitat for threatened, endangered and sensitive species.
- Expansion of cheatgrass constitutes a high risk for the persistence of sweet-flowered rock jasmine, starveling milkvetch, Payson’s milkvetch, peculiar moonwort, Payson’s bladderpod, Naked-stemmed parrya, Creeping twinpod, Aster mollis, Narrowleaf goldenweed, and other rare plant species.

Alternatives Considered but Eliminated from Detailed Study

I considered other alternatives for treatment of invasive plant species. They are listed below with a summary of the rationale for eliminating them from detailed consideration. The detailed descriptions and reasons for their elimination can be found in chapter 2 of the FEIS.

Prohibit all activities that spread invasive plants.

The intent of this alternative is to address and take action on human activities that promote the spread of weeds. The alternative proposed closing roads, modifying authorized livestock grazing permits, and altering or eliminating existing timber, mining and recreational OHV activities. These human uses and activities are authorized in the records of decision for the land and resource management plan. The plan meets the requirements of several public land laws and regulations authorizing multiple uses on NFS lands. Taking action on activities previously authorized under existing laws, regulations, permits and the land and resource management plan is beyond the scope of this EIS.

No use of herbicides

An alternative that discontinues the use of herbicides was considered but eliminated from detailed analysis because it does not meet the purpose and need of the project and does not comply with the Forest Plan Noxious Weed Control Standard which states, “Effective management of noxious weeds will be accomplished by cooperating with the Wyoming Department of Agriculture and County weed control districts, using Integrated Pest Management techniques, following the procedures outlined in the Bridger-

Teton NF Environmental Assessment for noxious weed control and appropriate technical guides. No toxic herbicides will be applied in a manner that will adversely affect non-target species.”

No invasive plant management treatments.

An alternative that discontinues the current weed management program was considered but eliminated from detailed analysis because it does not meet any of the project purposes. It does not comply with the Bridger-Teton NF’s integrated pest management program, is inconsistent with Forest Service policy that noxious weeds and their adverse effects be managed on NFS lands and it violates federal and state laws and executive orders.

Use herbicides only after other treatment methods have failed.

Other alternatives also eliminated from detailed analysis included mechanical, vegetative, biological, and combinations of treatments followed by herbicide application if these treatments are unsuccessful. This alternative was eliminated because of the concern that if the non-herbicidal treatments fails and some time passes before this failure is determined, the weed infestation may expand well beyond the original acreage and further impact forest resources. The resulting need for follow-up treatments would then have greater potential impacts than the original action. Such an occurrence would not meet the project purpose and need.

Climate change and global warming effects on resource conditions

This alternative was eliminated from further consideration because current science is insufficient to determine a cause and effect relationship between climate change and invasive plant management treatments. The preponderance of current literature suggests that “many invasive plants would benefit from increased disturbance under changing climate” (RMRS-GTR-375). The Bridger-Teton NF landscape is expected to become more vulnerable to the establishment of invasive plant infestations, actual acreage affected by invasive plants are expected to increase and control strategies are expected to become more difficult. Recommended management responses to these predictions are early detection (resulting from regularly scheduled monitoring) followed by a rapid response to eradicate initial infestations (Hellmann et al. 2008, Joyce et al. 2008, Tausch 2008). Early detection and rapid response are included in the proposed action and the alternatives.

Environmentally Preferable Alternative

Alternative 2 is the environmentally preferred alternative. While there are some direct and indirect effects to several resources, this alternative provides the most effective means to maintain and restore native vegetation which has long-term beneficial effects for most resources.

Public Involvement

The project was listed in the forest-wide schedule of proposed actions (SOPA) for the Bridger-Teton National Forest in November 2017. The notice of intent (NOI) was published in the Federal Register on January 18, 2018 which started a 33-day comment period. The agency sent scoping letters to individuals, businesses, organizations, and tribes that have expressed an interest in the project development process. Written comments were received from 15 respondents: members of the public, and other local, state and federal agencies. The interdisciplinary team used the comments to develop a list of issues to be addressed.

