AGENDA ITEM or FINAL CONTRACT REVIEW SUBMITTAL FORM

Agenda Item: Discussion; BOCC Comments - Taylor Park EA

Action Requested: Board of County Commissioners' Signature

Parties to the Agreement:

Term Begins: **Term Ends:** **Grant Contract #:**

Summary:

Discussion and possible approval of BOCC comments regarding the Taylor Park Preliminary Environmental Analysis. May 13th is the deadline for comments.

Fiscal Impact:

Submitted by: Liz Mense for CAO **Submitter's Email Address:** EMense@gunnisoncounty.org

Finance Review: ○ Required ◉ Not Required

Comments:

Reviewed by: Discharge Date:

County Attorney Review: ◉ Required ○ Not Required

Comments:
ok db 5/3/19

Reveiwed by: GUNCOUNTY1\dBaumgarten Discharge Date: 5/3/2019 Certificate of Insurance Required Yes ○ No ◉

County Manager Review:

Comments:

Reveiwed by: GUNCOUNTY1\mbirnie Discharge Date: 5/3/2019

○ Consent Agenda ◉ Regular Agenda ○ Worksession Time Allotted: 5 minutes

Agenda Date: 5/7/2019

Revised April 2015

May 13, 2019

Matthew M. McCombs,
Gunnison District Ranger
216 N. Colorado Street
Gunnison, Colorado 81230

VIA ELECTRONIC SUBMISSION

RE: Taylor Park Vegetation Management EA #53662 – Comments of Gunnison County

Dear Mr. McCombs,

The Board of County Commissioners of the County of Gunnison, Colorado ("BOCC" or "Gunnison County") , pursuant to the National Environmental Policy Act, 42 U.S.C. § 4331 *et seq.* ("NEPA")[1] and the Healthy Forest Restoration Act, 16 U.S.C. § 6501 *et seq.* ("HFRA") submit the following comments regarding the Taylor Park Vegetation Management Preliminary Environmental Analysis published in April 2019 ("Taylor Park EA"). The following should not be construed as all of the comments, or objections, the BOCC may submit during this process; the BOCC continues to reserve the right to fully participate in this process and, if necessary, object to the EA to the fullest extent permitted by Federal law.

I. INTEREST OF COMMENTING PARTY GUNNISON COUNTY

Gunnison County is the fifth-largest county by land area in Colorado, with a total area of 3,260 miles, which in turn is approximately the size of Rhode Island. Land under the jurisdiction of the United States Forest Service consists of almost 2,000 miles of this area, including the Gunnison, White River and Uncompahgre National Forests ("GUMG"). Recognizing that public lands are an important part of the economy, health and well-being of its citizens, Gunnison County has, throughout its history, promoted responsible economic use and recreational enjoyment of United Forest Service lands within its borders by the public, most often in cooperation with the United States Forest Service ("USFS") and other stakeholders.

Under Colorado and Federal law, Gunnison County, through the BOCC, has the authority to protect and promote the public health, safety and welfare of the people of Gunnison County, and the authority to regulate land use planning and environmental quality and protection. Gunnison County also has authority over public roads within its borders where Gunnison County has affirmatively assumed or been expressly designated by law with such authority. *See, e.g.*, Colo. Rev. Stat. §§ 43-2-201, 43-2-201.1. Gunnison County, along with the Gunnison County

[1] NEPA's requirements apply to hazardous fuel reduction projects, such as the one proposed by the Taylor Park EA, under HFRA. *See Decker v. United States Forest Serv.*, 780 F. Supp. 2d 1170, 1174-75 (D. Colo. 2011).

Sheriff, who under Colorado law is the fire marshal for the County, *see, e.g.*, CRS § 30-10-513, is party to a series of agreements between the USFS and the State of Colorado for wildfire management on public and private lands within the County, including within the GUMG.

For at least these reasons, Gunnison County is a critical stakeholder in the Taylor Park EA process.

II. GUNNISON COUNTY'S COMMENTS REGARDING THE TAYLOR PARK EA.

Gunnison County supports responsible and adaptive vegetation management in the Gunnison National Forest, including in the Taylor Park area, to maintain if not improve forest health and resiliency, actively management potential wildfire hazard, and to provide responsible economic opportunities such as limited and controlled timber harvesting, balanced with the need to protect the environment and the recreational opportunities that the National Forest provides. That stated, Gunnison County provides comments to at least the following provisions of the Taylor Park EA:

A. The EA Should Consider Additional Alternatives for Policing the Unauthorized Use of Temporary, Maintenance and Administrative Roads Developed for the Project.

Gunnison County suggests that the USFS should more fully consider alternatives for addressing what we believe will be an inevitable problem created by the additional use of maintenance roads, as well as addition of temporary and administrative roads, to accomplish the proposed project: The unauthorized use of such roads despite efforts to discourage such use. Our suggestion stems from years of experience, in which, unfortunately, we have learned of recreational users, particularly utility terrain or side-by-side vehicle ("UTV") drivers and passengers, who fail to comply with road closure or use restrictions in the Taylor Park area. Our concern is that if additional roads are created or used in Taylor Park, even if closed to the public, temporary or scheduled for decommission, illicit use will increase the impact that motorized uses have on wildlife, watersheds, soil retention, road degradation, and the enjoyment of the backcountry by non-motorized recreational users. It may also lead to accidents and conflict between such users and 1) the timber vendors with whom USFS intends to contract with to perform the project; 2) residential and other property owners who now have roads closer to or perhaps even adjacent to their property; or 3) both. In other words, it is our belief, counseled by experience, that additional roads will result in additional adverse impacts unless USFS considers all alternatives to enforcing public road closure beyond what is presently set forth in the Taylor Park EA.[2]

We are concerned that the Taylor Park EA does not adequately address the potential illicit use issue, and does not consider in detail the alternatives which may result in better policing. As the USFS is aware, NEPA requires it to "[r]igorously explore and objectively evaluate all reasonable alternatives" and to take a "hard look" at all environmental consequences of a proposed agency

[2] In a more general sense, this should also include consideration, as part of the no-action alternative, the benefits to wildlife protection, non-motorized recreational use and enjoyment, and forest esthetics of fewer roads with the Taylor Park system. The Taylor Park EA does not expressly include these considerations as part of its analysis of a no-action alternative. *See, e.g.*, Taylor Park EA at 39.

action. *See* 40 C.F.R. 1502.14; *e.g.*, *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998). We suggest that analysis and discussion of the issue of enforcement of road closures for the proposed maintenance, temporary and administrative roads be included as part of the "hard look" that USFS must engage in. The Taylor Park EA states that the USFS plans to restrict use of maintenance, temporary and administrative roads through signs, "gates, boulders, or other native materials barriers[,]" *see* Taylor Park EA at 37, but it provides no details on how such closures would be enforced. Gunnison County therefore suggests that the USFS analyze in detail enforcement alternatives, plans and methods as part of its EA, including but not limited to: 1) cooperative agreement(s) with the Gunnison County Sheriff and other state and local law enforcement agencies for the enforcement of road prohibitions; 2) express allocation of USFS law enforcement officer ("LEO") assets for road enforcement during peak season (*i.e.*, summer) months; 3) increased or additional appointment and use of Forest Protection Officers ("FPOs"), *see, e.g.*, FSM 5304.6, tasked with assisting with road enforcement; and 4) inclusion of provisions in timber vendor contracts requiring vendors to provide private security to police roads used as part of any timber harvesting. These and other measures deserve express consideration in the Taylor Park EA; Gunnison County therefore encourages USFS to include them as part of its assessment of the contemplated project.

B. The EA Should Provide Details on Acceptable Rehabilitation for Temporary Roads.

On a related issue, Gunnison County suggests that the USFS include details regarding the standards and acceptable methods for rehabilitation temporary, decommissioned roads. Although the Taylor Park EA states that temporary roads will be "decommissioned and rehabilitated upon the end of project implementation[,]" *see, e.g.*, Taylor Park EA at 13, it does not lay out in detail what rehabilitation methods are acceptable and how such methods will accomplish rehabilitation. Our concern if that rehabilitation is performed minimally or haphazardly, temporary roads will still have enough of a footprint that even after decommission, they would attract and be subject to illicit use of the type described in Point I. *supra.* We therefore suggest that as part of "hard look" required by NEPA, the Taylor Park EA set forth in detail the rehabilitation methods contemplated by USFS for decommissioned temporary roads.

C. The EA Does Not Explain What "Undetermined Prescription" Treatments USFS Contemplates as Part of the Project.

In addition to more detail regarding roads, Gunnison County suggests that the Taylor Park EA contain additional details regarding proposed vegetation management methods. In particular, the Taylor Park EA lists "undetermined prescription" as a management method, but does not define this term, does not describe what it includes, and states that such methods will be decided during the project rather than spelled out as part of the EA process. *See, e.g.*, Taylor Park EA at 21, 27. While we recognize that the amount of acreage designated for "undetermined prescription" – 193 -- may seem small in comparison to the acreage of other management methods, we believe it important to remember that 193 acres is over three times larger than the United State Capitol Building and the Washington National Cathedral. And, while we also recognize that USFS needs at least some modicum of flexibility to decide what management methods are appropriate over the course of the proposed project and as conditions may change, we believe this consideration needs

to be balanced by the requirements of NEPA.[3] Accordingly, we suggest that the Taylor Park EA provide at least some additional detail, at least by way of example, of what "undetermined prescription" methods USFS is contemplating as part of the proposed project.

CONCLUSION

The BOCC appreciates the opportunity to provide the foregoing comments, and intends to provide additional input as the EA progresses.

Sincerely,

BOARD OF COUNTY COMMISSIONERS
OF THE COUNTY OF GUNNISON, COLORADO

By: _____
Jonathan Houck, Chairperson

By: _____
John Messner, Vice Chairperson

By: _____
Roland Mason, Commissioner

[3] We further recognize that the Taylor Park EA states that "[a]ny of the prescriptions described may be applied as appropriate to the site-specific conditions[,]" *see* Taylor Park EA at 27, but this sentence does not preclude the use of methods not described in the EA.

United States Department of Agriculture

U.S. Forest Service
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Delta, CO 81416
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News Release

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(970) 874-6717
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Media Contacts:
Matthew McCombs, District Ranger, 970-642-4404
John Slown, Project Environmental Coordinator, 406-239-3749

Opportunity to Comment on Taylor Park Vegetation Management Project

Gunnison, Colorado, April 17, 2018 – The Grand Mesa, Uncompahgre and Gunnison (GMUG) National Forests' Gunnison Ranger District will be preparing an environmental assessment for the Taylor Park Vegetation Management Project (Taylor Park EA). The GMUG is inviting you to comment on the proposal concerning treatment of areas of lodgepole pine and Engelmann spruce forest in the Upper Taylor River and Spring Creek drainages in the Taylor River Watershed.

The Taylor Park EA would complement the Spruce Beetle Epidemic and Aspen Decline Management Response (SBEADMR) project by adopting an adaptive management approach in the Taylor Park area.

The primary purpose of the treatments proposed is to increase the forest's ability to respond to multiple and interactive stressors affecting the forest including climate change, drought, insect attack and disease while promoting safety through reduction of fuel loading in the Wildland-Urban Interface (WUI) and surrounding areas. The secondary purpose of these treatments is to provide wood products for the regional economy.

"One of the most important aspects of my job is to safeguard the health and resiliency of the forest," said Gunnison District Ranger Matt McCombs "Bugs and crud affect trees the same way they do people – at a minimum they undermine their strength and ability to bounce back making them susceptible to other stressors in their lives like drought and wildfire, and at worst, they can lead to a tree's untimely death," McCombs continued "When it comes to dwarf mistletoe, bark beetles and fuel loading, I believe this project is just what the doctor ordered."

The Proposed Action includes:

- 2,811 acres of Fuel Treatments
- 3,609 acres of Dwarf Mistletoe Edge Strip Cuts or Clearcut
- 734 acres of Overstory Removal
- 714 acres of Shelterwood Seed Cut
- 741 acres of Group Selection in Spruce
- 6,363 acres of Precommercial Thinning

- 193 acres of Prescriptions To Be Determined, Mixed-species

Additional information is presented in the Scoping Letter and supporting documentation which can be found on the project webpage: https://www.fs.usda.gov/project/?project=53662.

Gunnison District Ranger, Matthew McCombs, will be the Authorized Officer for any future decisions that may be issued from the environmental assessment.

Comments on the project will be accepted for 30 days following the publication date of the opportunity to comment legal notice in the Gunnison Country Times which is the newspaper of record, or by May 21, 2018, whichever date occurs later. For more information on how to comment see the Scoping Letter.

In addition to this opportunity to submit written comments, the public will be invited to a meeting with representatives of the Gunnison Ranger District during the development of the Taylor Park EA project. This meeting will be held in Tincup, Colorado, during the summer of 2018. More detailed information about the meeting location and schedule will be available closer to the meeting date.

For additional questions, please contact John Slown, Project Environmental Coordinator at 406-239-3749; email jslown@fs.fed.us.

-USDA-

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United States Department of Agriculture
Forest Service
Gunnison Ranger District
216 North Colorado Street
Gunnison, CO 81230
970-641-0471
Fax: 970-642-4425

File Code: 1950; 2410
Date: April 1, 2019

Dear Interested Party,

The Grand Mesa, Uncompahgre and Gunnison National Forests (GMUG), Gunnison Ranger District, has prepared a preliminary environmental analysis for the Taylor Park Vegetation Management Project (Taylor Park EA), which is now available for review and comment.

The primary purpose of the project is to increase the forest's ability to respond to multiple and interactive stressors including climate change, drought, insect attack, or disease while promoting safety and reducing fuel loading in the Wildland-Urban Interface and surrounding areas. The proposed action would amount to approximately 15,000 acres of treatment within the 276,000-acre planning area.

Proposed treatments preliminarily identified for suitable sites within the planning area are listed in the following table, along with their estimated acreages. Ultimate acreage of each treatment would likely change over the course of the project. Treatments would be refined during implementation as additional inventory is completed through the projects adaptive implementation approach that would use on-the-ground specific conditions in real time to determine treatments.

Treatment	Acres
Dwarf Mistletoe Edge Strip Cuts or Clearcut	3,566
Shelterwood Seed Cut	714
Overstory Removal	733
Young Stand -- Precommercial Thinning, Sanitation, or No Immediate Treatment	6,182
Group Selection in Spruce	741
Fuel Treatment	2,820
Prescription To Be Determined, Mixed-species	193
Total	14,949

Additionally, this project is being developed under the authority of the Healthy Forest Restoration Act (HFRA; P.L. 108-148). It is eligible as an authorized project under this law because it is located within the area designated as experiencing or at risk of experiencing insect and disease infestations on the map proposed by the Governor of Colorado and is being developed collaboratively**.**

The entire Taylor Park Vegetation Management Preliminary Environmental Analysis is available for review online at https://www.fs.usda.gov/project/?project=53662, under the "Analysis" tab. Hardcopies may be reviewed at the Gunnison Ranger District office in Gunnison.

Adaptive Management Group

A unique facet of this project is the public outreach strategy the district has developed. Based on feedback from the public during the initial scoping phase of the project the district has partnered with Western Colorado University's Center for Public Lands to assist in developing the project collaboratively and with the intention to stand up a team of committed citizens (an Adaptive Management Group or AMG) to support not only the development of the project but also implementation once the planning phase is completed. The goal is to engage interested citizens in ways that share stewardship of the landscape between the USFS and the public in a more open and meaningful way.

The concept of an AMG is being borrowed from the public engagement effort build during development of the Spruce Beatle Epidemic and Aspen Decline Management Response (SBEADMR) EIS completed in 2016. The feedback received through this type of engagement from both a scientific and social standpoint, as well as the relationships and trust we can build, should strengthen the project substantively.

The AMG will assist the Forest Service through suggesting specific changes to the Proposed Action. Thus, we anticipate some changes to the proposed action (or potentially an alternative) between this preliminary analysis and the final environmental assessment within the planning area. In response to public input I will consider suggested changes from any source; however, it is strongly encouraged that suggestions are filtered through the AMG for efficiency. This group is open to the public and will meet with the GMUG to provide input on implementation of the proposed action throughout the life of the project.

For more information on the AMG and Science Team and how to get involved, visit: https://www.centerforpubliclands.org/taylor-park.

How to Comment

Comments on the Taylor Park EA will be accepted for 30 days following the publication date of the opportunity to comment legal notice in the Gunnison County Times which is the newspaper of record or by May 6, 2019. Those wishing to comment should not rely upon dates or timeframe information provided by any other source.

Mail comments regarding Taylor Park EA to:

Matthew M. McCombs
Gunnison District Ranger
216 N. Colorado
Gunnison, CO 81230
Fax comments to: 970-642-4425.

Please submit Electronic Comments on the following website: https://www.fs.usda.gov/project/?project=53662, through the "Comment/Object on Project" link found on the right hand side of the page. Electronic attachments to comments (e.g. .doc, .txt, .rtf or pdf) may also be submitted.

Hand delivered written comments will be accepted at the GMUG National Forests', Gunnison Ranger District, 216 North Colorado Street, Gunnison, Colorado, between the hours of 7:30 a.m. and 4:30 p.m., Monday through Friday, except for Federal holidays.

To be most effective when submitting comments, please include: (1) name, address, email address, and organization represented, if any; (2) the title of the project for which the comment is being submitted; and (3) specific facts, concerns or issues, and supporting reasons for the Responsible Official to consider.

Only those who submit timely and specific written comments will have eligibility to file an objection under 36 CFR 218.8. For objection eligibility, each individual or representative from each entity submitting timely and specific written comments must either sign the comment or verify identity upon request. A scanned signature may serve as verification on electronic comments. Individuals and organizations wishing to be eligible to object must meet the information requirements in 36 CFR 218. Comments received, including the names and addresses of those who comment will become part of the public record for this project and will be subject to review pursuant to the Freedom of Information Act.

Additional Information

For project updates, please visit the project webpage: https://www.fs.usda.gov/project/?project=53662. On the webpage you can subscribe to the electronic mailing list.

For additional information concerning the Taylor Park EA, contact: Pamela King, NEPA Specialist, at 970-642-4436 or pamela.r.king@usda.gov.

Sincerely,

/s/Matthew M. McCombs
MATTHEW M. MCCOMBS
District Ranger

United States Department of Agriculture

Taylor Park Vegetation Management

Preliminary Environmental Analysis

Forest Service | Grand Mesa, Uncompahgre, and Gunnison National Forests | Gunnison Ranger District | April 2019

For More Information Contact:

Pamela R. King, Natural Resources Specialist
Gunnison Ranger District
216 North Colorado Street
Gunnison, CO 81230
970-642-4436

Photo Description: Looking toward Taylor Park Reservoir from the Timberline trail near Gardner/Sanford Basin; Photo by Maddie Rehn.

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Introduction

We, the Gunnison Ranger District of the Grand Mesa, Uncompahgre and Gunnison National Forests (GMUG), are proposing to adaptively manage vegetation to: improve forest health and resiliency; minimize fuel loading to decrease the fire severity potential in wildland-urban interface (WUI); and to support local economies through the sustainable production of wood fiber on National Forest System lands totaling 14,949 acres of the Gunnison Ranger District. The Responsible Official for the decision to implement this action is the Gunnison District Ranger.

We prepared this environmental assessment to determine whether the proposed activities may potentially result in significant impacts to the human environment, and thus require analysis through an environmental impact statement. By preparing this environmental assessment, we are fulfilling agency policy and direction to comply with the National Environmental Policy Act and other relevant Federal and State laws and regulations. For more details of the proposed action, see the “Proposed Action and Alternatives” section of this document.