Using the information gleaned from scoping comments, the agency developed two alternatives to the proposed action (Alternative 2). Effects of implementing the proposed action and alternatives were analyzed and disclosed in the draft EIS (DEIS). The analysis focused on effects to the issues and resource concerns described under the ‘Rationale and Effects of Decision’ section of this ROD.

The DEIS was released on March 26, 2019. The notice of availability (NOA) of the Draft EIS was published in the Federal Register on April 5, 2019 which started a 45-day comment period. The NOA

sought public comments on the proposal by May 20, 2019. A legal notice was published in the Casper-Star Tribune on April 6, 2019 seeking public comments by May 20, 2019. We received comments from sixteen individuals, agencies, and organizations. Appendix E of the FEIS lists the comments and the agency responses.

The Notice of Availability of the FEIS and Draft ROD was published in the Federal Register on September 27th, 2019. Pursuant to 36 CFR 218 Subpart A and B, a legal notice establishing a 45-day objection period was published in the Casper Star-Tribune on September 27th, 2019. Two objections were received. The Objection Reviewing Officer, Deputy Regional Forester David Rosenkrance, offered objection meetings to both objectors. One objector engaged in communication with the Forest. The parties were unable to reach a resolution agreement. On April 3rd, 2020, the Objection Reviewing Officer signed a response letter to the objectors with instructions to the District Ranger.

Other Required Disclosures

Another aspect of the process of selecting an alternative is ensuring the planned actions comply with all legal requirements and policy. I have determined that implementation of the modified Alternative 2 is consistent with requirements of the laws and regulation listed below (also see FEIS chapter 1). My decision is also consistent with Environmental Protection Agency, Occupational Health and Safety Administration, state and federal water and air quality regulations, and Forest Service regulations (FSM 2150) regarding pesticide use and worker safety.

The National Forest Management Act (NFMA) 1976, which amends the Forest and Rangeland Renewable Resources Planning Act (RPS) of 1974: Alternative 2 was developed to be in full compliance and consistent with NFMA. I have determined that my decision to implement a modified Alternative 2 complies and is consistent with NFMA as summarized below:

Forest plan consistency: The forest plan, supported by FEISs, are the programmatic documents required by the rules implementing the Forest and Rangeland Renewable Resources Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA). My decision is consistent with the forest plan in that planned activities will contribute to the forest plan goals and objectives listed below. Planned activities are also consistent with desired future condition direction, and forest plan standards are followed.

- Protecting the natural condition and biodiversity of the Bridger-Teton NF by preventing or limiting the spread of non-native and invasive plant species.
- Promptly eliminating newly identified populations of invasive species not previously reported on NFS lands before they become firmly established.
- Preventing or limiting the spread of established invasive plants into areas containing little or no infestation. This could also reduce fire hazard and/or risk.
- Protecting sensitive and unique habitats including critical big game winter ranges, sage- grouse core areas and other important habitats.
- Reducing known and potential invasive plant seed sources along roads and trails, within powerline corridors, rights-of-ways, gravel and rock quarries, fuels reduction projects, previously-burned areas and forests impacted by the mountain pine beetle.

My decision is consistent with applicable forestwide threatened, endangered, sensitive species and wildlife standards and guidelines defined in the forest plan. The effects of my decision to implement a modified Alternative 2 are within the range of anticipated effects for each of the species as described in the environmental impact statement for the forest plan to which this analysis is tiered.

As disclosed in the FEIS, my decision is also consistent with forest plan standards and guidelines for rangeland vegetation; fish, wildlife, and rare plants; sensitive plant and animal species; noxious weeds,

non-native, and invasive species; water; wilderness, wilderness study areas, and eligible wild and scenic rivers; research natural areas and scenic integrity areas; recreation; and heritage resources.

The National Environmental Policy Act (NEPA) 1969: My decision and the analysis process documented in the FEIS comply with NEPA. Direction in 40 CFR parts 1500-1508 and FSH 1909.15 was followed throughout development of the FEIS and project as disclosed in the FEIS and project record.

The Endangered Species Act of 1973: My decision is consistent with the Endangered Species Act of 1973. Interagency cooperation between the Forest Service (or other federal agency) and the USFWS, regarding proposed, threatened, or endangered species, is described in Section 7 of the Endangered Species Act. The proposed actions contained in this document will have no effect on threatened, endangered species. Therefore, a biological assessment (BA) (FSM 2670.31-2670.32) was not prepared in addition to the FEIS document. All the information used to make these determinations is included in the FEIS.

The National Historic Preservation Act of 1966: The Forest Service consulted with the Wyoming State Historic Preservation Office (SHPO) to ensure compliance with the National Historic Preservation Act of 1966, as amended in 1999. The terms found in the 2009 programmatic agreement (PA) between the Wyoming SHPO and the National Forests of Wyoming allows for the application of pesticides that do not have the potential to affect access to or use of resources by Native Americans to be considered undertakings exempt from further review and/or consultation. SHPO and Native American Tribes have been notified of this project, and the project will be documented in the Annual Forest Service Report to SHPO. No cultural resource concerns have been identified through project notification of consulting parties. Further, the PA also allows mowing treatment with a brush hog or similar rubber-tired equipment to be exempt from review and/or consultation unless managers, planners, or heritage staff has reason to believe that a specific undertaking may affect historic properties.

The Clean Water Act of 1972 as amended in 1977 and 1987: My decision to implement a modified Alternative 2 is consistent with this act through the application of the resource protection measures identified in Attachment 1.

Executive Order 12898 ordered federal agencies to identify and address the issues of environmental justice (i.e., adverse human health and environmental effects of agency programs that disproportionately impact minority and low income populations). I reviewed the environmental justice analysis conducted for this project and note that it determined Alternative 2 will not have a disproportional impact on minority or low income populations. I find that the modification to Alternative 2 that excludes aerial application of herbicides from designated wilderness and wilderness study areas will also not have a disproportional impact on minority or low income populations.

Implementation of this Decision

Implementation may begin immediately after the decision is made (36 CFR 218.12).

Contact Person

For additional information concerning this decision, contact Chad Hayward, Natural Resource Specialist, Big Piney Ranger District, (307) 276-3375, chad.hayward@usda.gov.

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Attachment 1 – Resource Protection Measures to be Implemented Under My Decision

The resources protection measures for federally listed species and protection measures by activity included in Attachment 1 are to be implemented under my decision. Resource protection measures are actions designed to reduce impacts of activities. They are derived from applicable law, regulation, or policy and include such things as best management practices (BMPs), forest plan standards and guidelines and standard operating procedures. Analyses are completed assuming the implementation of all resource protection measures.

Protection Measures for Federally Listed Wildlife Species

- Any actions proposed within the Kendall Warm Spring Special Interest Area will be coordinated with the forest fisheries biologist to ensure that Kendall Warm Springs Dace are not negatively affected.
- Apply herbicides at concentrations that will avoid tree mortality to protect potential habitat for raptors, lynx and other key species.
- Prohibit or modify pesticide use where it would have adverse effects on threatened, endangered, proposed, sensitive species or species of local concern and minimize risk to other non-target species.

Protection Measures for Federally Listed Plant Species

There are no federally listed plant species on the Bridger-Teton NF. Potential habitat for Ute ladies' tresses (*Spiranthes diluvialis*) is suspected on the Jackson and Greys River Districts.

General guidance – The following apply to the development of all potential herbicide treatment projects:

- Establishment of site-specific limited activity and no activity buffers identified by a qualified botanist, biologist, ecologist, or range management specialist if areas of occupied habitat within the proposed project area are identified. Activities in these areas would be extremely limited or prohibited to protect occupied habitat.
- Collect baseline information on the existing condition of Threatened, Endangered and Proposed (TEP) plant species and their habitats in the proposed project area.