With this proposal, we seek to implement multiple vegetation management actions. This proposal is guided by the Ecological Restoration and Resilience Policy (FSM 2020), the GMUG National Forest Land and Resource Management Plan (USDA Forest Service 1983 and 1991, Forest Plan) and the National Cohesive Wildland Fire Management Strategy (USDA and USDI 2014).

The planning of this project was conducted across a much larger area than previous projects in order to cohesively manage the area’s long-term forest health, to maximize limited internal planning capacity and to increase the pace and scale of restoration and resiliency enhancing treatments across a broad landscape. As such, the planning area covers approximately 276,000 acres (figure 2). Of this total, 60 percent is excluded from active management in one of these three categories: designated wilderness (73,712 acres), Colorado Roadless Areas (80,214 acres), or Fossil Ridge Recreation Management Area (11,933 acres). Another approximately 10,000 acres are outside of Forest Service jurisdiction. About 33,000 acres is non-forested. Of the remaining 67,000 acres, 25 percent is either too steep, rocky, or isolated, leaving about 50,000 acres of land potentially suitable for forestry activities. That 50,000 acres is approximately 75 percent lodgepole pine dominated and 25 percent spruce-fir dominated. Around 4,300 acres are allocated for proposed group selection in Engelmann spruce/subalpine fir through an existing decision (i.e., Spruce Beetle Epidemic and Aspen Decline Management Response Project or SBEADMR); SBEADMR is further considered in cumulative effects in the Environmental Impacts of Proposed Action and Alternatives sections. This Taylor Park Environmental Assessment is proposing management on roughly 15,000 acres of lodgepole pine dominated forest, 6,200 acres of which is thinning to improve overall forest health.

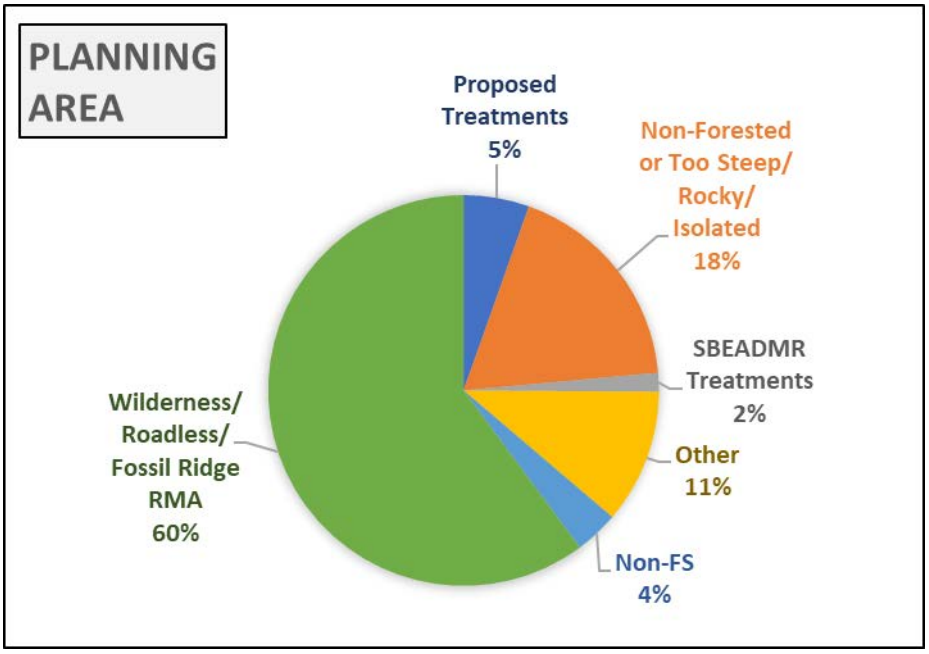

Figure 1. Planning area

Location of the Proposed Project Area

The project area is located approximately 20 to 35 miles northeast of Gunnison, Colorado, on the Gunnison Ranger District in the Spring Creek of the Taylor River drainages. The project planning area encompasses approximately 90 percent of the greater Taylor River watershed (HUC 5) and includes a small portion (approximately 500 acres) of the Cement Creek subwatershed (HUC 6) in a previously managed area. In general, the planning area is defined by the subwatershed divides following Taylor River and Spring Creek above Harmel's Resort (see figure 2). The project area lies in Gunnison County, Colorado, and can be accessed via Colorado State Highway 135 and County and Forest Roads 742 and 744 at Almont, Colorado.

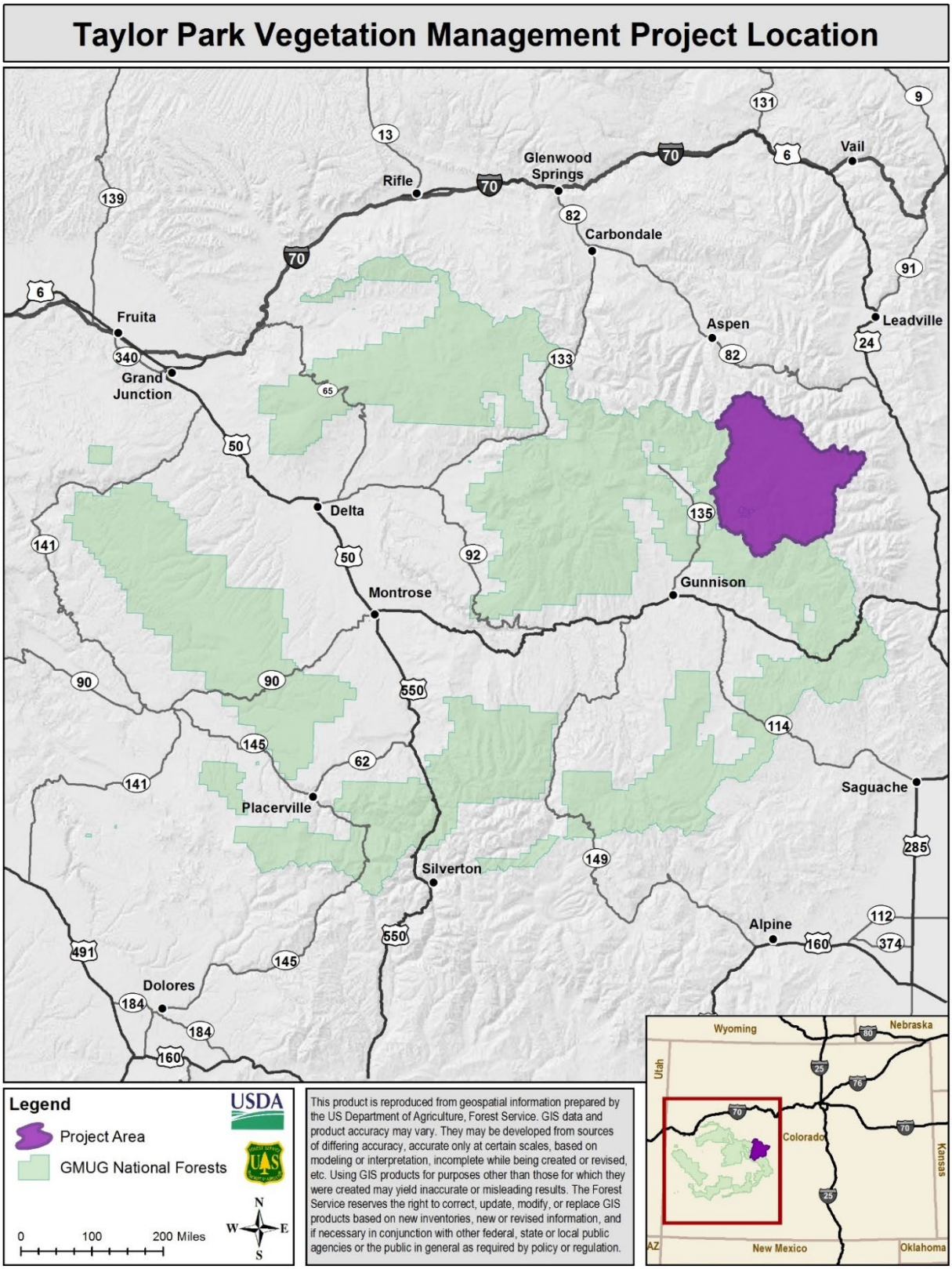

Figure 2. Vicinity map

Area History

General Timber Harvest

Existing conditions in the Taylor Park Vegetation Treatment project planning area are the result of past management, wildland fire activity (both wildfire and prescribed fire), forest succession, and disease. This background discussion provides a summary of how those forces have acted on the project area.

Early settlers in Taylor River began cutting trees around 1880 near mining towns like Tincup, mining camps, and mines. Wood was used locally for houselogs, fencing material, mine props, and fuel. Timber harvest for mining operations continued into the 1930s. The only extensive cutting, at this time, was for charcoal production in the forest around Tincup.

The livestock industry cut and used trees for fence posts and poles local to the Taylor River area, then used material more widely in the Gunnison Basin as the transportation system improved. Most of the early post and pole cutting was scattered in random pockets.

Modern commercial timber harvest for sawlogs began in 1967 with a series of clearcuts in mixed spruce-fir and lodgepole pine in Rocky Brook and Trail Creek (figure 3). The Taylor Park timber harvesting started considerably later compared to harvesting to the south of this area (near Pitkin, Colorado), where railroad infrastructure was in place, which started in 1878.

Figure 3. South Trail Timber Sale, harvested in 1967, 1983, and 1990.
Part of the 1980 Spring Creek Burn is at the bottom. The average 1983 and 1990 average clearcut size is 10.9 acres. The five larger snow-covered units in the distance were from the 1967 harvest and average size is 26.3 acres). Twenty-one percent of the 5,300-acre forested spatial area south of the Spring Creek Burn and between Taylor River and Trail Creek has been regenerated during the last 50 years. This equates to 4 percent per decade. Image taken June 18, 1995, AH 706-9.

Since the early 1970s, sawtimber and pole cutting has been generally concentrated on those lodgepole pine stands significantly infested with dwarf mistletoe in an effort to minimize disease in those areas

suitable for long-term timber production. During the early 1980s, stands of highly diseased and non-merchantable size trees were non-commercially treated to start the regeneration process. In figure 3, the 1983 clearcuts were non-commercial stand-replacement treatments.

Fire Activity and Management

Review of aerial photos back to 1939 indicate that pre-settlement stand-replacing fires averaged 80 acres in size. Forests around the stand-replacement fires likely burned in the same events, but at lower intensities which did not entirely replace the overstory. A study in the early 1980s indicated that the pre-settlement forest fire return interval was 30 to 50 years; oftentimes, the first two fires on a site burned at low intensity and small in scale which caused some trees to die and become windthrown, which increased ladder fuels. These low-intensity burns likely created conditions that intensified mistletoe spread and intensification. When a third fire came through a stand it was often a stand-replacing event, fueled by the increased fuel loadings and by dwarf mistletoe brooms forming fuel ladders into the crowns. This pre-settlement fire pattern ceased with fire suppression in the early 1900s.

In the historical period, forest fires were few and small up until 1980. In June 1980, the Crystal Creek Fire burned about 290 acres. A few days later the Spring Creek Fire burned 900 acres. In September 1988, the Lily Pond Fire consumed 180 acres. The Ute Gulch Fire of October 1991 burned 60 acres. The number of human-caused fire starts has been increasing with the increase in recreational use in Taylor Park.

Figure 4. Images taken June 3, 1994. (A) Browns Gulch north side Taylor Canyon. Spring Creek Road top left. Doctor Park Trail runs up the right side. Area prescribed burned in 1985 and again in 1998. AH 659-36. (B) Active prescribed burn in Big Gulch. Doctor Park is at top left. AH 659-37. (C) Burning intensifying in heavier fuels. AH 660-2. (D) Active prescribed burn in Big Gulch. Previous days burning visible as blacken canopy gaps and scorched crowns. AH 660-4.

In the 1980s and on into the 2000s, efforts were made to restore fire to the landscape in lodgepole pine. The focus of the prescribed burning was improving and maintaining bighorn sheep habitat in the Taylor Canyon area (figure 4). The burning was in the steep, rocky canyon and the unroaded forest above the canyon. Approximately 9,500 acres have been burned in the analysis area. Some areas have been burned three times. Fire severity has ranged from light underburning to full stand replacement. In the aftermath of the Spring Creek Fire and the increased awareness of wildland fire danger, fuel break treatments were developed in conduction with dwarf mistletoe control treatments (discussed below). Around the Red Mountain Summer Home Group, six stand-replacement units covering 123 acres were created as fuel breaks. Additionally, on the forested slopes northwest of Rainbow Subdivision near Tincup, commercial clearcuts and noncommercial stand replacing treatments were made to provide the beginning of fuel breaks upwind of the community. Recently, portions of the needed fuel treatments have been completed along the road into Tincup.

Forest Health Management

The Gunnison Ranger District has approximately 285,000 acres of lodgepole pine-dominated forest with an additional 162,000 acres of lodgepole pine mixed with other dominant tree species. Extensive surveying estimates (Johnson et al. 1981) that 52 percent of those lodgepole forests, or approximately 149,040 acres, have some level of dwarf mistletoe infestation. We do not have estimates for Taylor Park specifically, but because there is substantial area of lodgepole pine more or less free of dwarf mistletoe in the southern portion of the District, the percentage of infestation is probably much higher in Taylor Park. Since lodgepole pine is a predominate species in the Taylor Park area, dwarf mistletoe infestations (and the corresponding impacts of slower growth rates and longevity, increased ladder fuels from mistletoe brooms, increased likelihood of severe fire (Worrall 2018), and seedling mortality (Geils and Hawksworth 2002) has been the leading forest disease concern for the area.

By the 1970s, the impact of dwarf mistletoe on lodgepole pine growth and health was well understood and documented. The earliest science reports on the disease impact date back to the 1920s. The disease control method recommended is cutting the infested trees in clearcuts. Partial cutting or thinning in dwarf mistletoe infested stands has been shown to accelerated disease spread and intensity (Haines 2019). To prevent reinfestation of young lodgepole pine in regenerated stands, the recommendation is to cut rings around the young stand to pull the disease seed source back away from young healthy trees (Worrall 2018).

In 1973, the first steps in managing disease-infested lodgepole pine began in the Cottonwood Pass area. Clearcutting units were focused on dwarf mistletoe centers, with the intention of eliminating disease in the cutting unit and obtaining an uninfected stand of young lodgepole pine. Relatively young, dwarf mistletoe-free stands were commercially thinned for posts, poles, mine props, and some small diameter sawlogs.

In Taylor Park in the 1970s, foresters refined a strategy to conduct disease control while accommodating for wildlife habitat, providing forage for big game while leaving hiding and thermal cover adjacent. The strategy was to center the clearcuts (approximately two-15 acres in size) on the worst infestation centers in the initial harvest. Where there was interest to increase water yield, initial patch clearcuts ranged from 3 to 5 acres in size. Then at 10-year intervals, remove a ring (control strip) between 60 and 100-feet wide away from the young trees (figure 5). Where practical, clearcut unit edges were placed adjacent to dwarf mistletoe-free stands or stands of other tree species (spruce and fir).

Figure 5. Pieplant Creek: Initial dwarf mistletoe clearcuts from 1981 surrounded by a dwarf mistletoe control strip from 1991 to 1993 fence post and pole sales. The treatment has established a 44-acre of healthy young lodgepole pine. Image taken June 18, 1995, AH 706-10a.

Commercial harvest was used to implement this strategy from the 1970s to the mid-2000s, until the timber industry declined. Small forest product sales in this period did contribute to the edge treatments. Once timber industry recovered in 2013, the harvest focus was centered on salvaging bark beetle-killed Engelmann spruce elsewhere on the Gunnison Ranger District.

During the 1980s, funding was available to conduct noncommercial stand replacement of dwarf mistletoe infested lodgepole pine. Sites included in this effort were dense “doghair” sapling-pole stands and stands with little commercial value. A variety of stand-replacement tactics were experimented with, including: roller chopping, stand-replacement prescribed burning (figure 6), machine piling, hand felling, or combinations of those treatments.

In total, this legacy of forestry actions has not only contributed to disease control efforts but also contributed to age-class diversity which increases forest resiliency to landscape level stressors, supplied fuel reduction in the wildland-urban interface and generally supported ecosystem health. The added benefit has been sustainable wood products for a wood products industry that has struggled to gain a solid economic footing until recently.

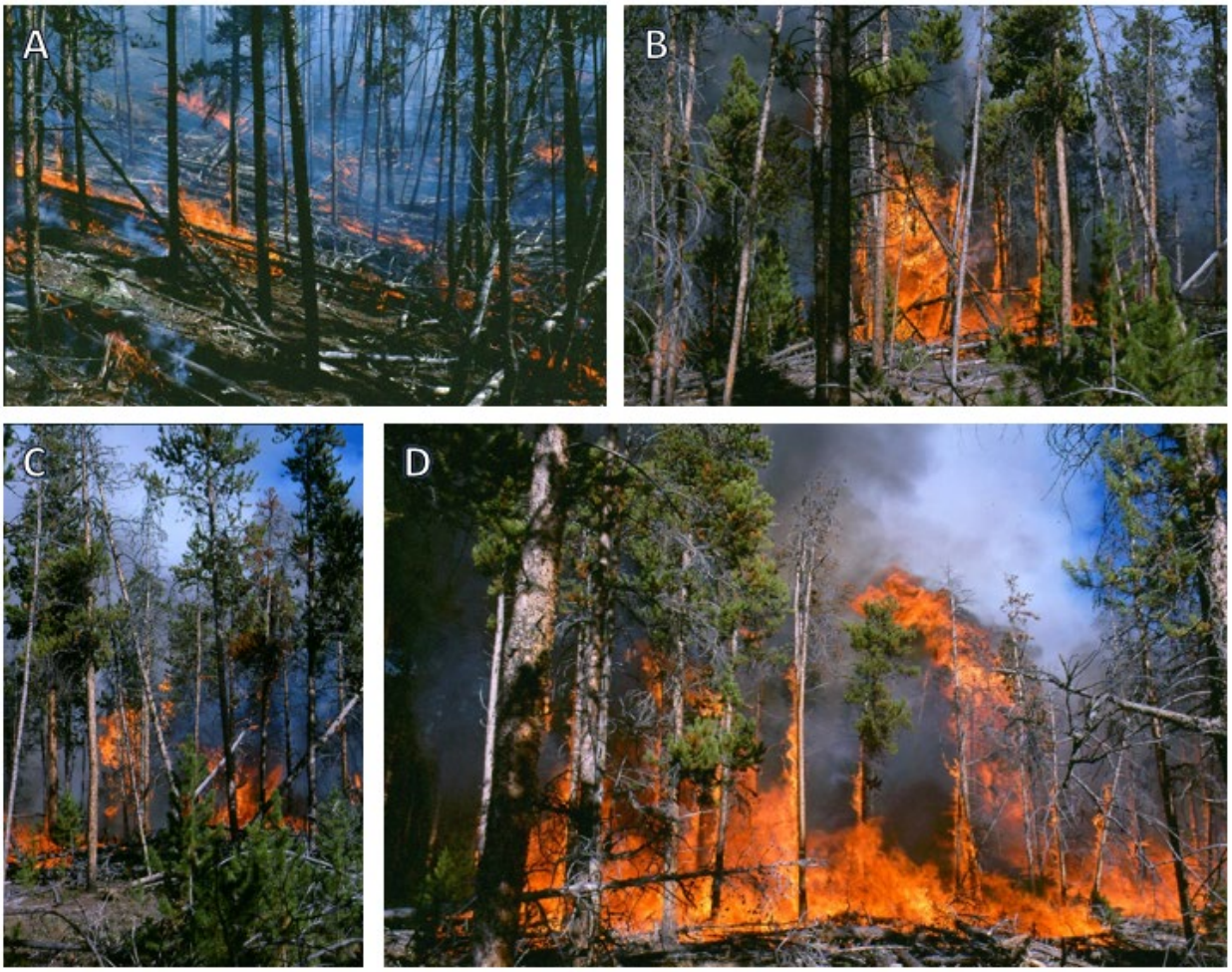

Figure 6. Images taken October 4, 1982. (A) Prescribed fire in natural slash accumulation from severe dwarf mistletoe infestation. Zimmerman's CSU Study units in between Illinois and Texas Creeks (AH 258-38). (B) Hot spot in heavy fuels (AH 259-14). (C) Fire in heavily dwarf mistletoe infested stand (AH 259-13). (D) Surface and crown fire in dwarf mistletoe infested stand (AH 259-19).

Management Direction and Strategies

Direction and national strategies guiding the proposed action is summarized below.

National Policy and Direction

Ecological Restoration and Resilience (FMS 2020)

Forest Service policy on ecological restoration and resilience was first written as an interim directive in 2008, and revised in 2010, 2011, and 2013. Final Forest Service policy on these topics was proposed in 2013. The proposed directive provides broad foundational policy for using ecological restoration to manage National Forest System lands in a sustainable manner. The policy spans all resource areas and activities applicable to land management and establishes a common definition for ecological restoration and resilience that is consistent with the 2012 Land Planning rule. The discussion below follows the latest (2013) interim directive, because that is current Forest Service policy.

The objective of restoration is stated as follows:

"The aim is to reestablish and retain ecological resilience of National Forest System lands and associated resources to achieve sustainable management and provide a broad range of ecosystem services. Healthy, resilient landscapes will have greater capacity to survive natural disturbances and large scale threats to sustainability, especially under changing and uncertain future environmental conditions, such as those driven by climate change and increasing human uses" (FSM 2020.2, Objective, interim directive).

Ecological restoration activities may include recovery from high-severity fires, restoring terrestrial and aquatic habitat, and watershed restoration treatments, among others. The policy incorporates consideration of increased human use and climate change on National Forest System lands when developing restoration and resilience activities. The directive reinforces the use of adaptive management, scientific information, and collaboration in agency planning and decision-making.

The directive defines restoration as:

"The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on establishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions" (FSM 2020.5).

Adaptive management is defined as:

"A system of management practices based on clearly identified outcomes and monitoring to determine if management actions are meeting desired outcomes, and if not, to facilitate management changes that will best ensure that outcomes are met or reevaluated. Adaptive management stems from the recognition that knowledge about natural resource systems is sometimes uncertain" (36 CFR 219.16; FSM 1905; FSM 2020.5). In the context of the proposed action, desired outcomes are associated with tree species and structural stand conditions and successful implementation of project design features designed to minimize/eliminate impacts to natural resources.

Healthy Forest Restoration Act

Every five years, Congress passes legislation that sets national agriculture, nutrition, conservation, and forestry policy. In 2014, Congress approved the Agriculture Act of 2014, commonly referred to as the "2014 Farm Bill." Section (§) 8204 of the 2014 Farm Bill amended Title VI of the Healthy Forest Restoration Act of 2003 ((HFRA) 16 U.S.C. 6591)) by adding §602, and §603 to provide treatment in areas of declining forest health. The projects are carried out in accordance with HFRA Title I §102(b), (c), (d), and sections 104, 105, and 106. Section 603 allows the use of categorical exclusions for projects that meet specific criteria. The HFRA encourages collaboration, emphasizes community protection, focuses the environmental analysis process, and provides a "pre-decisional" objection process.

Under HFRA Title VI, §602 (b)(1), the Secretary of the U.S. Department of Agriculture, which oversees the U.S. Forest Service, was required to designate areas requested by state Governors as part of an insect and disease treatment program. An area may be designated as part of an insect and disease treatment program if it meets as least one of the following criteria:

- Experiencing forest health decline based on annual forest health surveys
- At risk of experiencing substantially increased tree mortality over the next 15 years based on the most recent National Insect and Disease Map published by the Forest Service
- In an area in which hazard trees pose imminent risk to public infrastructure, health, or safety

On May 20, 2014, Secretary of Agriculture Vilsack announced the designation of approximately 45.6 million acres of National Forest System lands in 35 states to address insect and disease threats that weaken forests and increase the risk of forest fire. The planning area of this project (excluding designated wilderness areas) was designated under Section 602.

The project area meets the definition of "declining forest health" in §602(a) and is eligible for analysis under Titles VI of the HFRA.

National Strategy

Western Bark Beetle Strategy

The Western Bark Beetle Strategy (USDA Forest Service, 2011) was developed in response to current bark beetle epidemic in the western United States. The strategy addresses the three prongs of the bark beetle problem: human safety, forest recovery, and forest resiliency.

National Cohesive Wildland Fire Management Strategy

In the Federal Land Assistance, Management, and Enhancement Act of 2009 (FLAME Act), Congress mandated the development of a national cohesive wildland fire management strategy to comprehensively address wildland fire management across all lands in the United States. Shortly after enactment of the FLAME Act, a three-phased, intergovernmental planning and analysis process involving stakeholders and the public was initiated: the National Cohesive Wildland Fire Management Strategy, more commonly referred to as the Cohesive Strategy (USDA & USDI 2014). Its vision for the next century is "to safely and effectively extinguish fire, when needed; use fire where allowable; and as a Nation, live with wildland fire" (USDA and USDI). The Cohesive Strategy is an effort to work collaboratively among all stakeholders and across all landscapes, using best science, to make meaningful progress toward three identified goals: resilient landscapes, fire-adapted communities, and safe and effective wildfire response. The proposed action is informed by the Cohesive Strategy's identified goal of achieving and maintaining resilient landscapes via fire and non-fire vegetation and fuels management.

Forest Plan

The 1991 Grand Mesa, Uncompahgre and Gunnison National Forests Amended Land and Resource Management Plan (Forest Plan), is the programmatic document 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). The purpose of the Forest Plan is to provide direction for the multiple use and sustained yield of goods and services from National Forest System lands in an environmentally sound manner. The Forest Plan provides overall goals and objectives, standards and guidelines, and management area-specific goals and objectives that direct management of the Grand Mesa, Uncompahgre and Gunnison National Forests. The Forest Plan can be viewed online on the Grand Mesa, Uncompahgre and Gunnison National Forests website: Amended Land and Resource Management Plan, 1991 http://www.fs.usda.gov/detail/gmug/landmanagement/planning/?cid=fsbdev7_003229.

The proposed action is consistent with general management direction identified in the amended GMUG Forest Plan. General direction pertinent to this analysis include vegetation management, cultural resources, wildlife resources, old growth management, forest products, water quality, fire, insects and disease, and soil resources (Forest Plan, 1991, pp. III-2 through III-5).

General Direction for Forest Plan Management Area

The Forest Plan set management allocations for specific uses of land and established twenty Management Areas (MA) within the Forest to meet multiple use objectives (p. III-86). The MAs that overlap with the proposed treatment areas of the proposed action are 2A—Semi-Primitive Motorized Recreation (pp. III-100 to 104), 2B—Roaded Natural and Rural Recreation Opportunities (pp. III-105 to 109), 4D—Aspen Management (pp. III-120 to 123), 6B—Livestock Grazing (pp. III-145 to 149), and 7A—Timber Management on Slopes Under 40 Percent (pp. III-150 to 154). All of these Mas allow for vegetation management activities.

Public Involvement

On April 13, 2018, we issued a scoping letter that described the project purpose and need, as well as the proposed action, and solicited public comments. Scoping outreach consisted of:

- Approximately 209 postal letters mailed out on April 17, 2018
- Approximately 319 emails sent to unique email addresses on April 18, 2018
- News Releases posted on the GMUG website, Facebook and Twitter accounts on April 17, 2018
- News Release and Legal Notice published in the Gunnison Times on April 19, 2018 (initiating the 30-day scoping period)

Seventy individuals, private businesses, non-governmental organizations, local governments or Tribal governments provided written comments in response to our scoping letter. Of these, 28 were unique letters and 42 were copies of a form letter. Commenters who commented during scoping or during other official comment periods will have standing to file pre-decisional objections based on the final environmental analysis or draft decision.

On June 21, 2018, we held a public meeting in Tincup to present the proposed project to interested members of the public and solicit additional comments. More than 20 individuals attended the public meeting in Tincup. Attendees included local area residents (mostly seasonal) and representatives of non-governmental organizations. A Questions and Answer document from the meeting was posted on the project website and can be found in the project record (Taylor Park EA_PublicMeeting06212019_Q&A).

From the scoping response, we identified 148 individual comments ranging from specific requests to modify elements of the proposed action to general statements of support or opposition to the proposed action. We grouped the overall comments into five key issues:

1. Clearcuts away from the wildland-urban-interface (WUI) and other infrastructure will reduce forest age class diversity, and overall forest resiliency. No clear cuts should be conducted other than those necessary to address fuel loading near the WUI and hazards to existing infrastructure.

2. Clearcuts will adversely affect wildlife habitat. A persistent subset of this category is that clearcuts to control lodgepole pine dwarf mistletoe will result in 300 foot “permanently cleared” strips that will fragment lynx habitat.

3. Clearcuts will create hotter microclimates and inhibit regeneration.

4. Opening temporary roads for timber sales and other management actions will impact habitat quality and quiet of forest, both from operations and from increased use of temporary roads for motorized recreation.

5. Small size of sale areas, poor value of materials to be removed (mistletoe damaged timber, small diameter logs, requirement to lop and pile or remove slash, etc.) may hinder economic viability of commercial logging accomplishing project goals,

Adaptive Management Group and Science Team

Through the planning of the Spruce Beetle Epidemic and Aspen Decline Management Response (SBEADMR) project, the SBEADMR Adaptive Management Group (AMG) was formed to assist the Forest in applying the adaptive management framework over a multi-year timeframe in accordance with the SBEADMR FEIS and Record of Decision. This group consists of a diverse representation of external stakeholders who have an interest in vegetation management across the GMUG. In addition to the SBEADMR AMG, the Forest entered into an agreement with the Rocky Mountain Research Station and Colorado State University/Colorado Forest Restoration Institute to address scientific questions and monitoring needs for the SBEADMR project and future projects. The scientists engaged through this agreement are referred to as the Science Team.

Initially, we planned to utilize the SBEADMR AMG and Science Team for the Taylor Park Vegetation Management project. However, through scoping and the public meeting held in Tincup, it was strongly encouraged by local stakeholders that a separate and more localized AMG and Science Team be established for this Taylor Park.

To be responsive to local stakeholders, the District Ranger entered into an agreement with Western State University's Center for Public Lands (Western) for the development, facilitation and management of a local AMG and Science Team. Though this localized AMG and Science Team are separate from the SBEADMR AMG and Science Team, it is our intent that they will be working together (to some extent) as treatments from the SBEADMR and the current proposed project would be adjacent to each other in some instances.

On December 10, 2018, the formation of the AMG was initiated when Western held a public meeting to provide information on what an AMG is and what the role of the AMG would be, gauge what stakeholders should be in the group, and gain an understanding of stakeholders' values/concerns regarding the forest health condition and proposed project. During this meeting, it was expressed that interested potential members of the AMG wanted a more collaborative role in the development of the project and requested an official comment period be provided for the environmental assessment. To accommodate this desire, the District Ranger decided to publish this Preliminary Environmental Analysis for a 30-day comment period.

We anticipate some changes to the proposed action or development of an alternative between this preliminary analysis and the final environmental assessment within the planning area, in response to public input. Specifically, the AMG will assist us through suggesting specific changes to the Proposed Action. However, we will consider suggested changes from any source. This group is open to the public and will meet with the GMUG to provide input on implementation of the proposed action throughout the life of the project.

For more information on the AMG and Science Team and how to get involved, visit: https://www.centerforpubliclands.org/taylor-park-project-events.

Scoping Issues

Here is a summary response to the scoping comments, grouped by key issues:

Issue: Clearcuts away from the WUI and other infrastructure will reduce forest age class diversity, and overall forest resiliency. No clearcuts should be conducted other than those necessary to address fuel loading near the WUI and hazards to existing infrastructure.
Response: The proposed clearcuts would be generally small in size and occur in a mosaic across the treatment area. Currently, 98 percent of the forested acres in the planning area are over 1-inch diameter at breast height (DBH), with 31 percent of forested acres over 9 inches DBH. Clearcutting would move a stand into a size class of less than 1-inch average DBH, which would actually increase forest age class diversity, as this young age class currently only comprises 0.3 percent of forested acres in the project area. Also, as a reference, proposed treatment units comprise 8 percent of forested acres in the planning area, and some treatments would not be changing the overall age class of the stand.

Issue: Clearcuts will adversely affect wildlife habitat. A persistent subset of this category is that clearcuts to control lodgepole pine dwarf mistletoe will result in 300 foot "permanently cleared" strips that will fragment lynx habitat.
Response: The U.S. Fish and Wildlife Service concurred with our determination that the proposed action "may affect, but is not likely to adversely affect, Canada lynx." For additional information on potential impacts to Canada lynx in particular, and wildlife habitat in general, see the Wildlife Section, below. Regarding the concern that clearcuts would result in permanently cleared areas, our experience with many years of clearcuts of varying size in lodgepole pine forest is that lodgepole regeneration has occurred after clearcutting (Haines 2019). Further, the National Forest Management Act (NFMA) dictates that we ensure clearcut areas are restocked with trees within five years.

Issue: Clearcuts will create hotter microclimates and inhibit regeneration.
Response: Clearcuts remove shading from a site allowing direct sunlight to the soil surface. The increased sunlight warms the soil surface and increases the solar flux (input) to the exposed site. Lodgepole pine and aspen prefer to regenerate in these sunnier and warmer site conditions. Where lodgepole pine cones are "serotinous" or closed, the warmth near the soil surface allows the cones to open up and disperse their seed. Other tree species do not regenerate well in open clearcut conditions due to soil warming and increased sunlight. Engelmann spruce at high elevations is among these tree species. We are required by NFMA to restock regeneration (clearcut) harvests within five years. Proposed unit areas were not identified in areas where regeneration would be difficult to achieve post-harvest.

Issue: Opening temporary roads for timber sales and other management actions will impact habitat quality, both from operations and from increased use of temporary roads for motorized recreation.
Response: All temporary roads opened for project implementation would be posted as closed to the general public during project implementation and blocked from unauthorized use. The temporary roads would be decommissioned and rehabilitated upon the end of project implementation. While disruption of wildlife habitat would result from our implementation of the proposed action, these activities are consistent with ongoing forest management, Forest Plan direction, and have been analyzed in the wildlife effects section.

Issue: Small size of sale areas, poor value of materials to be removed (mistletoe damaged timber, small diameter logs, requirement to lop and pile or remove slash, etc.) may hinder economic viability of commercial logging accomplishing project goals.
Response: Timber sales that are developed from the Proposed Action will be planned with economic factors in mind, including move-in and move-out costs and temporary road costs. Our standard appraisal system will be utilized where work such as temporary road construction/rehabilitation will be factored in to the advertised rate for the sawtimber. Due to the adaptive nature of our planning, we will be reviewing design features on a sale-by-sale basis and ensure that what is included is necessary. We acknowledge that

some activities (non-commercial forest health/fuels treatments) in the proposed action will not be covered by a standard timber sale contract and that other contracting/funding mechanisms may have to be utilized.

Purpose and Need for the Proposal

The primary purpose of the proposed action is to increase the forest's ability to respond to multiple and interactive stressors including climate change, drought, insect attack, or disease while promoting safety and reducing fuel loading in the wildland-urban interface and surrounding areas. Based on existing conditions and Forest Plan direction, the need for the proposed action is to manage forest vegetation to bring current and foreseeable conditions closer to desired conditions on landscapes where commercial harvest can be implemented appropriately and effectively.

The secondary purpose of the proposed action is to provide wood products for the local economy which relies on wood fiber harvested sustainably from public lands.

Project Objectives

- Thin and harvest stands to improve forest health, reduce fuels in wildland-urban interface areas, using commercial harvest and non-commercial treatments as appropriate to the site-specific situation.
    - In the wildland-urban interface: reduce the potential for crown fire by reducing or breaking up canopy continuity, decrease potential surface fire intensity via reduced surface fuels, and improving tree health and vigor.
    - Protect young, healthy stands of lodgepole pine from infestation by dwarf mistletoe through harvesting infested stands and treatment of adjacent strips and stands.
    - Salvage trees killed by spruce bark beetle, mountain pine beetle, Douglas-fir bark beetle and wildfire for commercial wood products.
    - Precommercially thin young stands of lodgepole pine to increase/maintain growth rates.
- Remove hazard trees along the Taylor Canyon and Spring Creek Roads (CR 742 and FR 744).
- Provide lodgepole pine and Engelmann spruce sawtimber and other forest products such as firewood, fence posts, and corral poles from suited timber in the watershed. Focus is on dwarf mistletoe infested stands and spruce resiliency treatments outside of SBEADMR treatment units. Proposed commercial harvest would be in addition to, and in conjunction with that of SBEADMR.

The project would implement management direction identified in the Forest Plan, by responding to goals and objectives and would move the planning area toward desired conditions (III-1 through III-5). Specifically, the Forest Plan goal for vegetation is to "manage vegetation in a manner to provide and maintain a healthy and vigorous ecosystem resistant to insects, diseases and other natural and human causes."

Additionally, this project is being developed under the authority of the Healthy Forest Restoration Act (HFRA; P.L. 108-148). It is eligible as an authorized project under this law because it is located within the area designated as experiencing or at risk of experiencing insect and disease infestations on the map proposed by the Governor of Colorado and is being developed collaboratively.

Proposed Action and Alternative

Proposed Action

The Gunnison Ranger District has preliminarily identified areas for the suite of treatments listed in table 1. Treatments are limited to areas outside of wilderness, Colorado Roadless Areas, and designated recreation management areas. The location of the treatments is depicted in Figure 7; a poster sized map can be found on the project website. The total acreage for treatment shown in Table 1 is the maximum that would occur over the 10-year life of the project.

The exact extent and location of treatments to be applied would be determined through an adaptive approach. Treatments were mapped with our best available data; however, there may be discrepancies and errors in the existing data. As such, during implementation, actual treatment boundaries would vary and may include areas adjacent to the mapped areas. During the 10-year implementation period, the project interdisciplinary team would survey areas proposed for treatment to determine existing conditions, identify appropriate treatments and schedule implementation. The interdisciplinary team would use the implementation checklist (Appendix A) to guide survey and implementation planning. The interdisciplinary team would determine treatment type, location and extent based on site-specific conditions identified during survey and implementation planning. See the Decision Tree for Silvicultural Prescription Application (Appendix B). Proposed treatments follow standard silvicultural practices identified by Alexander 1974 and 1986; Alexander and Edminister 1980 and 1981; Cole and Koch 1995; Hawksworth 1977; Hawksworth, et al. unknown; and Hawksworth and Wiens 1996.

We would not develop any new permanent roads for this project. Any temporary roads created for the treatment would be closed and obliterated upon project completion. Any currently closed administrative roads that would be opened for project implementation would be closed upon project completion. At no time would temporary or administrative roads be open to public use. We would retain the open road and trail system, as defined by the 2010 Gunnison Travel Management Plan Decision and displayed on the current Motor Vehicle Use Map for the Gunnison Ranger District.

We would implement project design features specifically developed to protect sensitive natural features during all treatments. A list of project design features is incorporated into the implementation checklist (Appendix A).

Descriptions of treatments follow.