Treatments near occupied TEP plant habitat – At a minimum, the following restrictions must be applied:

- Given the high risk for damage to TEP plants and their habitat from burning, mechanical treatments (other than hand pulling) and use of domestic animals to contain weeds, none of these treatment methods should be utilized within 300 feet of sensitive TEP plant populations UNLESS the treatments are specifically designed to maintain or improve the existing population. Grazing and mechanical treatments such as haying may be employed in Ute ladies' tresses habitat if weed treatments will also enhance habitat suitability for this species.
- Off-highway use of motorized vehicles associated with treatments should be avoided in occupied habitat.
- Biological control agents that affect target plants in the same genus as TEP plants must not be used to control target species occurring within the dispersal distance of the agent.

- Prior to use of biological control agents that affect target plants in the same family as TEP plants, the specificity of the agent with respect to factors such as physiology and morphology should be evaluated and a determination as to risks to the TEP species made.
- To avoid negative effects to TEP plant species from off-site drift, surface runoff and/or wind erosion, suitable buffer zones should be established between treatment sites and populations of TEP plant species and site-specific precautions should be taken (refer to the guidance provided below). Buffer zone distances will vary by method of treatment, herbicide used and TEP plant habitat type.
- Within buffer zones limited herbicide treatments such as low boom spraying and spot treatment via hand-held wands, backpack sprayers, wicking, etc. may be conducted if the threat of weed invasion into occupied TEP plant habitat is thought to be greater than the threat of herbicide use. Treatment in buffer zones must be approved by a qualified botanist or biologist and will only occur if the treatment is not thought to pose risks to TEP plant populations. Precautions such as the construction of physical barriers, treatment during TEP plant dormancy and treatment during favorable climatic conditions will be used to protect TEP plant populations from herbicide drift and other indirect impacts.
- Follow all label instructions, Resource Protection Measures and Forest Service Standards and Guidelines to avoid spill and direct spray scenarios into aquatic habitats that support TEP plant species.
- Follow all Resources Protection Measures for avoiding herbicide treatments during climatic conditions that would increase the likelihood of spray drift or surface runoff.

Manual spot treatment and low boom ground application of undesirable vegetation can occur if it is determined by local botanists, or designated resource specialists, to not pose risks to TEP plant species in the vicinity. Additional precautions during spot treatments of vegetation within habitats where TEP plant species occur should be considered while planning local treatment programs.

Protection Measures for Designated Wilderness, Wilderness Study Areas (WSAs), Designated and Eligible Wild & Scenic Rivers (WSRs)

- Non-native plants, especially those which may significantly alter natural plant succession, will be controlled as needed, by means that have the least impact on the Wilderness, WSA, or WSR resource.
- Prevention programs and weed treatments outside wilderness are the most effective means to minimize invasive weed spread and subsequent treatment needs inside Wilderness. Hand pulling and spot spraying using backpack sprayers or horseback sprayers have minimum impact and are target specific. These treatment methods should always be the first choice (minimum tool) within these designated and eligible special areas for weed species that respond to these methods. It is recognized that these methods are not always effective depending upon invasive plant species and degree of infestation.
- Aerial applications of herbicides will be excluded from designated Wilderness and WSAs.
- Within designated or eligible WSR corridors, aerial spraying must meet or improve free-flowing conditions, water quality, and/or Outstandingly Remarkable Values (ORV's) applicable to each river segment and corridor.

- Non-native exotic biological control agents will not be utilized near or within Wilderness, WSAs, or designated WSR corridors. Grazing by sheep or goats will be coordinated with Wilderness and/or WSR Specialists as applicable.
- Seeding within Wilderness, WSAs, and eligible or designated WSRs will be avoided unless determined to be absolutely necessary to prevent further spread of weeds or for soil stabilization. If seeding is determined necessary, seeding should be from native sources only.
- All relevant Resource Protection Measures and Protection Measures by Activity identified in Attachment 1 apply to Wilderness, WSAs, IRAs, and WSR corridors.