Table 1. Proposed treatments

Treatment	Acres
Dwarf Mistletoe Edge Strip Cuts or Clearcut	3,566
Shelterwood Seed Cut	714
Overstory Removal	733
Young Stand -- Precommercial Thinning, Sanitation, or No Immediate Treatment	6,182
Group Selection in Spruce	741
Fuel Treatment	2,820
Prescription To Be Determined, Mixed-species	193
Total	**14,949**

Design Features

We developed project design features for the proposed action to conserve and protect natural and human environment resources during the implementation of the Taylor Park Project (modeled after the design features from the SBEADMR project). Appendix A: Implementation Checklist and Design Features lists the identifier, design feature description (objective/specifications), and source for each design feature. Many of the design features are from the Forest Plan Standards and Guidelines, Forest Service Handbooks/Manuals direction, Best Management Practices, and professional judgement. Treatment-specific design features will be selected by GMUG resource specialists during pre-implementation analysis.

During implementation, design features could be modified to fit the situation so long as the intent of the design feature is maintained. If specific design features are found to be ineffective in their intended purpose for most or all situations, they would be updated (with justification) to meet the intention. These modifications will be vetted through the Adaptive Management Group, Science Team, and Forest Leadership Team, with the deciding officer making the final determination. The intent of this adaptive approach is to ensure robust, community engaged monitoring throughout implementation of the project.

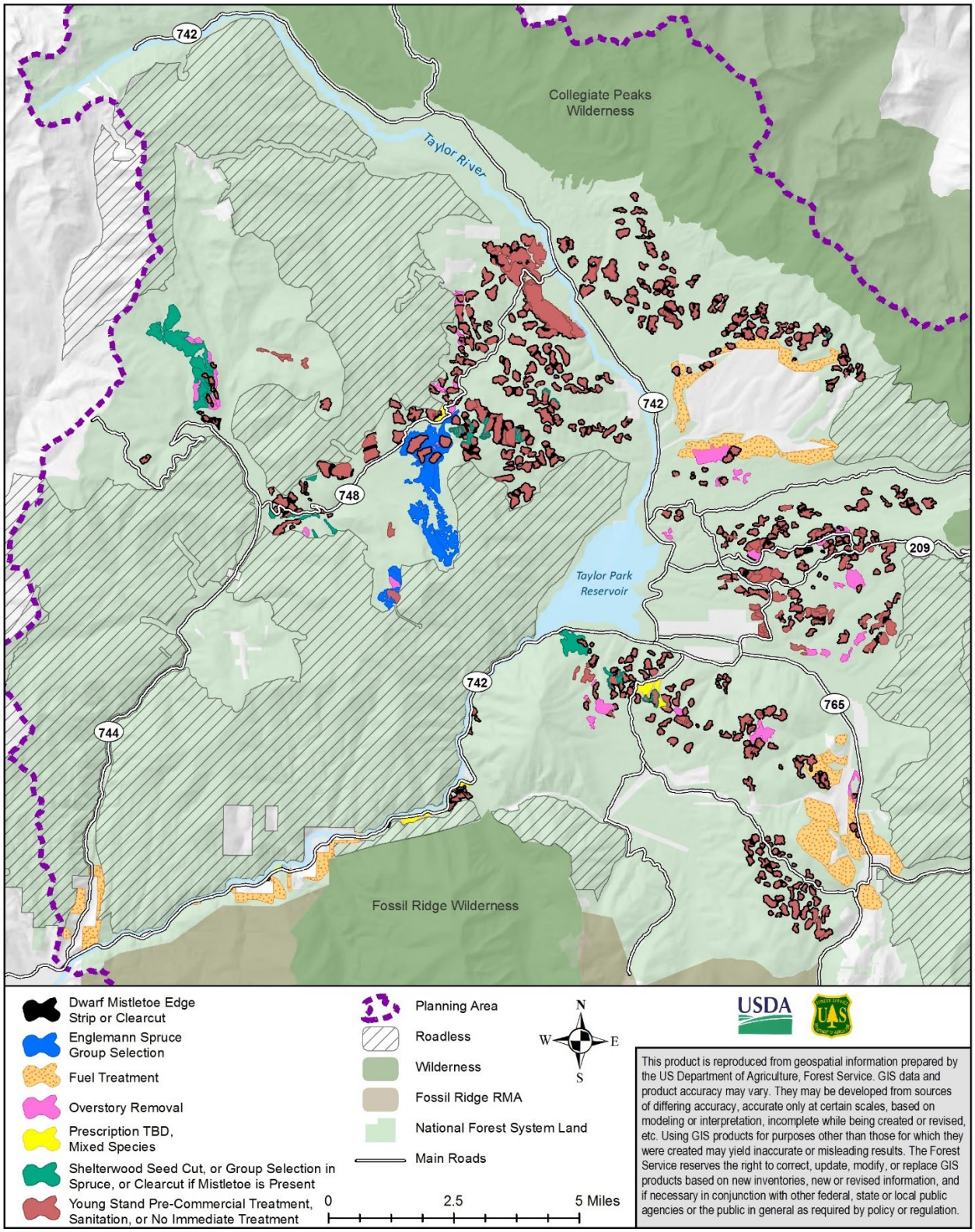

Figure 7. Map of proposed action

Proposed Vegetation Treatment Details

This project would be implemented using an adaptive approach. The anticipated treatments displayed in figure 7, were our best estimations as to what treatments are needed on the ground to address the purpose and need for this project. These estimated treatments were developed from GMUG Geographic Information System (GIS) data, professional knowledge, and interdisciplinary team input. Treatments chosen for implementation in the portrayed areas would depend on site-specific conditions identified during survey and implementation planning (Appendix A). Below are the types of treatments proposed.

Dwarf Mistletoe Edge Strip Cuts and Dwarf Mistletoe Clearcut

Vegetation Type: Lodgepole pine dominated areas

Treatment: This treatment would be used in lodgepole pine-dominated areas where dwarf mistletoe is present. In areas surrounding young lodgepole pine stands, we would harvest or fell infested edges, generally within 100 to 300 feet of healthy, young trees. Where edges are healthy lodgepole pine or other tree species, harvest or treatment could be deferred. Where young stands are close to one another and edge cuts between would leave only a narrow strip of trees that would be vulnerable to windthrow, the entire strip would be removed.

Several non-edge strip stand clearcuts are proposed in areas of high infestation. Exact location and extent of individual dwarf mistletoe clearcuts would be determined through implementation-phase surveys. No individual clearcut would exceed the 40-acre limitation identified in the Forest Plan (III-43).

All lodgepole pine other than wildlife trees would be removed or felled within the treatment area. Where insufficient dead trees are present to meet snag retention requirements (i.e., retention of standing dead trees to retain wildlife habitat), live lodgepole pine wildlife trees would be girdled to create wildlife snags. This would also reduce the spread of dwarf mistletoe, which requires a live host tree. Other tree species could be left uncut if they are healthy and of low risk for windthrow. Mechanical site preparation would be used to promote seed germination and seedling survival and to meet wildlife and/or fuels objective on the site through piling and burning slash. Snags and downed logs would be retained on site as prescribed in the Forest Plan and by the District Biologist.

Desired Condition: Stands of young, vigorous lodgepole pine (and other species where present) that are free to grow without dwarf mistletoe infection. These stands will not be susceptible to mountain pine beetle for several decades and will break up the fuel continuity in the area. If the implementation team determines that a stand is in good condition with healthy trees it may not need treatment. Treatment decisions would be made on a case-by-case basis during implementation, based on existing conditions.

Shelterwood Seed Cut

Vegetation Type: Lodgepole pine dominated areas without mistletoe infection.

Treatment: This treatment would be used in lodgepole pine dominated stands not infested with dwarf mistletoe. This treatment would remove 40 to 45 percent of the overstory trees uniformly, or in groups of ¼ acre to 2 acres in size, across the stand to promote regeneration by allowing sunlight and nutrients to reach the forest floor. Seeds from the remaining overstory trees would germinate to foster regeneration. The neighboring residual trees would provide for partial shading of seed beds and protection of young trees from drying winds.

The prescription would be either the first step in a two-step shelterwood cut, or the second step of a three-step shelterwood cut. After 20 years (under a new planning effort), final overstory removal would be completed to release the then established understory of young trees.

The treatment would create a two-aged, two-storied stand in the short term. In the longer term, after final overstory removal, a relatively even-aged, single-storied stand would result. Concentrations of heavy fuel loading would be piled and burned.

Desired Condition: Establishment of regenerating stands of young, healthy lodgepole pine with some protection by overstory trees, while also reducing stand susceptibility to mountain pine beetle and decreasing the amount of continuous overstory fuels.

Overstory Removal

Vegetation Type: Predominately lodgepole pine, but spruce-fir stands are also proposed.

In most applications, overstory removal is the final harvest of merchantable trees left from previous treatments (e.g., shelterwood seed cut). The stand is two-storied and two-aged, with an adequately stocked understory of healthy, young trees.

Treatment: This treatment would be used to remove all mature overstory trees left from previous shelterwood preparatory and seed cutting. This would allow existing young trees to fully occupy the site, releasing an even-aged stand of trees growing in fully-open conditions. Young trees would be protected to the extent possible during harvest to ensure adequate stocking of undamaged trees. Open areas would be treated to foster additional natural tree recruitment, as appropriate. Inferior and over-mature residual trees too small or too defective for commercial use would be felled to reduce competition with desirable young trees. Lodgepole pine with dwarf mistletoe would be harvested or felled to reduce disease presence and spread.

Desired Condition: Young, healthy, fully stocked stand of trees, free from competition by overtopping trees, and decreased continuity of fuels.

Young Stand -- Precommercial Thinning, Sanitation, or No Treatment

Vegetation Type: Smaller-diameter lodgepole pine dominated areas (present spruce and fir would be retained to enhance diversity).

Treatment: This treatment would leave dominant, healthy trees at a spacing of 8 to 12 feet between stems, depending on the size of the tree. Tree species other than lodgepole pine would be retained unless their removal is necessary for safety or operational purposes. The intent of this treatment would be maintenance of desirable growth rates and promotion of tree vigor. A dwarf mistletoe survey would be completed during the thinning operation, and any diseased trees would be felled to reduce disease presence and spread.

Slash from the thinning operation would be lopped and scattered to lay within 2 feet of the ground. Lop and scatter retains the nutrient capital of felled trees on site for future use by the desired trees. However, in the wildland-urban interface, the thinning slash would be piled and burned to reduce fuel loadings.

Not all of the stands identified for “Young Stand – Precommercial Thin, Sanitation, or No Treatment” would be thinned during the next 10 years. During implementation surveys, stands not ready for thinning would be identified and slated for no treatment. Consideration of snowshoe hare and Canada lynx habitat

needs may determine whether a thinning of a particular site would occur, or whether the treatment would be modified to maintain or improve habitat conditions for the term.

Desired Condition: Young, healthy, even-aged stand of trees, with reduced competition between trees and space to grow and a reduction of fuels.

Group Selection in Engelmann Spruce-dominated Stands

Vegetation Type: Engelmann spruce dominated stands areas.

Treatment: This treatment would be used where the goal is to promote regeneration of Engelmann spruce, subalpine fir, and lodgepole pine through removing groups of mature trees. Emphasis for group placement would focus on pockets of dead, diseased, damaged, or declining trees. About 25 percent of the stand area would be cut during each treatment, with group size ranging from ¼-acre to 2 acres in size. Mechanical soil scarification would be used, as appropriate, to promote seed germination and seedling survival.

Desired Condition (long-term): Creation and maintenance of Engelmann spruce dominated stands (and other tree species) with four age classes present in order to increase stand resiliency to bark beetles and other stressors. Trees of similar age would be concentrated in groups.

Fuel Treatment

Vegetation Type: Predominately lodgepole pine, but in the lower Taylor canyon the vegetation type will also contain areas of mixed conifer.

Treatment: Fuel treatments would include variety of tactics ranging from thinning to clearcutting.

Forest canopy fuels would be treated as appropriate near developed areas to reduce stand density and break up canopy continuity, decreasing the probability of a crown fire. Larger trees would generally be favored for retention; while damaged, diseased, suppressed, and intermediate trees would be favored for removal. Open areas would be created to break-up stand continuity.

We would treat surface fuels and understory vegetation (by thinning and pruning) to reduce surface fire spread and intensity, and to reduce the potential for surface fires to climb into the canopy as crown fires. Other surface fuel treatments could include chipping, patch cutting, mastication, mechanized crushing and scattering or tub grinding woody material as appropriate.

Heavy concentrations of existing woody debris or slash from treatments would be hand or machine piled for burning when conditions are favorable.

Disease control and obtaining natural tree regeneration would not be driving goals in these treatments. Visual quality of managed stands from neighboring areas would be a consideration. Commercial harvest of merchantable trees would be used to remove wood from the area and reduce the fuel loading in a cost effective way were appropriate.

Desired Condition: Reductions in canopy and stand continuity and surface fuel loading near private land, or other values, where wildfire suppression could be more effective and safer.

Salvage Clearcut

Vegetation Type: Stands where more than 40 percent of the basal area is dead (all tree species). Where mortality exceeds 40 percent of the overstory, harvesting the dead trees would likely trigger windthrow of the remaining overstory trees if live trees were retained.

This assessment does not identify specific sites for salvage clearcut. The prescription is intended as contingency in case bark beetle or wildfire mortality occurs. If applied early enough in a proactive fashion, additional mortality losses maybe contained. Wood products would be salvaged while still merchantable for sawlogs.

Treatment: Salvage Clearcut would remove all merchantable dead, dying, or deteriorating trees, except those required to meet wildlife snag requirements. During implementation we would protect existing conifer regeneration within the stand. After salvage harvest we would implement reforestation activities to ensure the recruitment of a fresh cohort of Engelmann spruce, Douglas-fir or lodgepole pine. Excessive concentrations of slash and woody debris would be piled and burned. If needed, mechanical site preparation would be used to promote seedling germination and survival. Individual salvage clearcuts in response to mortality events are not subject to the 40-acre limitation.

Desired Condition: A new stand comprised of healthy seedlings that has established post-salvage and remaining live overstory, with decreased fuel loadings from the removal of dead overstory.

Prescription Undetermined, Mixed-species Present

Vegetation Type: Several stands were identified in the proposed action development where active treatment would be feasible, but the current condition and tree species composition is not known well enough to anticipate a treatment type.

Treatment/Desired Condition: Management prescription would be determined during implementation phase surveys. Any of the prescriptions described above could be applied. Refer to Appendix B- Decision Tree for Silvicultural Prescription Application.

No-Action Alternative

Under the no-action alternative, we would not implement the proposed treatments. Forest management activities would continue at rates and treatment types similar to those of recent years. We would continue to implement currently authorized activities.

Environmental Impacts of the Proposed Action and Alternative

This section summarizes the potential impacts of the proposed action and alternatives. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and occur later in time or removed in distance. Cumulative impacts are the direct and indirect effect of the project added to the effect from other past, present, and reasonably foreseeable actions.

Timber Resources

Affected Environment

Cover Type

We classified cover type and habitat structural stage for the entire planning area (approximately 276,000 acres), as well as the treatment area (approximately 15,000 acres). The original classification was based on the 1988 aerial photograph flight. In this analysis, cover type and structural stage were updated based on aerial photograph interpretation[1] and the on-ground knowledge of the Gunnison Ranger District Silviculturist. Existing Cover Type information provided here is approximate.

Table 2 displays general cover type by acre and percent within the project area and treatment area independently. As mentioned above, we initially determined cover type from aerial photography, a level of error should be expected until surveys verify or correct the existing estimates. During implementation surveys, full silvicultural prescriptions will be completed for site-specific conditions. In the larger 276,000-acre planning area, trees are dominant on 186,086 acres (67 percent).

Table 2. Existing cover type (all lands within analysis area, includes National Forest System and private lands)

Dominant Cover Type	Acres in Project Area	Percent in Project Area	Acres in Treatment Area	Percent in Treatment Area
Grass/Forb	24,914	9%	259	2%
Bare/Rock	19,345	7%	0	0%
Shrub	44,005	16%	159	1%
Aspen	6,448	2%	28	less than 1%
Douglas-fir	688	less than 1%	11	less than 1%
Limber pine	51	less than 1%	48	less than 1%
Lodgepole pine	110,307	40%	12,545	84%
Spruce-fir	68,553	25%	1,871	13%
Unknown Trees	39	0%	27	less than 1%
Water	2,289	1%	0	0%
TOTALS	**276,639**	**100%**	**14,948**	**100%**

[1] The aerial photo series used for stand delineations was the 1988 set. Delineation and interpretation started about 1997. There were updates made based on the digital DOQ and NAIP for activities since. The district went through efforts at various times after 2010 to update stand delineation and interpretation by watershed. Stand examination data has been collected periodically since 2011. Some of the old photo work and older stand exam data is still valid since the mature forests do not change rapidly in the absence of bark beetle outbreak or fire. However, the young stands regenerated during the period have changed considerably.

Lodgepole pine is the primary Cover Type within the project area (40 percent) and dominates the treatment area at 84 percent. Spruce-fir cover type has a secondary presence, represented by 25 percent of the acres in the project area and 13 percent in the treatment area. Shrub community cover types also exist, generally along drainages and riparian areas, comprising 16 percent of the acres within the project area and one percent of the acres within the treatment area.

Habitat Structural Stage

Habitat structural stage is a stand level sampled attribute, describing vegetation canopy layers by vegetation type, size and crown cover. We use the habitat structural stage system derived from Hoover and Wills (1984). Structural stage can generally give a good understanding of the canopy cover of the stand, relative average size of trees in the stand, and crown closure. It can be useful in determining landscape level conditions and showing changes in the overall landscape condition of vegetation, in addition to showing changes over time and disturbance regimes.

Table 3. Habitat structural stages

Habitat Structural Stage Code	Description	Approximate Tree Size	Crown Cover
1M	Grass/Forb, natural meadow	Nonstocked	Not applicable
1T	Grass/Forb, previously trees	Nonstocked	Not applicable
2S	Shrub-Seedling; not previously trees	Nonstocked	Not applicable
2T	Shrub-Seedling, previously trees	Less than 1” DBH	Not applicable
3A	Sapling-Pole	1” to 9” DBH	Less than 40%
3B	Sapling-Pole	1” to 9” DBH	40-69%
3C	Sapling-Pole	1” to 9” DBH	70-100%
4A	Mature tree	Greater than 9” DBH	Less than 40%
4B	Mature tree	Greater than 9” DBH	40-69%
4C	Mature tree	Greater than 9” DBH	70-100%

As table 3 displays, structural stage 3B, sapling to pole sized trees between 1 and 9 inches in diameter with moderate crown closure, is the dominant size class by area in both the planning (33 percent) and treatment areas (42 percent). Structural stage 2 has a secondary presence, represented by 16 percent of the acres in the planning area as 2S, shrub areas not previously supporting trees, and 20 percent in the treatment as 2T, formerly forested areas with seedling regeneration. Another structural stage noticeably represented in both areas is 4B, mature trees with moderate crown closure. This structural stage comprises 12 percent of the acres within the project area and 11 percent of the acres of the treatment area. The habitat structural stage presented here is derived from aerial photograph interpretation of the 1988 photo series. A known error in that data set is the underestimation of tree sizes. Lodgepole pine has a narrower crown, making it appear to be smaller than it really is. The GMUG silviculturist estimates that half of the “sapling/pole” stages are actually “mature, greater than 9 inches DBH. A method for correction of the mistyping would be to use ground-based stand examination plot data to adjust the classifications.

Table 4. Existing habitat structural stage in analysis area and treatment area

Habitat Structural Stage	Acres in Project area	Percent of Project area	Acres in Treatment area	Percent of Treatment area
1M - Grass/Forb	24,313	9%	77	1%
1T – Grass/Forb/Seedling	619	less than 1%	185	1%
2S – Shrub	43,987	16%	154	1%
2T – Seedling/Shrub	3,157	1%	3,026	20%
3A – Sapling/Pole less than 40%	9,937	4%	1,246	8%
3B – Sapling/Pole 40 to 70%	91,436	33%	6,335	42%
3C – Sapling/Pole greater than 70%	23,867	9%	1,184	8%
4A – Mature less than 40%	7,705	3%	588	4%
4B – Mature 40 to 70%	33,030	12%	1,698	11%
4C – Mature greater than 70%	16,954	6%	451	3%
5 – Old Growth	0	0%	0	0%
Rock/Bare	19,345	7%	0	0%
Water	2,289	less than 1%	0	0%
Total	**276,639**	**100%**	**14,949**	**100%**

Lodgepole Pine Dwarf Mistletoe

A general decline in forest health and resiliency has occurred within the lodgepole pine forest cover type on the GMUG, specifically in the Gunnison Ranger District. A known and leading cause of this is a parasitic plant, lodgepole pine dwarf mistletoe, *Arceuthobium americanum*.

The lodgepole pine forest type on the GMUG is limited almost entirely to the Gunnison Ranger District, where it occupies approximately 286,616 acres, according to the current Forest Service Field Sampled Vegetation spatial database. Following an extensive survey, Johnson et al. (1981) estimated that 52 percent of the lodgepole pine type on the GMUG is infested with dwarf mistletoe. We do not have figures for Taylor Park specifically, but because there is substantial area of lodgepole pine more or less free of dwarf mistletoe in the southern portion of the District, the percentage is probably much higher in Taylor Park. The dwarf mistletoe and Taylor Park is further discussed in *Lodgepole Pine Dwarf Mistletoe in Taylor Park, Colorado* (Worrall 2018), which can be found on the project website.

Lodgepole pine regenerates through removal of mature trees by clearcutting, bark beetle outbreak, windthrow, or stand replacing fire. Lodgepole pine dwarf mistletoe is spread by forceful ejection of seeds from adult mistletoe plants in mature lodgepole pine trees onto adjacent, generally younger stands of lodgepole pine. Seeds that adhere to needles can establish new infestations in the young stands. Maximum dispersal distance is about 52 feet, but most seeds fall within 33 feet of the infected tree. The preferred method of treatment is creating uninfected new lodgepole pine stands through clearcuts or taking advantage of new stands established by fire. Once uninfested stands are established, they are protected by removing infested stands around the margins of young stands in edge clearcuts. These edge clearcuts further remove sources of new infestation and, over time, regenerate larger uninfected stands of lodgepole pine. (Information on dwarf mistletoe ecology and treatments is from Worrall 2018, and Hawksworth and Wiens 1996).

Bark Beetles

Stands of lodgepole pine are considered susceptible to mountain pine beetle mortality when they are fairly dense and have an average DBH of 5 inches or more (Gibson 2004). Spruce stands are susceptible to endemic (localized) spruce bark beetle mortality when average DBH is larger; however, the GMUG National Forest has been undergoing a spruce bark beetle outbreak for several years (see USDA Forest Service 2016 for in-depth discussion). Currently, 18 percent of the project area is in a Habitat Structural Stage of 4B or 4C and are susceptible to bark beetle mortality. An additional 43 percent of the project area is in Structural Stages 3B and 3C. Although the DBH range of size class “3” is 1 to 9 inches, field observations estimate that a large percentage of lodgepole pine stands in this size class have an average DBH of 5 inches or greater and are susceptible to mountain pine beetle mortality.

In addition, mortality of small lodgepole pine trees and the tops of larger pine have been observed in the project area. This mortality is likely caused by bark beetles in the genus *Ips*. These beetles are not aggressive tree killers and normally attack and kill weakened trees (likely stressed by mistletoe in the project area) (Cranshaw and Leatherman 2013).

Effects of the No-Action Alternative

If the Gunnison Ranger District takes no action, we would implement no additional vegetation treatments to address safety, forest health, or project objectives. We would continue to implement currently authorized activities and other reasonably foreseeable related actions.

Due to the above average mistletoe infestation in the Taylor Park area, lodgepole pine stands would continue to be affected by lodgepole dwarf mistletoe. Infected host lodgepole pine stands would continue to spread mistletoe to adjacent stands. Healthy, young lodgepole pine stands would continue to be at a high risk of infestation from infested, adjacent mature stands. Mistletoe can move slowly throughout landscapes unchecked, leaving structural stages and cover types intact for short term. Combined with other disturbances, change can be intensified or be immediate, as described in in Worrall 2018; Hawksworth and Wiens 1996. In a no-action alternative, this infestation risk in lodgepole pine forest type stands would continue. We would not implement additional fuels treatments within the wildland-urban interface, resulting in continued build-up of fuel loading in these areas. As no group selection or precommercial thinning would occur in spruce-fir forest, no increase of tree growth rate and/or resiliency would occur.

Stands that are susceptible to bark beetles will remain susceptible, and as more stands grow denser and larger in absence of disturbance, a larger portion of the landscape will have a high hazard to bark beetle mortality.

Effects of the Proposed Action

We do not expect that the proposed action would create any major changes in overall forest species composition or cover type in the project area. Rather, the primary effects would be changes in habitat structural stage. The proposed action would effectively reduce the amount of standing live saplings and trees by use of hand and mechanical treatments with emphases on precommercial thinning and on providing a lodgepole pine dwarf mistletoe free buffer around each regenerating stand of lodgepole pine, as discussed in detail in Alexander 1974 and 1986; Alexander and Edminister 1980 and 1981; Cole and Koch 1995; Hawksworth 1977; Hawksworth, Johnson and Geils, unknown; Hawksworth and Wiens 1996; and Worrall 2018. Additionally, standing dead trees would be removed through salvage cuts or fuel reduction treatments where bark beetle, lodgepole pine dwarf mistletoe, or wildland fire has caused widespread mortality. Where residual lodgepole pine overstory trees are present in proposed spruce-

dominated stands, a minor amount of lodgepole pine regeneration might occur, we would not expect lodgepole pine to become dominant in those localized areas. Similarly, lodgepole pine-dominated stands receiving treatment could have residual spruce-fir and or other species present, but lodgepole pine would remain the dominant cover type.

Treatments

The proposed action would include precommercial thinning treatments on up to 6,182 acres.[2] For analysis purposes, we consider stands proposed for precommercial thinning to be uninfested lodgepole pine stands that typically had been clearcut or burned to create a young stand of trees between 10 and 60 years of age. The stands would generally be classified as moderate to dense sapling and pole structural stage (3B to 3C) prior to treatment. After thinning treatment their classification would primarily be low to moderate density sapling and pole structural stage (3A to 3B); although, some areas previously classified as dense sapling/pole (3C) would have sufficient small diameter saplings and poles removed to be reclassified in a low crown closure mature tree category (4A) after treatment. Trees in these thinned areas would have reduced competition between trees, reducing competition-related mortality, especially in drought years. Routine dwarf mistletoe monitoring and sanitation (removal of host trees) would occur.

We propose clearcut treatments on up to 3,566 acres of lodgepole pine stands for dwarf mistletoe control, in small clearcuts of blocks or mistletoe edges to isolate uninfested young stands from surrounding infestations. Generally, stands to be clearcut would be currently classified as mature tree structural stage (4A, 4B, or 4C). The proposed treatment would change their structural stage to grass/forb/seedling (1T). These treated stands would not be susceptible to mountain pine beetle for several decades and would help break up fuel continuity in the area.

Fuel treatments would address up to 2,820 acres. Fuel treatments would be implemented through the practice of precommercial and commercial thinning, pruning, to patch cuts or clearcuts. Stands typically would be classified as moderate to high density sapling and pole structural stage (3B and 3C) prior to treatment, with a target of distributing post treatment structural stage roughly equally among mature tree low to moderate crown closure and low-density sapling and pole size structural stages (4A, 4B, and 3A) or in some areas to grass/forb/seedling (1T). We anticipate most of this treatment would occur in lodgepole pine, but it would be appropriate in single-storied Engelmann spruce as well.

We propose group selection or salvage and sanitation cut in up to 741 acres of Engelmann spruce dominated stands. The stands to receive these treatments would generally be classified as mature tree, moderate to dense crown closure (4B and 4C) prior to the treatment and mature tree, moderate crown closure (4B) post treatment. These stands will have increased resiliency to bark beetles since the portions of the stands treated would not be of a susceptible size for several decades.

The proposed action could implement overstory removal on up to 733 acres. This treatment would generally target lodgepole pine stands with advanced regeneration in the understory. Structural stage would be classified as a sapling and pole size (3) or mature trees (4) prior to harvest and would be classified as seedlings (2T) or low to moderately dense sapling and pole size (3A or 3B) after treatment.

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[2] As of 2018, these young stands ranged from 5 to 50 years old. Normal precommercial thinning typically occurs when a stand is between the 30 to 50 years of age. As such, thinning would not be regularly planned in the stands regenerated from the early 1990s to present. It is estimated approximately 4,000 acres or less would be thinned of the proposed 6,182. However, dwarf mistletoe monitoring and sanitation (removal of host trees) would occur on a regular basis throughout the proposed acreage.

We propose a shelterwood seed cut disturbance on up to 714 acres. This treatment would generally target lodgepole pine stands. Structural stage would be classified as mature trees with moderate to dense crown closure (4B and 4C) prior to harvest and would be classified as mature trees with low to moderate crown closure (4A or 4B) after treatment.

We proposed up to 193 acres as prescription undetermined stands. These stands were identified in the proposed action as commercial timber harvest, but the current condition and tree species composition is not fully known. In these identified stands, the management prescription would be determined after implementation survey is completed. Any of the prescriptions described may be applied as appropriate to the site-specific conditions.

Table 5 provides a summary of the anticipated structural stage outcomes of the proposed action.

Table 5. Summary of effects – proposed action structural stage

Proposed Treatment	Acres Affected	Immediate Post Treatment Structural Stage	Post Treatment Structural Stage After 40 Years Recovery Time
Precommercial Thinning	6,182	3B	3C or 4C
Dwarf Mistletoe Clear Cut	3,566	1T	3B or 3C
Fuel Treatments	2,820	4A = 940 acres 4B = 940 acres 3A = 940 acres	4A or 4B 4B or 4C 3A, 3B, 4A, or 4B
Engelmann Spruce Group Selection	741	4B	4b or 4C
Overstory Removal	733	2T, 3A or 3B	3B or 3C
Shelterwood Seed Cut	714	4A or 4B	4B, then 3A or 3B after Overstory Removal
Undetermined Prescription	193	1T, 2T, 3B, 4A, or 4B	3B, 3C, 4B, or 4C
Total	14,949		

Rate of Recovery

Overtime, areas receiving treatment would transition between structural stages. As individual tree canopies fill the gaps of harvested trees, canopy closure increases, transitioning from A to B or C in the structural stage values. Accordingly, as tree size of the stand increases, the structural stage could also increase from 1 or 2 to 3 or 4. In table 5 above, the right-hand column displays the likely structural stages after 40 years of recovery.

The duration a stand remains in a habitat structural stage depends on average tree age, stand density, competition between trees, and site productivity. Stands of trees that are less dense with less inter-tree competition have more rapid diameter growth rates. Dense stands of trees may grow very little in diameter and height for many decades.

In lodgepole pine after clearcutting or fire, the period of time for new seedlings to become established is generally 5 years. So the duration of the 1T structural stage is generally 5 years.

The next structural stage in the development of the lodgepole pine stand is the seedling 2T. The stage lasts about 10 years while seedlings grow in height above 4.5 feet tall and the crowns of trees begin to fill in the space between trees.

At about 15 years tree age, trees in a former clearcut will grow above 1 inch DBH, thus graduating into the sapling-pole size class (3). Depending on the number of trees per acre, with the canopies occupying the horizontal space, the crown closure at this age could range from 20 to 50 percent. So the stand would be in stage 3A or 3B. Stage 3B is the most common.

Lodgepole pine diameter growth is strongly influence by canopy closure or competition. For a stand to reach an average DBH of nine-inches, the trees could range from 60 years old in relatively open stands to 120 years age in dense stands.

In natural lodgepole pine, it is not uncommon for very dense stands to never reach 9 inches DBH. These are called doghair stands. The very dense stands maybe in the immature sapling-pole structural stage, but physiologically the trees are mature or overmature. Trees in this stand condition will not respond to thinning treatments. The structural stage system does not describe this stand condition at this point.

Disease and Insects

Treatments designed to mitigate mistletoe infection would have other effects such as the added benefit of increasing resiliency in the treated stands to bark beetles. Literature supports the effectiveness of silvicultural control of bark beetles (Fettig et al. 2007; Gibson 2004). Much of the research points to two silvicultural strategies that have shown promise, one at the landscape level and one at the stand level. At the landscape level, diversity of size and age classes is thought to be more resistant and resilient to insect damage. Silvicultural treatments that create age and size mosaics (such as clearcutting and group selection) can increase landscape diversity.

At the stand level, evidence suggests that thinning can be an effective deterrent to insect infestation and associated losses. In general, reducing tree densities allows residual trees to allocate more resources toward growth thus making them more resistant to insects and disease (Fettig et al. 2007; Fettig et al. 2014; Kegley 2011). Clearcutting and overstory removal will inherently reduce stand susceptibility by removing all susceptible (larger mature) trees and establishing a new age class of trees. These areas would not exhibit conditions favorable to mountain pine beetle for many years, even if host pines are the primary species regenerated.

The proposed action would supply approximately 50,000 ccf total of Engelmann spruce and lodgepole pine sawtimber. Other forest products industries and small businesses would be supported with the sales of firewood, fence posts, and corral poles provided through this proposed action. Contract crews and Forest Service personnel would be utilized for the treatments involving hand thinning, piling, and burning. Worrall (2018) suggests that in the Taylor Park area, mistletoe infection causes growth losses of 6 ft^3 per year. He also states that young stands that are infected with mistletoe have 23 percent of the merchantable volume of an uninfected stand after 70 years. Sanitation and clearcut activities proposed would prevent these losses from occurring in treated areas.

Cumulative Effects of the Proposed Action and Other Decisions

The Taylor Park Silvicultural Categorical Exclusion (CE) Decision Memo, approved April 11, 2017, provides for precommercial thinning on 72 acres, commercial thinning for poles on 25 acres, dwarf mistletoe survey and sanitation on 114 acres, and dwarf mistletoe clearcutting on 105 acres. As of March 2019, the precommercial thinning is under contract for completion in 2019. About 75 percent of the dwarf mistletoe survey and sanitation has been completed, and small firewood and pole sales are under way on the commercial treatment areas. The precommercial thinning and sanitation units were included in the Taylor Park EA proposal’s mapping of “Young Stands – Precommercial Thinning and Sanitation”

element. The 186 acres of thinning/sanitation of the Taylor Silvicultural CE are factored out of the 6,182 acres identified in this Taylor Park EA proposed action.

The Decision for the Spruce Beetle Epidemic and Aspen Decline Management Response (SBEADMR) project (approved July 5, 2016) includes four commercial Primary Treatment Areas (PTAs) with the Taylor Park EA analysis area. These PTAs are “Bear Creek,” “Forest Hill,” “Wheelbarrow Gulch,” and “Matchless Mountain.” Since spruce bark beetle activity in these four areas has thus far been low (as of 2018), the “Resiliency” goal is planned for implementation. Resiliency treatments are group selection of 15 to 25 percent of the spatial area of stands, with groups being between ¼-acre and 2 acres in size. The intention is to obtain a new cohort of young Engelmann spruce, subalpine fir, and lodgepole pine (where present) and increase stand resiliency to bark beetle since the treated portion of the stand would not be large enough for bark beetle attack for several decades. The SBEADMR identified areas are Engelmann spruce-dominated with mixtures of subalpine fir and lodgepole pine. The areas cover 4,300 acres. The proposed action does complement SBEADMR by including group selection in other spruce-dominated stands near the PTAs, and management of lodgepole pine-dominated stands in those areas.

During the recent decade, fuel reduction projects have been approved and mostly completed near Murdie Subdivision and Rainbow Subdivision/North Tincup. The Taylor Park EA proposed action expands on the fuel reduction treatments around the Tincup area and other private lands.

The active forest management of the past 51 years (1967 to 2018) sets the stage for the continuing activities proposed in this Environmental Assessment. The previous management has created new stands with differing age classes and structural stages, increasing diversity in the forest. This project intends to continue to increase landscape age and size diversity to increase resilience to stressors such as bark beetle, mistletoe, and climate change. Table 6 and table 7 show the number of acres by decade treated.

Table 6. Previous and proposed harvesting[1]

Treatment	1960s	1970s			1980s	19 90s		2000s	2010s[2]	Totals	2020s Proposed Action	2020s SBEADMR[3]	2020s Totals
Clearcutting	430	191	937	1,326	523	247	3,654	3,566			3,566		
Shelterwood Prep Cut		290	2,066	193			2,549						
Shelterwood Seed Cut[3]	37	205	637	524	110		1,513	714			714		
Overstory Removal		24	393	451	124		992	733			733		
Individual-tree Selection			11				11						
Group Selection								741	4,300	4,300	5,041		
Commercial Thinning		120	612	49	7	49	837						
Salvage Cut[4] (Fire, Wind)			304	29	51		384						
Sanitation Cut		141	120	14	67	91	433						
To Be Determined								193			193		
Fuel Treatment (Assumed Here to Be Commercial)								2,820			2,820		
Sum of Commercial Harvest	467	971	5,080	2,586	882	387		8,767	4,300	4,300	13,067		
Noncommercial Stand Replacement			1,100		6		1,106						
Wildfire (All of Analysis Area)		1,265	172	60			1,497						
Wildfire of Suited Lodgepole[5]		769					769						

[1] *Decades in Table 6 are defined as 1970s being 1971 to 1980. The 1960s is 1967 to 1970. The 2010s is 2011 to 2018. Acreages in each field are from the Forest Service Activity Tracking System (FACTS) activity records, not from polygon footprints. Example, the 304 acres of salvage cutting in the 1980s was in the footprint of the Spring Burn, so the acres are double reported.*

[2] *The 2010s harvesting figures above includes cutting units currently under contract (Taylor Silvicultural CE approved).*

[3] *The 1980s shelterwood cutting (1, 2, and 3-step) was mainly in spruce and mixed spruce/lodgepole in the Rocky Brook (Dustin Gulch), Bear Creek, Flag Creek, and Dark Gulch sales. Many of these stands are shifting from even-aged to uneven-aged management. These stands are mostly included in the SBEADMR Priority Treatment Areas for group selection.*

[4] *The "Salvage Cut" row includes the salvage harvesting following the Spring Creek Burn with 304 acres in 1980s and 29 acres in the 1990s.*

[5] *The Spring Creek Burn of 1980 included 769 acres suited lodgepole pine. These fully regenerated acres are included in the proposed action as "Young Stands – Precommercial Thinning or Sanitation."*

Table 7. Previous and proposed harvesting and regeneration rate[1]

Treatment	1960s[2]	1970s	1980s	1990s	2000s	2010s[3]	Totals	2020s Proposed Action	1970s to 2020s Lodgepole Regeneration Rate
Acres of Suitable Lodgepole Regenerated[4]		984	2,430	1,777	653	247	6,091	4,299	10,390
LP Percent Regeneration Rate per Decade (7% or 2,679 acres Desired)		37%	91%	66%	24%	9%	45%	160%	65%

[1] *Decades in table 7 are defined as 1970s being 1971 to 1980. The 1960s is 1967 to 1970. The 2010s is 2011 to 2018. Acreages in each field are from the Forest Service Activity Tracking System (FACTS) activity records, not from polygon footprints. Example, the 304 acres of salvage cutting in the 1980s was in the footprint of the Spring Burn, so the acres are double reported.*

[2] *The 1967 clearcutting was in mixed spruce, fir, and lodgepole. Those stands have since regenerated into mixed spruce, fir and lodgepole pine, dominated by Engelmann spruce. The 1960s cutting was not included in the "Acres of LP Regenerated" row.*

[3] *The 2010s harvesting figures above includes cutting units currently under contract (Taylor Silvicultural CE approved).*

[4] *The "Acres of LP Regenerated" row is from lodgepole pine clearcut, overstory removal, noncommercial stand replacement, and the Spring Creek Burn on suited timber. Where there have been shelterwood preparatory or seed cuts in one decade, these acres may have been overstory removal cut in later decades. An example is the 1960s seed cuts were overstory removal cut in the 1980s.*

Rate of Lodgepole Pine Regeneration Harvesting or Treatment

It is estimated 50,000 acres of forest within the 276,000-acre Taylor Park analysis is suitable and feasible for commercial forest management (18 percent of the area). About 75 percent or 37,500 acres is dominated by lodgepole pine. The other 25 percent or 12,500 acres is dominated by Engelmann spruce with subalpine fir and lodgepole pine.