Protection Measures by Activity

Prevention of Weed Introduction and Spread

- Educate all Forest Service field personal so they are aware of and knowledgeable about invasive plant species (FSM 2902).
- On NFS lands, it is prohibited to possess or store any hay, hay cubes, straw, grain, or other forage or mulch product, without original and current documentation from a state certification process which meets or exceeds the North American Invasive Species Management Association (NAISMA) Weed Free Forage and Gravel Program or comparable certification standard (USDA Forest Service, Rocky Mountain Region Weed Free Forage Products Order R2-2005-01) This includes products used for revegetation projects by the U.S. Forest Service.
- Use contract and permit clauses to prevent the introduction or spread of noxious weeds by contractors and permittees (FSM 2904, Amendment No. 2000-95-5). This includes timber sale contract clauses RO-K-G.6.0.2#, RO-K-GT.6.0.2#, RO-C6.602#, RO-CT6.602# and B6.35 and Special Use Permit clauses R2-D-103 (R2 Supplement 2709.11-2006-1).
- All purchased seed should be certified noxious weed free. As a Best Management Practice recommend using certified cheatgrass free seed source (Refer to Bridger-Teton Revegetation Guidelines).
- Where noxious weeds or other harmful invasive plant species are present on a project site or near enough to pose a threat of colonizing disturbed areas, seed the disturbed area with approved plant materials as specified in the Bridger-Teton Revegetation Guidelines.
- Before using any gravel, topsoil or other fill products used on NFS lands be sure the source has been treated; that the pits or stockpiles have been treated and are free of noxious weeds. Sites should be inspected regularly and comply with North American Invasive Species Management Association (NAISMA) certified weed free gravel. All gravel, topsoil or other fill products to be used on NFS lands will be pre-treated before transporting.
- Prevention measures specific to wildfire:
 - Minimize weed spread in fire camps by incorporating weed prevention and containment practices such as mowing, flagging or fencing weed patches, designating weed-free travel routes and washing equipment.
 - Inspect all vehicles involved in fire suppression regularly to assure that undercarriages and grill works are kept weed seed free.

Coordination

- Where traditional cultural plant gathering areas have been identified, tribal consultation may be done to address any additional mitigation measures needed to minimize effects to various aspects of the activity. These could include, but are not limited to, adjusting the timing of the treatment, adjusting the type of treatment, adjusting the priority of the treatment.
- If any treatment is desired within RNA boundaries, concurrence must be obtained from the cooperating USFS Research Station and all other relevant partners prior to treatment implementation.
- In cooperation with federal, state and county agencies, National Forest System lands adjacent to other ownership will be selectively treated to coincide with active invasive plant management projects. Decisions regarding treatment methods and buffer width on land adjacent to privately owned land or land managed by other agencies will be negotiated between the Forest Service and the other owner/agency.
- District or Forest invasive plant coordinators will coordinate a review of invasive plant management projects with the District/Forest resource specialists to identify specific resource conditions that may be affected by control activities, to ensure the protection measures are implemented properly.
- If treatment is desired in Special Interest Areas (SIAs) that have special values, treatment must be planned and executed with concurrence from the appropriate forest program manager for that special value.

Travel Management Compliance

- Treatment activities will follow local motorized travel management plan or applicable public land laws, rules, regulations and orders. Variances to motorized travel plans may be allowed for administrative motorized access to conduct weed treatment activities in areas approved by the authorized officer.

Prescribed Burning

- Any prescribed burning conducted for weed control will be conducted in accordance with Bridger-Teton National Forest fire management policy which requires the site specific preparation of a prescribed burn plan before every burn.
- Avoid burning sites with high risk of weed invasion unless effective post-burn treatment methods and funding are incorporated into project planning.

Sagebrush Habitat

- Restrict or contain fire within normal range of fire activity (assuming a healthy native perennial sagebrush community), including size and frequency, as defined by the best available science.
- Limit intentional fires in sagebrush habitats, including prescribed burning of breeding and winter habitats unless it can be demonstrated to be beneficial to local sage-grouse populations.
- Design and implement restoration of burned sagebrush habitats to allow for natural succession to healthy native sagebrush plant communities.

- Implement monitoring programs for restoration activities. Monitoring must continue until restoration is complete.