One method to maintain age and size class diversity (which increases landscape resiliency to insect, disease, and climate stressors, and influences fire behavior) in lodgepole pine is to follow even-aged management. The average even-aged rotation length (the time from stand regeneration to final harvest) for lodgepole pine on this ranger district is 140 years. With a long-term goal of managing the landscape for age class diversity and sustainability, it follows that each year 1/140th of the suitable lodgepole pine should be regenerated. For practicality, it is easier to conceive this in terms of decades, so 14 decades. With a lodgepole pine suitable timber base of 37,500 acres divided by 14 decades, 2,679 acres (7 percent of base) should be regenerated per decade to maintain landscape diversity in the long term.

From table 7, above some 6,091 acres of suited lodgepole pine have been regenerated in the past five decades (1971 to 2018), which averages to 1,218 acres per decade. This is 45 percent of the calculated sustainable regeneration rate.

The proposed action of the Taylor Park EA proposes the regeneration of 4,299 acres of lodgepole pine during the next decade (2020s). This would be 160 percent of the sustainable decade treatment rate of 2,679 acres. When these acres are added to the previous five decades of lodgepole pine regeneration, the average treatment rate is 65 percent of the sustainable level for 1971 to 2030. All else equal, the previous and proposed harvest rates in lodgepole pine are below the sustainable limits. The higher rate in the 2020s

makes up in part for lower regeneration harvest rates in previous decades and will help to increase age and size diversity and increase landscape resiliency.

The 430 acres of regenerated stands of the 1960s is known to have come from spruce-fir clearcuts and are not included in these lodgepole pine calculations.

Climate Change Considerations

Projections concerning climate change in southwest Colorado point to a continuation of average temperature and precipitation during the next several decades. However, there is a change in terms of climatic extremes above and below the average. Extreme climate episodes including drought, will be more abrupt and dramatic. Examples are the exceptionally severe droughts of 2002-2003 and 2012-2013; then, the unusually wet and cool winters like 2007-2008 and 2018-2019. Extreme periods have always been around, but are becoming increasing stronger in amplitude.

In forest management, drought events are more significant than wet periods. Intense drought can significantly impact reforestation success. Adequate tree seed can be on receptive seedbeds, but fail to germinate due to lack of moisture and high temperature. If seeds do germinate, the seedlings may not be able to compete well with grasses and forbs in order to become established. Grasses and forbs require less moisture and respond more quickly when a moisture event occurs. At this elevation, seedling establishment can take up to five growing seasons. Once seedlings are established, they are more able to cope with adverse conditions and become competitive with other vegetation. If some climate projections are correct and average temperatures and droughts do increase in frequency and intensity, then it would be prudent to get a new cohort of trees established sooner than later.

Additionally, increased temperature and drought, even for short periods of time (i.e., 1 to 2 years), can increase mortality of trees due to bark beetle activity or disease weakening. This could affect individual trees, groups of trees, or progression of mortality to a landscape level. Often times, bark beetle activity increase in trees that are weakened by disease, age, or lack of water, making the trees more vulnerable to infestations; this is particularly seen with bark beetles in pine and spruce.

Fire and Fuels Management

Affected Environment

Climate

Climate, not fuels, may be the most important factor in driving fire extent in subalpine areas of the Rocky Mountains, such as the area for this project (Sibold et al. 2006). The project area experiences cold winters and hot dry weather generally early in the summer, followed by monsoons later in the summer. The Energy Release Component (ERC), which is a measure of how hot a fire could burn, is high early in the summer, then drops slightly in July as the summer monsoon generally begins creating higher relative humidity and fuel moistures. During extreme weather conditions fires in the project area burn with high intensities and are generally not affected by control efforts until winds slow down and cooler, moister conditions prevail.

That being said, fuels must still be present in an amount and configuration that supports fire establishment on the landscape when weather is conducive for fires to occur. Current stand conditions in Lodgepole Pine across much of the GMUG are adequate to support significant fire intensity and fire size or are approaching those stand conditions due to age and successional processes. Comparisons of historic photos to present conditions do suggest changes in stand condition that would lead to higher severity fires.

Historically, stands were more open, with much more diversity of sizes and ages; small openings were much more frequent.

Past fires demonstrate that most tend to remain small and infrequent throughout most of the project area; but, during extreme fire weather, fires can grow large. The available GIS data supports the following observed fire occurrence. Since 1970, there have been 180 fire occurrences with the project area. Of this total, only 5 fires have been recorded that grew to a fire size greater than 5 acres. Only one fire that occurred in 1980, the Spring Creek fire, exceeded 800 acres. The Spring Creek fire occurred during a dry and hot weather pattern in June.

Fire Behavior

The exclusion of fire combined with insect and disease activity, storm/wind blowdown and the forest's growth and natural progression has allowed hazardous fuels to accumulate throughout the planning area. As a result, many changes associated with the current vegetation composition and structure have occurred which also changes the fuel profile and subsequent fire behavior characteristics. The current vegetation consists of grasses and shrubs that transition into lodgepole pine and mixed conifer forests. These vegetation types are also represented by standard fire behavior fuel models. A representative fuel model can be used to quantify fire behavior characteristics, fire suppression effectiveness, and the potential effects on vegetation.

Indicators for treatment success relative to fire and fuels desired conditions and objectives include the following: surface fuel loading, ladder fuels, canopy continuity, defensible space, snag density (particularly near values at risk and travel corridors), presence of young aspen stands (particularly near wildland-urban interface), modeled surface fire intensity, and crown fire potential.

Wildland-Urban Interface

The wildland-urban interface (WUI) is described as the geographical area where structures and other human development meet or intermingle with wildland vegetative fuels. Important infrastructure lies within or adjacent to the project area, including but not limited to: powerline corridors, small communities and widely dispersed private property. A Community Wildfire Protection Plan (CWPP) is a local wildfire protection plan that can take a variety of forms, based on the needs of the people involved in its development. The Gunnison Community Wildfire Protection Plan goals as related to this project include:

- Enhance life safety for residents and responders
- Mitigate undesirable fire outcomes to property and infrastructure.
- Mitigate undesirable fire outcomes to the environment, watersheds, and quality of life

In Gunnison County, between 1999 and 2008, a total of 299 ignitions were reported in Gunnison County. Of these ignitions, 123 were caused by lightning. Most fires in Gunnison County are small (less than 100 acres) (CWPP 2011).

Effect of the No-Acton Alternative

At the landscape scale, the effect of not implementing treatments may be relatively small for wildland fires in the planning area, largely because of the small percentage proposed for treatment and because large fires are generally weather-driven in the project area. However, with the increasing deterioration of forest health due to insect and disease (e.g., increased ladder fuels, mistletoe brooms, beetle-killed trees) and without treatments in affected and green stands to encourage canopy discontinuity, promote younger trees, and reduce surface fuels in some locations, communities and values at risk would remain at a higher

level of risk. Additionally, the ability of land managers to safely defend values at risk (WUI) and manage wildfire for resource benefit would be constrained.

Effects of the Proposed Action

Fuel Treatments

Proposed treatments are on lands within the WUI or adjacent to lands that contain trees infected by insect and disease activity. The Forest Plan requires that when under 90 percent of fire season weather conditions, potential fires burn with less than 100 BTU/ft/sec, which correlates to 4-foot flame lengths. This reduced fire intensity/flame length enables firefighters to utilize defensible space and other treated areas on the landscape to protect values, and control or manage wildfires.

Proposed treatments would reduce fuels to acceptable levels and meet fire and fuels management objectives. Fuels would be reduced to be compliant with this 4-foot flame length standard/guideline by: (1) reducing fuel loadings near values such that future surface flame lengths would not exceed four feet where values are at risk, (2) reducing the potential for torching, crowning, and spotting near values at risk through removal of ladder fuels in adjacent stands, and (3) reducing the risk of wildfire impacting the WUI and other values at risk through creation of additional locations across the landscape where wildfires can be managed from. Treatments would include commercial and non-commercial thinning, pruning, patch cutting, and clearcutting. The treatments would also include machine and hand piling and burning of residual fuels to meet the fuels objectives.

By reducing the hazard of falling trees, creating defensible space around values, and increasing locations on the landscape from which to manage fires, desired conditions on the landscape can be more fully realized; fire managers will have improved ability to both safely protect values as well as to safely suppress fires or use fire to enhance resources. Additionally, these same conditions will improve public safety by reducing the hazards of falling trees along travel corridors, enhancing safe evacuation of the public during wildfires, and reducing fire intensity in areas where the public may be ‘sheltering in place’, for example at structures and campgrounds.

Mechanical Harvest: Edge Strip Cuts or Clearcuts, Group Selection, Shelterwood Seed Cut, Overstory Removal, and Non-commercial Cutting and Sanitation

The majority of these activities would involve either lopping and scattering or pilling and burning of left-over materials associated with the treatments. Lopping and scattering material could lead to an increase in surface fuels that could remain on site for decades. Piling and burning of material in areas with higher fuel loads would quickly reduce surface fuels to near pre-treatment levels. Removal of the overstory could cause an increase in potential surface fire behavior due to the regeneration of shrubs and conifer trees in the understory. In the short term, the increase will occur as fine and herbaceous fuels in the understory. However, fire that remains on the surface is generally more controllable than a crown fire (Scott 2003). Reducing fuel loading levels and breaking up contiguous vegetation will result in areas of lower fire behavior interspersed with areas of higher fire behavior potential.

Cumulative Effects

The combination of proposed action, other approved forest service vegetation treatments (SBEADMR and Taylor Park Silviculture CE), fuels and vegetation treatments on private and neighboring lands including community wildfire protection plans, and reasonable future activities would increase the defensible space within the WUI.

Over the long term, the combinations of treatment activities on the landscape would create a vegetation mosaic and fuels complex across the landscape that would allow future fire and resource managers to more effectively utilize future wildfires and other natural disturbance events, as well as future treatments that mimic more historical disturbance regimes, to continue to maintain, modify, regenerate, and restore vegetation and mosaics.

Climate Change Considerations

With the continuing probability of drought conditions, forest fires will be increasing in size and severity. In a moderate fire situation, a diversity of tree sizes and heights across the forest will be less conducive to large-scale crown fire spread. Overmature stands with continuous canopies, greater numbers of dead trees, heavier ground fuel loadings, dwarf mistletoe and/or multiple stories are more likely to support crowning and crown fire spread. During severe droughts, trees are under stress with less moisture available in the stem and foliage. Older trees, trees with dwarf mistletoe, trees under competitive stress, or with bark beetle activity have foliage which is drier and more flammable. Thinning trees reduces competition for moisture and nutrients. Younger managed stands tend to have less ground fuel loading, less disease, less competitive stress, and tree heights are lower than surrounding stands. Crown fire in surrounding stands may vent a larger portion of the fire energy well above the shorter crowns, disrupting crown fire spread and leaving the younger stand relatively intact. A pattern of younger stands across a landscape break-up crown continuity.

In most forest management treatments, ground fuels are usually reduced and fuel continuity is broken up as part of the treatment. A portion of the larger diameter fuels are removed as forest products. Fuel management treatments near values of high importance (houses) would be specifically designed to break up overstory canopy continuity to reduce the probability of crown fire spread, reduce the ladder fuels under the canopy to reduce individual tree and group crowning, and reduce the volume and break up the continuity of ground fuels.

Transportation System

Existing System

The National Forest Transportation System includes routes closed to all use, roads open to public use, and roads used for administration of the National Forest, but closed to general public use. Open roads are depicted on the GMUG Motor Vehicle Use Maps. National Forest System Roads are maintained to one of five operational maintenance levels, based on intended use and user comfort and convenience. Table 8 summarizes the miles of each operational maintenance level in the project area.

Table 8. Miles of each maintenance level road in project area

Operational Maintenance Level	Description	Project Area Approximate Miles
1 – Basic Custodial Care (Storage of closed roads)	Intermittent use road while placed in storage; closed to all mechanized travel but not decommissioned	28
2 – High Clearance Vehicle	Limited to use by high clearance vehicles	91
3 – Suitable for Passenger Cars	Maintained for travel by prudent driver in standard passenger car	43
4 - Moderate Degree of User Comfort	Provides a moderate degree of user comfort and convenience at moderate travel speeds	24
5 - High Degree of User Comfort	Provides a high degree of user comfort and convenience at most travel speeds	25
Motorized Trails	Trails designated for motorized vehicles - Share alignment with system roads	2

*Operational maintenance levels 2-5 summarized here also include administrative use roads not open to public use.

Effects of the No-Action Alternative

The no-action alternative would continue to implement current operation and maintenance practices. The existing road system would experience no changes in status or condition. Roads that are currently in custodial status (Operational Maintenance Level 1) would remain closed. Open roads would continue to provide access for recreational, commercial, and administrative functions as they currently do. Roads would receive no maintenance beyond that which is normally scheduled or approved though currently authorized activities and other reasonably foreseeable related actions. As a result, current sediment delivery from road segments in need of maintenance would continue, especially during heavy run-off events.

Roads that are currently in custodial status (Maintenance Level 1 and administrative use roads) would remain closed. Some of these roads have not been properly stored or maintained to establish a hydrologically stable condition. This can lead to additional road damage, greater sediment transfer, additional environmental impacts, and higher reconstruction costs, should the roads be reopened.

The no-action alternative would result in the continued deterioration of the subject transportation system as a result of the existing maintenance backlog.

Effects of the Proposed Action

Stored Roads

The Forest Service and contractors would potentially use all 28 miles of maintenance level 1 roads to implement the proposed action. Maintenance level 1 roads could be used intermittently when needed for project access but would be kept closed to the public. The responsible official's decision to implement the proposed action would open these routes for administrative use. The Forest Service or a contractor would open these routes and maintain or reconstruct them to accommodate the vehicle of the associated treatment prescription, typically a log hauling truck or a chipping van. After project implementation these roads would remain as part of the Forest transportation system but would be physically closed.

The Forest Service or contractor would implement closure by installing gates, boulders, or other native material barriers typically within the first 100 feet of the road. In addition to installation of barriers, closure of maintenance level 1 roads includes activities that facilitate "custodial care." These activities would be conducted in a manner that hydrologically stabilizes the road prism (toe of fill to top of cut) for the long term. This could include adding drainage features or removing culverts, as appropriate in each case.

Temporary Roads

This project would require development of temporary roads. These may currently exist as non-system roads or existing system motorized trails. In some cases, temporary roads would be developed to cross undisturbed ground to access treatment areas. Implementing the proposed action would require development of up to 109 miles of temporary roads.

Like maintenance level 1 roads, temporary roads would remain closed to public access throughout project implementation. Closure during operations would be achieved by signage and barricades when necessary. The Forest Service or contractor would physically close temporary roads with barriers during periods of inactivity and at final project closeout.

The proposed action would use temporary roads for short-term access to treatment areas. Though these roads have been theoretically identified, the final alignment may deviate from the plan. Such deviation would be limited to that agreed by the Forest Service and the contractor.

Temporary roads are typically constructed under minimal standards and investment. However, temporary roads can traverse difficult terrain and can require higher standards. In such cases specific survey and design would be required.

After the implementation of the vegetation management prescription, the contractor would be responsible for rehabilitating temporary roads. In some cases, post-contract activities such as pile burning would be necessary. In these circumstances the Forest Service would be responsible for the decommissioning efforts. Temporary roads would be decommissioned in a timely fashion following implementation, as described below in Appendix A: Implementation Checklist and Design Features, Transportation System and Haul Routes.

Existing Public Road System

The proposed action would result in temporary inconveniences to the public due to temporary road and motorized trail closures as well as increased traffic during project implementation. Increased traffic would result in higher fugitive dust levels and temporarily degraded road surface conditions such as washboarding and potholes. The Forest Service or contractor would repair any damage to existing roads

that results from implementing the proposed action. In general, the Forest transportation system would benefit from maintenance efforts required, and as a result, long-term public and administrative access would be improved throughout the project area. Maintenance and repair included in the proposed action would improve the condition of all 211 miles of maintenance level 1-5 roads in the project area.

Cumulative Effects

Implementation of the proposed action would result in temporary congestion and user inconvenience on the existing road system. The Federal Highways Administration, in cooperation with Gunnison County and U.S. Forest Service, proposes improvements to Cottonwood Pass Road, also designated as County Road 209 and Colorado Forest Highway 59. This project will widen and pave 13.5 miles of existing narrow gravel highway between Taylor River Road and Cottonwood Pass. The Cottonwood Pass project is scheduled for completion in 2019, shortly prior to implementation of the proposed action. Improving this road would likely attract additional recreational traffic to the area, thus exacerbating the congestion and delays resulting from proposed action truck traffic and route closures. This would be a temporary effect during the 10-year duration of the proposed action and would vary in location and intensity as different areas are treated.

The proposed action and other authorized vegetation management projects, including SBEADMR and Taylor Park Silviculture CE, will not be creating or authorizing new system roads. As such, there is no cumulative effect to the transportation system.

Watershed and Soils

Potential treatments identified in the proposed action are located across 11 individual sixth level Hydrologic Unit Code (HUC) subwatersheds, as mapped by the U.S. Geological Survey of the Taylor River fifth level HUC watershed. These subwatersheds include: Trail Creek-Upper Taylor River, Middle Taylor River, Texas Creek, Outlet Willow Creek, Headwaters Willow Creek, Lottis Creek, Crystal Creek, Lower Taylor River, Taylor Park Reservoir, Rocky Brook-Spring Creek, Bear Creek-Spring Creek. For the purposes of this analysis, the analysis area is defined as these 11 subwatersheds. Watershed and soils effects were considered if any component of the proposed action was located within these subwatersheds.

The USFS in 2011 initiated the Watershed Condition Framework (WCATT) which is a comprehensive approach for evaluation the conditions of watersheds, strategically implementing integrated restoration and tracking and monitoring outcome-based projects and activities on the forest. Subwatersheds in WCATT are broken out in the 6th level Hydrologic Unit Code (HUC). Subwatersheds are ranked from poor (impaired function), fair (functioning at risk) and good (functioning properly). Subwatersheds are ranked based on 12 metrics that rate aspects of the landscape that affect watershed health, e.g. road density and road proximity to streams.

Subwatersheds, Rocky Brook-Spring Creek and Taylor Park Reservoir, have a WCATT rank of ‘functioning at risk.’ The other nine subwatersheds with treatment areas proposed score ‘functioning properly.’ These scores are from the *Watershed Condition Framework and Technical Guide* (USDA Forest Service 2011) process.

Two other subwatersheds (HUC 6), Upper Taylor River and Cement Creek (small portion), are within in the project planning area but not a focus of this analysis as their watershed and soils resourced will not be impacted as a result of the proposed action.

Effects of the No-Action Alternative

The following bullets define the assumptions of the no-action alternative.

- There could be short-term plant community changes, such as temporary shifts from forested to non-forested communities as a result of forest health decline and wildfire. Over time, it is assumed that forest ecosystems would likely regenerate returning the plant communities more in line with forested conditions. The size and severity of a potential disturbance would affect the amount of time it would take for stands to regenerate.
- Vegetation structure would change over time through natural growth and mortality and events such as wildfires, storms, and insect and disease outbreaks.
- Water yield in impacted watersheds could either slowly increase as trees die and fall and communities shift to stands dominated by aspen or, in the absence of disturbance, could decrease as overly dense stands of trees utilize water or intercept precipitation.
- Ecosystem processes such as insects and disease in trees would continue in their current trends.
- Portions of the Forest transportation system would not receive maintenance (road, culvert and ditch maintenance) and improvement treatments associated with the implementation of the Taylor Park proposed action.
- If a wildfire were to occur, increased fuel loads from tree mortality and disease (e.g., mistletoe brooms) could increase the risk of high-severity fire and greater soil sterilization, hydrophobic soils, and erosion.

It is important to note that the absence of management actions under this project does not mean that conditions in the area would remain static over time. This is related to the actions of nature coupled with the actions of humans. Because no treatments are proposed in this alternative, current conditions and existing trends in the analysis indicators would continue.

We believe water yield changes at the stand scale in individual watersheds would be localized to non-detectable under the no action alternative. Dwarf mistletoe infestation does not cause extensive die off of trees. Therefore, we do not anticipate major changes to evapotranspiration or ground-level snowpack and growth of understory vegetation. However, if a high-severity wildfire were to occur, we would anticipate these effects.

Surface organic matter would increase as insect and disease-killed trees fall and decay. Erosion would remain minimal where ground cover is sufficient and could decrease in other areas as dead trees continue to fall, thus adding to large wood debris on the forest floor.

A potential indirect effect of the no-action alternative is the increased risk of high-severity fire due to stress on lodgepole pine by dwarf mistletoe infestation and other insect and disease infestations. Although results of fire behavior modeling and studies of burned areas are not consistent, some results indicate that the potential for high-severity fire is greater in areas with dwarf mistletoe infested trees and other infestations/diseases such as bark beetles. Under the no-action alternative, the acres of dead and dying trees will increase, providing more surface fuels on more acres for future fires. If proposed treatment areas were to be burned by wildfire in the future, a mix of burn severities would be anticipated depending on the topography, fuels, and climatic conditions. Moderate to high burn severities would likely result in an increased amount of bare soil, accelerated erosion, slow recovery of effective vegetation cover and loss of soil nutrients and soil microorganisms.

Large, high-severity wildland fire occurring within a watershed could have sufficient negative effects to change the WCATT score toward poorer watershed condition. Effects of high-severity fire may include increases in surface runoff and sediment transport to streams, increases in nutrients in streams, loss of soil structure, loss of soil biota, potential changes to stream flow timing and volume, and increases in water temperature in streams.

Effects of the Proposed Action

Direct and Indirect Effects of the Proposed Action

This analysis concluded that with the Taylor Park treatment implementation of water influence zone buffers and a no net increase in roads, as well as use of the implementation checklist and project design features (Appendix A), will ensure that disturbance levels will not adversely affect the WCATT ratings of the project area subwatersheds. Table 9 displays the number of affected acres per subwatershed where treatments are proposed and temporary roads are anticipated, along with the percentages of the subwatershed that would be affected.

Table 9: Watershed Affected[1] Area from Proposed Action

Subwatershed (HUC6/HUC12)	Subwatershed Acres	Affected Treatment Acres	Affected Temp Road Acres	Total Affected Acres	Percentage of Subwatershed Affected
Bear Creek-Spring Creek	23,114	28.6	2.4	31.01	0.1
Crystal Creek	14,385	0.07	0.0	0.07	0.0
Headwaters Willow Creek	16,093	129.3	28.6	157.89	1.0
Lottis Creek	26,945	16	3.3	77.94	0.3
Lower Taylor River	39,280	15.5	3.0	92.09	0.2
Middle Taylor River	23,743	134.8	27.8	642.73	2.7
Outlet Willow Creek	24,511	81.5	16.8	496.01	2.0
Rocky Brook-Spring Creek	20,885	33.9	7.0	424.45	2.0
Taylor Park Reservoir	14,030	91.6	18.9	387.14	2.8
Texas Creek	25,911	54.8	11.3	140.62	0.5
Trail Creek-Upper Taylor River	18,441	74.7	15.4	469.47	2.6

[1] *Methodology for calculating affected acreages was the same as SBEADMR. See SBEADMR FEIS: Appendix I—Watershed Condition Class & Cumulative Effects Analysis for explanation of how treatment acreages were weighted to calculate affected acreage. For this analysis, pre-commercial thinning and fuels treatments were considered non-commercial; all other treatments were considered commercial.*

Mechanical Harvest: Edge Strip Cuts or Clearcuts, Group Selection, Shelterwood Seed Cut, Overstory Removal, and Non-commercial Cutting and Sanitation

The majority of these activities would involve the use of heavy equipment to remove green/live or dead trees or other vegetation from identified stands or treatment areas. Ground-based heavy equipment use would require construction and use of temporary roads, skid trails, and landings. Implementation surveys would identify areas of concern for protection. Additionally, project design features have been included to reduce the potential for direct and indirect effects to soil and water resources to acceptable levels. Potential implementation surveys and project design features can be viewed in Appendix A.

We anticipate minor compaction of soils, but within the range of Forest Plan Guidance. Further, we anticipate adequate coarse wood to be left for soil development in all proposed units. Surface erosion would be limited and localized due to mitigations involving slope, compaction, and seasonal operating procedures. Water quality in both riverine and wetland systems would be protected with the use of buffers that limited management and mechanical equipment use.

Fuels Treatments

Fuels treatment could consist of mastication, thinning, pruning, patch cutting and commercial harvest. Commercial harvest and patch cutting effects would be similar to the effects discussed under mechanical harvest above. Masticators are heavy pieces of equipment that shred understory vegetation and small trees. Hand treatments include thinning or pruning with chain saws, and hand piling and burning slash. Use of the implementation checklist, design features (see Appendix A) and best management practices would reduce the potential for direct and indirect effects to soil and water resources to acceptable levels.

Implementation of the design features should protect watershed and soils resources into the future. We anticipate minor compaction of soils, but within the range of Forest Plan Guidance. Further, we anticipate adequate coarse wood would be left for soil development in all proposed units. Surface erosion would be limited and localized due to mitigations involving slope, compaction, and seasonal operating procedures. Water quality in both riverine and wetland systems would be protected with the use of buffers that limited management and mechanical equipment use.

Road Construction and Reconstruction

We have developed a transportation and road system to implement the Taylor Park project while using the existing road network to the maximum extent possible to access the proposed treatments and to remove forest products. For commercial treatments, existing roads would be supplemented by constructing new temporary roads only when necessary. Minimum temporary roads will be required for mechanized noncommercial treatments to access heaving equipment for servicing and repairs. Where noncommercial treatments are to be completed without heavy equipment, hand crews will typically walk to the job site. Where necessary for resource protection and operations, existing roads would be maintained or reconstructed. Note that because all new roads in the action alternatives would be decommissioned within 5 years of the closure of the associated Taylor Park Project, all road construction analyzed in the Taylor Park EA project is temporary.

Implementation of the project design features (Appendix A) should protect watershed and soils resources into the future. We anticipate minor impacts to soils during construction and use of the temporary roads. Roads would be rehabilitated after use to provide for infiltration, drainage and soil development. Top soil would be kept onsite and used during rehabilitation. Decommissioned roads would be blocked so that unauthorized use does not occur after road closures. Water quality would be protected during construction and decommissioning with the use of BMPs and design features. Culverts and bridges would be pulled and channels would be put back to grade to allow for natural flow patterns.

Pile Burning

Prescribed fire would be conducted for slash disposal. Pile burns would occur on small areas where slash is piled by hand or machine, resulting in localized areas of moderate to high burn severity. Prescribed fires would be guided by a Burn Plan that would specify the conditions under which the burn can occur in order to minimize resource damage while meeting management objectives. Use of the design features (Appendix A) and best management practices would reduce the potential for direct and indirect effects to soil and water resources to acceptable levels.

Implementation of the design features should protect watershed and soils resources into the future. We anticipate minor and localized soils effects from burn piles burning at moderate and high intensity burns. These effects would be within allowable limits set by the Forest Plan. We expect impacts to be low to non-detectable due to the buffers set up for the project.

Cumulative Effects

An analysis of WCATT was completed that examined the potential direct and indirect effects of the Taylor Park treatments on WCATT scores and ratings when combined with other projects such as SBEADMR, Taylor Park Silviculture Categorical Exclusion, Stagestop, 2015 Travel Management Implementation Categorical Exclusion and past mining activities. Each element (indicators and attributes) of the WCATT were evaluated and how Taylor Park treatments when added to past, present and future projects could affect those ratings was analyzed. We do not anticipate future detrimental cumulative effects in the analysis area and therefore we do not expect the WCATT scores for the project area subwatersheds to change.

The SBEADMR watershed analysis (SBEADMR FEIS: Appendix I—Watershed Condition Class & Cumulative Effects Analysis), was an extensive analysis that included eight of the 11 subwatersheds of the Taylor Park Proposed Action. This analysis included past treatments (going back 25 years), SBEADMR priority treatments areas or PTAs (assumed the all PTA areas would receive treatment, this was noted as an over-estimate of effects as not all treatment areas will be treated), and reasonably foreseeable disturbances. Table 10 displaces the coincident subwatersheds analyzed in SBEADMR and from this proposed action.

Table 10: Watershed Affected Area Cumulative Effects

Subwatershed (HUC6/HUC12)	SBEADMRE Cumulative Disturbance (% Area)	Taylor Park Proposed Action % Area Affected	Total Cumulative Disturbance (% Area)
Bear Creek-Spring Creek	8	0.1	8.1
Headwaters Willow Creek	1	1.0	2.0
Lottis Creek	1	0.3	1.3
Lower Taylor River	16	0.2	16.2
Outlet Willow Creek	2	2.0	4
Rocky Brook-Spring Creek	8	2.0	10
Texas Creek	1	0.5	1.5
Trail Creek-Upper Taylor River	3	2.6	5.6

To ensure the potential of cumulative effects to subwatersheds comply with the Watershed Conservation Practices Handbook (FSH 2509.25), implemented treatments and roads are restricted such that the proposed action, other timber harvest treatments, and/or natural disturbances when added to past disturbance would total no more than 25 percent of the total subwatershed acres. If the subwatershed is found to have greater than 25 percent disturbance, treatments would be discontinued until recovery has occurred. This will be tracked and documented through the use of the Implementation Checklist (Appendix A).

Observable increase in water yield at the stand scale would be transmitted downstream, but the effects from changes in any given stand would become proportionately smaller as water yield is measured at the subwatershed (HUC 6) and watershed (HUC 5) scale. Limiting treatments to 25 percent of the area of a subwatershed would make it unlikely that the proposed treatments will result in a detectable change in water yield at the watershed scale.

Wildlife

Species Analyzed

Table C-1, Appendix C, includes federally listed and Forest Service sensitive species, or their habitats, that are located on the Grand Mesa, Uncompahgre and Gunnison National Forests. Of the 40 species that occur on the Forests, 13 species occupy or have suitable habitat within or near the treatment areas. Treatments identified in the proposed action are located across a larger project area. For the purposes of this analysis species were considered if their habitat was present within or adjacent to treatment areas. Of the 13 species with suitable habitat within or near the project area, two are federally listed and were analyzed in the project biological assessment, which is available on the project website. A brief summary of the analysis of those species and our analysis of the remaining 11 species follows.

Effects of the No-Action Alternative

The no-action alternative would not directly alter habitat conditions in the near term. In the long term, the habitat would continue to be affected by natural processes including the potential for wildfire, insect and disease (e.g., dwarf mistletoe, mountain pine beetle, and spruce bark beetle) outbreaks and climate change effects. Predicted climate change effects include an increased frequency of weather extremes, ranging from drought periods to heavy precipitation winters or summer monsoonal seasons. These natural disturbance events and processes are an important part and role of these ecosystems that have the potential to alter wildlife habitat, causing reductions in habitat for some species and benefits to others. We believe that the proposed action may alleviate some of these potential undesirable long-term effects by enhancing the resiliency of forest stands. Thus, we anticipate that there would be effects in the absence of action, influenced by ongoing natural disturbance and ecosystem processes.

Effects of the Proposed Action

Appendix A, Implementation Checklist and Design Features, lists the project design features that will alleviate impacts to the species analyzed below.

Canada Lynx

There are five Lynx Analysis Units in the Taylor Park project area and resident lynx have been documented in two of them (Theobald and Shenk 2011). This species and its habitat in the project area is analyzed in detail in the project Biological Assessment, available in the project record. We determined that the proposed action **may affect, but is not likely to adversely affect** Canada lynx. U.S. Fish and Wildlife Service concurred with our affect determination on December 3, 2018. The U.S. Fish and Wildlife Service concurrence is available on the project website. The affect determination was based on the following:

- Planned treatments in the proposed action affect 3,824 acres of suitable lynx habitat (2.4 percent of suitable habitat in the project area).
- Dense horizontal cover in the understory will continue to exceed 20 to 22 percent within treated stands and thus keeping lynx habitat suitable but at a lower quality for the short term on all acres except 131 acres of clearcut treatment in lodgepole pine.
- Of the suitable lynx habitat that could be treated a maximum of 131 acres will be converted to a stand initiation structural stage.

- Of the 6,182 acres of pre-commercial thinning, the GMUG Geographic Information System identified 271 acres of it as spruce-fir habitat in Lynx Analysis Units, however, precommercial thinning will occur in lodgepole stands and spruce-fir will be maintained.
- The percentage of early stand initiation habitat in any of the Lynx Analysis Units that touch the action area would not exceed 30 percent, even under full implementation of the proposed action.

North American Wolverine

This species is analyzed in detail in the project Biological Assessment, available in the project record. We determined that proposed action would have **no effect** on wolverine, as all potential wolverine habitat in the project area is uninhabited.

Northern Goshawk

Goshawks are known to occur and appear well distributed on the GMUG based on the distribution of known nest sites and goshawk sightings, although knowledge of the distribution and abundance of this species across the Forest is limited (USDA Forest Service 2005). There is 903 acres of northern goshawk nesting habitat within the treatment areas. The closest known nest site to a treatment area is 1,600 meters distant.

Goshawks are not tolerant of humans (or other animals perceived as a threat) in the immediate vicinity of a nest. Noise, commotion, or human presence near an actively used goshawk nest is likely to disturb these birds during the breeding season (Reynolds et al. 1992). Direct effects to the northern goshawk would be in the form of disturbance to breeding pairs from the noise associated with machinery. Such a disturbance would be most severe if conducted near the nest during the breeding season. Pre-implementation raptor surveys to determine nest sites will be conducted. In compliance with Forest Plan Standards and Guidelines, timing restrictions will be applied to occupied nests with a minimum buffer distance of 0.25 mile, and a maximum distance of 0.5 mile. Project design features (see Appendix A), will also protect nesting habitat at nest sites and maintain habitat requirements within the post-fledging area surrounding nest sites. Disturbance to foraging goshawks from noise created by treatment activities could cause the birds to temporarily avoid the area.

On the GMUG, goshawks have been primarily documented to nest in mature aspen-dominated stands mixed with conifers, including Engelmann spruce and lodgepole pine. A low percentage of known nests are in mature lodgepole pine stands. It is unlikely that treatments will affect occupied nesting habitat for goshawks in the project area due to the project design features discussed above. Table 11 shows the amount of nesting habitat that could be impacted by each treatment type. It may, however affect foraging habitat and may indirectly affect prey species. Indirect effects are generally associated with habitat modification or removal. Treatments may benefit northern goshawks, prey species, and their habitat in the long term by improving the health of forested stands if they are successful in increasing age-class diversity.

The proposed action **may impact individual northern goshawks but is not likely to cause a trend toward Federal listing or a loss of viability.**

Table 11. Northern goshawk nesting habitat by treatment area

Treatment	Acres	Nesting habitat (acres)
Dwarf Mistletoe Edge Strip Cuts or Clearcut	3,566	277
Group Selection in Spruce	741	0
Shelterwood Seed Cut (or Group Selection in Spruce or Clearcut if Mistletoe is Present)	714	126
Overstory Removal	733	40
Prescription To Be Determined, Mixed-species	193	0
Young Stand -- Precommercial Thinning, Sanitation, or No Immediate Treatment	6,182	197
Fuel Treatment	2,820	263
Total	14,949	903

Owls (Boreal Owl and Flammulated Owl)

Boreal owls nest almost exclusively in the boreal, or subalpine life zone; however, they have been sited on the Gunnison Ranger District in spruce-conifer mix and aspen habitat types.

Flammulated owls may prefer late-successional stage ponderosa pine/Douglas-fir forests, but in Colorado have been observed using mixed forests with aspen. Flammulated owls have been observed throughout the GMUG and a few have been detected on the Gunnison Ranger District. Suitable habitat is present in the project area.

Boreal and flammulated owls are secondary cavity nesters. Mature forest stands containing snags with cavities have the potential to provide nesting habitat for these species.

During implementation, the presence of humans and equipment, and the noise generated from these sources, may cause behavioral responses from owls that can reduce vigor and expose these species to threats. The potential effects of owls reacting to human caused disturbance include increased energetic demands of avoidance flight, displacement in distribution or habitat use, and exposure to diurnal predators. However, the sources of disturbance that can alter the behavior are expected to be limited in duration and extent. The proposed activities would be implemented during daylight hours, avoiding the time when owls are most active.

Project activities will also remove suitable habitat which could result in displacement of owls if they are using areas where pockets of trees are removed. Flammulated owls do not typically nest in spruce-fir forests, but they have been documented in mixed conifer and aspen-Douglas-fir and aspen-lodgepole pine mixed stands on the GMUG. Treatments in spruce-fir forest stands are not expected to affect flammulated owl nesting habitat but will affect habitat potentially suitable for boreal owl. Likewise, treatments in lodgepole pine would reduce nesting habitat availability for both species. Treatments could cause reductions in nesting habitat or cause nest abandonment and chick mortality if implemented during the nesting season in occupied areas for both species.

Indirect impact to owls would include impact to prey species, potentially causing a shift in prey selection due to distribution of prey pre- and post-implementation.

The proposed action **may impact individual boreal owls and/or flammulated owls but is not likely to cause a trend toward Federal listing or a loss of viability.**

Olive-Sided Flycatcher

Olive-sided flycatchers are early successional species. They are also fire-associated species and have been documented to increase in habitats post fire (Hannon and Drapeau 2005). Suitable habitat is present in the project area and observations have been recorded in eBird (2018) and from nearby Breeding Bird Survey routes.

There is potential for disturbance of nesting and/or breeding activities from noise during project implementation. Timing limitations in the project design features for other species, would also alleviate impacts to olive-sided flycatcher. Olive-sided flycatchers may benefit from treatments that increase early-seral stand structure.