Biological Control

- Only biological control agents that have been approved by USDA Animal Plant Health Inspection Service (APHIS) will be released.
- Where biocontrol agents have become successfully established protect those sites from other forms of weed control to promote spread of the biocontrol agents and provide collection locations for release at other sites.
- Non-native biological control will not be utilized near or within designated Wilderness, Wilderness Study Areas, or Research Natural Areas.

Livestock Grazing

- Proposals for domestic goat or sheep grazing for control purposes will comply with the recommendations of the Wyoming State-wide Bighorn/Domestic Sheep Interaction Working Group.

Revegetation

- Seeding with native seed will only occur if desirable competitive plants do not re-emerge and dominate the vegetation community after the weed species is treated. For further details, refer to Bridger-Teton Revegetation Guidelines.

Mechanical Treatment

- To limit the potential for equipment to spread invasive plant seeds, mechanical treatments should be completed before seed becomes viable.
- Disposal of plants that are grubbed or manually removed will be as follows: If no flowers or seeds are present, pull the plant to dry it out. If flowers or seeds are present, pull and place plants in a plastic bag or a container to retain seeds. Dispose of plants by burning them or taking them in closed garbage bags to a sanitary landfill.
- Avoid or mitigate mechanical treatment methods that have potential to adversely affect the viability of known sensitive plant species populations.
- Implementation of mechanical treatments, such as disking, have potential to impact cultural resources. Mechanical treatment planning should be coordinated with the Forest Archeologist early in the planning effort. Areas planned for disking will be examined for the presence of historic properties. If previously discovered historic properties in the disking area are present, they will be identified for protection through avoidance during implementation. If part or all of the area planned for mechanical treatment has not been surveyed for the presence of historic properties, then the area should be archaeologically surveyed according to Bridger-Teton NF and State Historic Preservation Office (SHPO) standards. The survey process should include identification of cultural resources, determination of significance of cultural resources, a plan developed for avoidance of historic properties during implementation, and consultation with the SHPO. If historic properties are present in the treatment area, the site location will be disclosed to the project leader. Communication between Bridger-Teton NF heritage staff and the project leader, such as a field visit, will determine if flagging for

avoidance, cultural resource monitoring, and sharing maps with historic property avoidance areas are appropriate to ensure avoidance. Historic trails will be identified and protected through avoidance of mechanical treatment within a buffer area around the trail. The buffer area will be determined by consultation with Bridger-Teton NF and SHPO and will reference NPS historic trail buffer documentation data. The Bridger-Teton NF staff will conduct field review to ensure quality control for historic trail avoidance areas.

Ground-based Herbicide Application

- Herbicides will be used in accordance with U.S. Environmental Protection Agency label instructions and restrictions. Label restrictions on herbicides are developed to mitigate, reduce, or eliminate potential risks to humans and the environment. Label information and requirements include: personal protective equipment, user safety, first aid, environmental hazards, directions for use, storage and disposal, general information, mixing and application methods, approved uses, weeds controlled and application rates. It is a violation of federal law to use an herbicide in a manner inconsistent with its labeling.
- Additional herbicides may be considered for use within the project area in the future. Only EPA registered herbicides having a completed risk assessment will be considered for use.
- Adhere to all guidelines and protection measures in the Forest Service Manual 2150, Pesticide Use Management and Coordination and in the Forest Service Handbook 2109.14, Pesticide Use Management and Coordination Handbook.
- Applicators or operators must wear all protective gear required on the label of the herbicide they are using (FSH 6709.11).
- Application will be conducted or supervised by licensed applicators or trained technicians as required by law.
- Operators will calibrate spray equipment at regular intervals to ensure proper rates of herbicide applications.
- The local herbicide coordinator will maintain daily records of herbicide use, including: temperature, wind speed and direction; herbicide and formulation uses; quantity of herbicide and diluents applied; location and method of application; acreage and persons applying herbicides.
- Procedures for mixing, loading and disposal of pesticides and a spill plan will be followed (Label and FSH 2109.14, 43). All herbicide storage, mixing and post-application equipment cleaning is completed in such a manner as to prevent the potential contamination of any perennial or intermittent waterway, unprotected ephemeral waterway or wetland. Herbicide applicators shall carry spill containment equipment, be familiar with and carry an Herbicide Emergency Spill Plan.
- In occupied public recreation areas (such as developed campgrounds, trailheads, other areas of concentrated use) post notification of treated area until the beginning of the reentry period (as defined by the product label).
- Apply herbicides at concentrations that will avoid tree mortality to protect potential habitat for raptors, lynx and other key species.

- Prohibit or modify pesticide use where it would have adverse effects on threatened, endangered, proposed, sensitive species or species of local concern and minimize risk to other non-target species.

Water resources

- Use only aquatic-labeled herbicides in the Water Influence Zone (WIZ). The WIZ includes the geomorphic floodplain (valley bottom), riparian ecosystem, and inner gorge. Its minimum horizontal width (from top of each bank) is the greater of 100 feet or the mean height of mature dominant late-seral vegetation. The WIZ protects interacting aquatic, riparian, and upland functions by maintaining natural processes and resilience of soil, water, and vegetation systems (Reid and Ziemer 1994). (Watershed Conservation Practices Handbook FSH 2509.25)
- For aquatic-labeled herbicides application within the Water Influence Zone, some application buffers still apply. Chemical and application type will drive any aquatic restrictions. These restrictions can be found in Environmental Risk Analysis documents and on EPA approved product labels.
- Only aquatically approved herbicides will be used over water (streams, ponds, springs, etc.), including water standing or running in ditches. Weeds overhanging a waterway or growing within the channel should be treated as an aquatic situation (including stock tanks).
- Follow herbicide label restrictions regarding use near functioning potable water sources. Herbicides can have varying setback restrictions near functioning/active potable water intakes. For example, labels of glyphosate products registered for aquatic weed control state: “Do not apply this product in flowing water within 0.5 mile up-stream of active potable water intake”.
- Ground herbicide terrestrial applications will maintain a 50 foot buffer of all water sources/wellheads unless the formulations are approved for “in or near water”.
- Locate vehicle service and fuel areas, chemical storage and use areas and waste dumps and areas on gentle upland sites. Mix, load and clean on gentle upland sites. Dispose of herbicides and containers in State-certified disposal areas. (Watershed Conservation Practices Handbook FSH 2509.25)
- During use periods, inspect herbicide transportation, storage, or application equipment for leaks. If leaks occur, report them and install emergency traps to contain them and clean them up. Refer to FSH 6709.11, Chapter 60 for direction on working with hazardous materials. Report herbicide spills and take appropriate clean-up action in accordance with applicable state and federal laws, rules and regulations. Contaminated soils and other material shall be removed from NFS lands and disposed of in a manner according to state and federal laws, rules and regulations. (Watershed Conservation Practices Handbook FSH 2509.25)
- Apply herbicides using methods that minimize risk of entry to surface and ground water. Apply at lowest effective rates as large droplets or pellets. Follow the label directions. Favor selective treatment. (Watershed Conservation Practices Handbook FSH 2509.25)
- Spray only when heavy rain is not expected, per label directions.
- Carry herbicide only in secure containers.
- Only add surfactants specified on the label to herbicides registered for aquatic use.

- Ester formulations are prohibited where fisheries occur.
- Mix herbicides and rinse equipment away from the waterway.

Wildlife and aquatic organisms

- Herbicides will be used in accordance with U.S. Environmental Protection Agency label instructions and restrictions. Label restrictions on herbicides are developed to mitigate, reduce, or eliminate potential risks to humans and the environment. Label information and requirements include: personal protective equipment, user safety, first aid, environmental hazards, directions for use, storage and disposal, general information, mixing and application methods, approved uses, weeds controlled and application rates. It is a violation of federal law to use an herbicide in a manner inconsistent with its labeling.
- Herbicide will not be sprayed if amphibians are known to be present and cannot be avoided; hand-pulling or wick application of herbicide will be used instead. If tadpoles or metamorphs are identified, the location will be reported to the local amphibian specialist (fisheries or wildlife biologist) and invasive plant coordinator and application of herbicides will be delayed until metamorphs disperse if necessary.

Sensitive plant species

- Broadcast (boom) applications of chlorsulfuron are prohibited within 1,500 feet of sensitive plant occurrences. Selective hand spot or wick treatment with this herbicide is allowed within this setback.
- When applying herbicides within 50 feet of sensitive plants, spot treat with hand held wands, backpack sprayers, wick, etc. using herbicide that does not persist in the soil (i.e. picloram and imazapic are more persistent in soils) and protect sensitive plants from herbicide drift (e.g. cover plant with plastic when spraying herbicide or use a wick applicator).
- Chlorsulfuron and imazapyr, are prohibited within the 50-foot buffer zone around sensitive plants. The broad-spectrum herbicide, glyphosate, may be applied within the 50 foot buffer, only if the sensitive plant species is dormant.

Aerial application of herbicides

- All aviation activities will be in accordance with FSM 5700 (Aviation Management), FSM 2150 (Pesticide Use Management and Coordination), FSH 5709.16 (Flight Operations Handbook), FSH 2109.14, 50 (Quality Control Monitoring and Post-Treatment Evaluation). A project Aviation Safety Plan will be developed prior to aerial spray applications.
- Any non-selective herbicides that are aerially applied will be used at rates that are low enough to limit injury to desirable species or used during periods when non-target plants are dormant.
- Aerial applications of herbicides will be excluded from designated Wilderness areas and WSAs. Aerial applications would be excluded from Research Natural Areas unless needed on a site-specific basis to protect the native plant populations for which the area is being managed.
- Aerial application of herbicides will not occur in occupied developed campgrounds or recreation residences. Areas adjacent to campground and recreation residences will be treated outside of high use periods where feasible. Temporary closures of campgrounds may be considered to protect the public during spray operations.

- Signing and on-site layout will be performed prior to actual aerial treatment.
- Temporary area and road/trail closures could be used to ensure public safety during aerial spray operations.
- Constant communications will be maintained between the aircraft and project leader during spraying operations. Ground observers will have communication with the project leader. Observers would be located at various locations adjacent to the treatment area to monitor wind direction and speed as well as to visually monitor drift and deposition of herbicide.

Protection measures to reduce spray drift

- Application will occur per label instruction.
- Aerial spray units would be field-validated, flagged and/or marked using GPS prior to spraying to ensure only appropriate portions of the unit are aeri ally treated. To ensure that aerial treatments stay within intended treatment areas, units will be GPS'd before and during the flight.
- Drift reduction agents, nozzles that create large droplets and special boom and nozzle placement, would be used to reduce drift during aerial spraying.
- Drift control agents may be used in aerial spraying during low humidity to reduce drift into non- target areas. Products that reduce volatility, have been shown to keep droplet sizes larger and are appropriate adjuvant for the herbicide (as specified by labeling of both the herbicide and the drift agent, in consultation with the herbicide manufacturer) would be used.
- Aerial spraying will be discontinued if herbicide is drifting within the set-back zone and/or wind speed exceeds those recommended on the product's label.
- Weather conditions would be monitored on-site (temperature, humidity, wind speed and direction) and spot forecasts would be reviewed for adverse weather conditions.
- Monitor treatment boundaries next to sensitive areas with spray deposit cards to detect any possible drift.

Water resources

- During contract preparation for aerial application, reassess surface water quality risk with site- specific information. Once the exact treatment areas are delineated in preparation for the contract, determine treatment acres for 6th hydrologic unit code (HUC) watersheds potentially affected by aerial application. If picloram is used, incorporate these acres into the risk assessment to estimate probable herbicide concentrations and allowable treatment acres. If concentrations of picloram exceed the recommended threshold, reduce treatment acres to the allowable amount or use herbicides approved for use near surface water.

Sensitive plant species

- No aerial application of herbicide will occur within 300 feet of any sensitive plant populations. Buffers around sensitive plants will be generated using the most current species information available, which will include Wyoming state records of plant occurrences (databases maintained by Wyoming Natural Heritage Program and Wyoming Natural Diversity Database), records in the Forest Service Natural Resource Manager database and recent field survey results.