Indirect effects would include changes in habitat structure and composition within all treatment units. Snag densities would be expected to decrease from the proposed treatments, which may diminish site quality particularly if larger snags, which olive-sided flycatchers prefer (Altman and Sallabanks 2000, Brandy 2001), are selectively removed. However, this species has been found to nest in logged forests, but not in clear cuts (Kotliar 2007). There are studies that have found that logged areas provide nesting habitat; however, there is conflicting evidence as to the relative suitability of these areas (Kotliar and Melcher 1998, Hutto and Young 1999). In studies comparing burned forests with logged forests, results have shown both higher and lower nesting success in burned areas (Smucker and Smucker 2001, Meehan and George 2003). Studies have also shown that logged areas likely provide better forage than burned areas based on higher feeding rates (Meehan and George 2003). This was even found in studies where burned areas had higher nesting success than logged areas (Meehan and George 2003).

Based on the scientific literature, disturbance events including logging activities do not necessarily result in negative impacts to olive sided flycatchers. What isn't known is whether it's the type of disturbance, the scale, severity, or elapsed time since the disturbance occurred that affects habitat suitability (Kotliar 2007). Maintaining clumps of trees and snags are important to maintaining nesting habitat for flycatchers. The proposed project includes design features that would maintain these elements in areas where salvage activities occur. This would help to minimize adverse effects to flycatchers.

The proposed action **may impact individual olive-sided flycatchers but is not likely to cause a trend toward Federal listing or a loss of viability.**

Amphibians (Boreal Toad, Northern Leopard Frog)

Boreal toads are restricted to areas with suitable breeding habitat in spruce-fir forests and alpine meadows. Breeding habitat includes lakes, marshes, ponds, and bogs with sunny exposures and quiet, shallow water. Northern leopard frogs are associated with wet meadows and the banks and shallows of marshes, ponds, lakes, reservoirs, streams, and irrigation ditches, but may move far from water during wet, mild weather. Both boreal toads (including breeding sites) and northern leopard frogs have been observed to the west of the project area.

There are a several potential direct effects from project activities on amphibians. These would include mortality due to the operation of equipment in or around wetlands, stream channels, and/or destruction of stream habitat. Project design features included as part of the proposed treatment activities, including aquatic zone buffers, should prevent this impact. Additionally, because these species may be foraging in upland areas, direct mortality could be caused by ground based vegetative management activities. These

would include noncommercial activities such as mastication and fuels reduction. Furthermore, movement and operation of vegetative management equipment can reduce or destroy hibernation locations by crushing woody debris and soil compaction. Direct effects to egg masses or tadpoles would not be anticipated as the proposed treatments would not occur in suitable breeding habitats.

Potential indirect effects to streams of forest management practices in a watershed include erosion from roads and timber harvest near the riparian area or on surrounding hillslopes.

The proposed action **may impact individual boreal toads and/or northern leopard frogs but is not likely to cause a trend to Federal listing or loss of viability**.

Bats (Spotted Bat, Hoary Bat and Fringed Myotis)

The spotted bat has been found in a variety of habitats, including ponderosa pine, pinyon-juniper woodland and shrub desert. The hoary bat is a solitary, tree-roosting species and can be expected to live in any habitat with trees. The fringed myotis is a species of coniferous forest and mixed pine woodland at moderate to low elevations in Colorado. Suitable foraging and roosting habitat is present for all three species in the project area. Of these three bat species, the hoary bat is most likely to be present in the project area. None of the species has suitable hibernating habitat in the project area.

In the short term, timber harvest activities could impact bats roosting within harvested stands. Design features include protecting groups of trees and snags, consistent with Forest Plan direction for snag retention. Aquatic buffers would maintain roosting and foraging sites. Bats roosting within the project area could be disturbed by project activities including equipment noise and vibration. Project activities would not likely directly impact foraging activity since these bats are nocturnal and project activities would take place during the day. Prescribed burning in the understory of mature forest could directly impact a small number of individuals.

The proposed action **may impact individual spotted bat, hoary bat and/or fringed myotis but is not likely to cause a trend toward Federal listing or a loss of viability.**

American Marten

In Colorado, favored habitats for American martens are old-growth or mature subalpine forests of spruce, fir or lodgepole pine. Marten occurrences are within mature spruce-fir and lodgepole pine forests on the GMUG and have been observed throughout the project area.

Direct effects to marten are likely to occur primarily where treatments are impacting suitable habitat. Within treatment areas there are 3,370 acres of denning habitat and 160 acres of foraging habitat. Project design features that protect snags and large woody debris would reduce project effects on martens and retain functional habitat. Individuals might be displaced and avoid the area temporarily during project implementation due to the presence of humans, equipment and increased noise.

Snags and large woody debris are important features of marten habitat. Logs are most useful to martens for gaining access to subnivean (beneath the snow) areas and for resting. Removal of large, coarse woody debris from forests, or indirectly affecting processes that make it available in suitable sizes and stages of decay by removing standing trees and snags indirectly affects martens and their prey species (e.g., red-backed voles, snowshoe hares, red squirrels, etc.) by reducing habitat quality. While reductions of this important component of marten habitat might reduce habitat quality directly within the units, the project design features would help to maintain suitable marten habitat components consistent with Forest Plan direction.

The proposed action **may impact individual American martens but is not likely to cause a trend toward ward listing or a loss of viability.**

Pygmy Shrew

Pygmy shrew are found in moist and forested habitats including late seral spruce-fir stands which usually have a high amount of coarse woody debris on the ground. Suitable habitat is present in the project area. There are no recorded observations of individuals in proposed treatment areas however this species is small and not easily detected due to their small size (they are the smallest North American mammal and one of the smallest mammals in the world). They spend a lot of time digging through soil and leaf litter searching for food, which makes observations and detection difficult.

Project implementation could result in direct effects to pygmy shrews including the potential of direct mortality from heavy equipment, due to the species' behavior including digging through soil and leaf litter to search for food, and using burrows created by other species. Changes to habitat from the proposed project activities, including clearcutting, would have varied effects on pygmy shrews. Michal and Rafal (2014) found that European pygmy shrews actually increase after clearcutting. Although recorded to live in areas with both wet and dry soil, the pygmy shrew requires moist soils and a moist leaf litter layer when foraging for insects (*Index for Mammalian Species. www.science.smith.edu. Retrieved 2016-01-16*). Though small, they have an extremely large appetite for their size and due to a fast metabolism, they need to eat constantly. Treatments that reduce woody material on the ground and that reduce shade from overstory tree removal would be likely to result in dryer conditions that could negatively impact pygmy shrew foraging habitat.

The proposed action **may impact individual pygmy shrews but is not likely to cause a trend toward Federal listing or a loss of viability.**

Management Indicator Species

The Grand Mesa, Uncompahgre, and Gunnison National Forests have 10 management indicator species. A description of species biology, ecology, habitat characteristics and species or habitat abundance for the management indicator species can be found at: www.fs.usda.gov/goto/gmug/wildlife.

Table 12. Management indicator species

Common Name	Scientific Name	Habitat Association	Species and or Habitat Present in Project Area?
Rocky Mountain elk	*Cervus elephus*	Early succession spruce- fir, Douglas-fir, lodgepole, aspen, mountain shrub.	Yes
Abert's squirrel	*Sciurus aberti*	Late-succession ponderosa pine	No
American marten	*Martes Americana*	Late-succession spruce-fir, lodgepole pine	Yes, this species is also a Forest Service Sensitive species and was analyzed above. The proposed action will not change the current Forest-wide population or habitat trend.
Northern goshawk	*Accipiter gentillis*	Late-succession aspen and mixed conifer	Yes, this species is also a Forest Service Sensitive species and was analyzed above. The proposed action will not change the current Forest-wide population or habitat trend.
Red-naped sapsucker	*Sphyrapicus nuchalis*	Aspen, and willow riparian adjacent/near mature aspen	No
Merriam's turkey	*Meleagris gallopavo*	Gamble oak, ponderosa pine, and Pinion-Juniper	No
Brewers Sparrow	*Spizella breweri*	Sagebrush	No
Rainbow trout	*Oncorhynchus mykiss*	Aquatic and riparian habitats	Yes, Design Features for Wildlife, Fish, and Rare plants, as well as those for Water Quality and Soil Productivity will protect habitats. The proposed action will not adversely affect Forest-wide population or habitat trend.
Brown trout	*Oncorhynchus trutta*	Aquatic and riparian habitats	Yes, Design Features for Wildlife, Fish, and Rare plants, as well as those for Water Quality and Soil Productivity will protect habitats. The proposed action will not adversely affect Forest-wide population or habitat trend.
Brook trout	*Salvelinus fontinalis*	Aquatic and riparian habitats	Yes, Design Features for Wildlife, Fish, and Rare plants, as well as those for Water Quality and Soil Productivity will protect habitats. The proposed action will not adversely affect Forest-wide population or habitat trend.

Rocky Mountain elk

The Gunnison Basin supports a strong population of elk. The project area is within Data Analysis Unit E-43. Current population estimates meet the State of Colorado population objectives. Within the treatment areas that are considered elk habitat, 77 percent is high summer cover, 30 percent is high summer forage habitat, and 57 percent is high winter cover (https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5199934.pdf). Less than 1 percent is

considered high winter forage habitat. Impacts to elk would be in the form of displacement and disturbance during project implementation, however given the spacing of each treatment, elk would not have to move great distances to reach refuge. Direct and indirect effects would most likely result in temporary displacement or cause shifts in elk behavioral patterns and habitat use. This displacement is expected to be short-term with elk use returning to the same level or possibly greater level in treatment areas due to an anticipated increase in forage quality and quantity.

The proposed action **will not change the current Forest-wide population or habitat trend for Rocky Mountain elk.**

Migratory Birds

Executive Order 13186 (January 10, 2001) requires Federal agencies to consider management impacts to migratory birds to further the purposes of the Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and other laws. Federal agencies need to identify whether unintentional take will occur, and if so, whether such take would have a measurable negative effect on migratory bird populations. Take is defined to mean "… to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR 10.12). Removal or destruction of vegetation is not considered a taking.

The objectives of Executive Order 13186 address migratory birds by analyzing potential effects to: (1) Priority bird species identified in the Colorado Partners in Flight Land Conservation Plan (Beidleman 2000) (2) Important Bird Areas identified through the Audubon Society Important Bird Area program (3) known important or unique avian over-wintering areas and (4) identify the unintentional take of the action alternatives.

Partners in Flight Priority Species (Appendix D: Physiographic Area 62: Southern Rocky Mountains, Beidleman 2000) and U.S. Fish and Wildlife Service Birds of Conservation Concern (USDI 2008): The Gunnison Ranger District is within the Southern Rockies Colorado Plateau (#16) bird conservation region.

Overwintering Areas: There are no noted important overwintering areas within the project area.

Pre-implementation raptor surveys would be conducted and if a nest is found buffers would be put in place to avoid impacts (WFRP-14, Appendix A). If surveys do not detect all nests in the area implementation, for example a tree falling on a nearby tree containing a nest, **may result in some level of incidental mortality (unintentional take) of some birds. The removal of any eggs or fledglings is unlikely and would not result in a measurable negative effect to the bird populations listed above.**

Cumulative Effects

There is a need to consider the incremental cumulative effects of the proposed action when added to other past, present and reasonably foreseeable future actions. Projects in the Taylor Park analysis area that could contribute to effects include travel management, dispersed recreation management, and the implementation of vegetation management project decisions (SBEADMR EIS and Taylor Park Silviculture CE). Travel management has long-term habitat benefits by maintaining a manageable road system and reducing disturbances to wildlife species and their habitat by decommissioning and restoring illegal routes. Ongoing recreation has long-term additive impacts as recreation activity continues to increase. These additive impacts include noise disturbance that displaces wildlife. The additive effect of noise from recreation activities throughout Taylor Park with the proposed project will temporarily increase noise effects during project implementation. As described above under cumulative effects in the

Transportation System effects analysis, the Federal Highway Administration, in coordination with Gunnison County and the Forest Service, has been paving the Cottonwood Pass Road with completion expected in 2019 potentially leading to increased visitation, recreation, and human disturbance in Taylor Park.

This project in conjunction with the implementation of SBEADMR would not exceed the vegetation caps for VEG S1, VEG S2, VEG S5, or VEG S6 under the Southern Rockies Lynx Amendment (SRLA) for Canada lynx. Tracking and reporting to U.S. Fish and Wildlife Service is conducted annually to ensure cumulative impacts of these caps under the SRLA are meeting the 2008 SRLA biological opinion requirements. Annual reporting occurs in February each year to U.S. Fish and Wildlife Service. This annual reporting will include acres treated in lynx habitat under this Taylor Park Environmental Assessment (EA). The cumulative effects of vegetation management from this project, SBEADMR, and Taylor Park CE will meet all vegetation management standards in the Southern Rockies Lynx Amendment. The proposed project is expected to add cumulatively to past, current and reasonably foreseeable activities in terms of increasing direct and indirect effects for all species analyzed. Over time, these effects will decrease in magnitude as vegetation management activities implemented under this proposal, SBEADMR, and the Taylor Park Silviculture CE are completed, and as forests regenerate and recover over time.

Forest Service Sensitive Plants

Affected Species

No plants federally listed as threatened or endangered occur in the Gunnison Ranger District. Table 13 provides a list of Forest Service sensitive plant species that occur on or near in the Gunnison Ranger District and comments/rationale related to their potential to be affected by the proposed action. Of the 21 Forest Service sensitive plan species that occur on or near the Gunnison Ranger District, 13 were found to have suitable habitat within or near the treatment areas.

Table 13. Region 2 sensitive plant species considered for this analysis
There are 21 sensitive plant species on or near the Gunnison Ranger District (Rocky Mountain Region Endangered, Threatened Proposed, and Sensitive Species 4/3/2018)

Scientific Name	Common Name	Known suspected to be present or its habitat in the planning area?	Known suspected to be present or its habitat in the treatment area?	Habitat	Effect	Comments and Rationale
Aliciella sedifolia	stonecrop gilia	No	No	Small-scree slopes on volcanic tuffs, Alpine tundra, above 10,500 feet elevation.	NI	There is no suitable habitat within the planning/treatment area. Occurs south of planning area and at higher elevations than any treatments.

Scientific Name	Common Name	Known suspected to be present or its habitat in the planning area?	Known suspected to be present or its habitat in the treatment area?	Habitat	Effect	Comments and Rationale
Astragulus iodopetalus	violet milkvetch	No	No	Openings in sagebrush and Gambel oak, commonly on granite. Commonly found at 6,500 – 7,260 feet in elevation but one known account at 8,200 feet (Big Mesa, Colorado). Currently not much is known about this species.	NI	There is no suitable habitat within the planning/treatment area. Planning area is above the elevation range of occurrence of this species Known occurrence occurs southwest of treatment area and at lower elevations than any treatments.
Astragulus leptaleus	park milkvetch	Yes	No	Riparian margins, submontane. Elevation range occurs between 6,000 and 9,000 feet.	MI	There is potential habitat in the planning area but no suitable habitat within the treatment areas. The elevation of the treatment areas are outside the known elevation occurrence for this species. No direct effects to this species would occur as a result of implementing the proposed action. Indirect effects to park milkvetch could include slight changes to area hydrology from changes in forest cover and operation of equipment above the species' habitat range within the watershed. This species has been historically found in Gunnison County but far from project location.
Botrychium paradoxum	peculiar moonwort	Yes	Yes	Alpine or subalpine open rocky sites, moist alpine turf above 10,500 feet elevation. Occurs on lightly disturbed sites.	MI	There is potential habitat within the planning/treatment areas. Closest known location is 9 miles from the planning area.
Braya glabella	Smooth northern-rockcress	Yes	No	Rocky alpine slopes, on limestone 12,000-13,000 feet elevation.	NI	There is potential habitat in the planning area but no suitable habitat within the treatment areas The treatment areas are below the elevation range of occurrence of this species. No effects to any of this specie would occur as a result of implementing the proposed action.

Scientific Name	Common Name	Known suspected to be present or its habitat in the planning area?	Known suspected to be present or its habitat in the treatment area?	Habitat	Effect	Comments and Rationale
Carex diandra	Lesser panicled sedge	yes	No	Fens, wetlands, subalpine 9,000-10,500 feet elevation. Species commonly found on floating mats and in kettle ponds	MI	There is potential habitat within the planning area but no suitable habitat in the treatment areas. Design criteria would prevent treatments in their habitat. Design features protect this species from direct effects but not indirect. This specie has been observed in the planning area within a fen.
Drosera rotundifolia	round leaf sundew	No	No	Iron fens, floating peat mats with Sphagnum moss, 9,100-10,000 feet elevation.	NI	There is no suitable habitat within the planning/treatment area. Nearest known occurrence is from one iron fen approximately 13 miles from project area.
Eriophorum chamissonis	Chamisso's cottongrass	Yes	No	Fens, wetlands, 9,500-14,000 feet elevation.	MI	There is potential habitat within the planning area but no suitable habitat within the treatment areas. Design criteria would prevent treatments in their habitat. Design features protect this species from direct effects but not indirect.
Eriophorum gracile	slender cotton grass	Yes	No	Sedge meadows, fens, floating peat mats, saturated soil to shallow water, 8,100-12,000 feet elevation.	MI	There is potential habitat within the planning area but no suitable habitat within the treatment areas. Design criteria would prevent treatments in their habitat. Design features protect this species from direct effects but not indirect.
Kobresia Simpliciuscula	Simple bog sedge	Yes	No	Calcareous fens with hummocks, alpine or subalpine, 9,500 feet elevation.	MI	There is potential habitat in the planning area but no suitable habitat within the treatment area. Design criteria would prevent treatments in their habitat. Design features protect this species from direct effects but not indirect.

Scientific Name	Common Name	Known suspected to be present or its habitat in the planning area?	Known suspected to be present or its habitat in the treatment area?	Habitat	Effect	Comments and Rationale
Machaeranthera coloradoensis	Colorado tansy-aster	Yes	Yes	Gravelly places in mountain parks, ponderosa pine stands, dry tundra, Occurs in forest openings sandstone / limestone, 7,600 -12,500 feet elevation. Species occurs in Gunnison County.	MI	There is potential habitat within the planning/treatment areas. The closest known occurrence is 4 miles from a treatment unit.
Neoparrya lithophila	Bill's neoparrya	No	No	Found in piñon-juniper woodlands on north-facing ledges, cliffs, and canyons associated with volcanic dikes composed of igneous outcrops or sedimentary rock, and in montane meadows and grasslands (Anderson 2004). It is found at elevations ranging from 7,000 to 10,000 feet.	NI	No suitable habitat in the planning/treatment areas. All known occurrences well outside of treatment area.
Physaria scrotiformis	west silver bladderpod	No	No	Habitat consists of windswept, nearly barren, cobbly and gravely limestone outcrops in a matrix of *Picea engelmannii*. Elevation range 11,500–11,850 feet.	NI	No suitable habitat in the planning/treatment areas. The treatment areas are below the elevation range of occurrence of this species. Only known occurrence well south of treatment area.
Ranunculus karelinii	ice cold buttercup, tundra buttercup	Yes	No	Alpine ridgetops and peaks, in rocks and scree, where there have been low-lying snow banks or in the rivulets below them, 11,000-14,100 feet elevation.	NI	There is potential habitat in the planning area but no suitable habitat within the project area. Treatment areas are below the elevation range of occurrence of this species. No effects this specie would occur as a result of implementing the proposed action.
Rubus arcticus ssp acaulis	Dwarf raspberry	Maybe	No	Found in understories of moderate to dense canopy cover in spruce, spruce/willow and occasionally willow dominated communities. Also in boggy woods, marshes, mountain meadows, and alpine tundra at 8,500 – 9,600 feet in elevation.	MI	There may be potential habitat in the planning area but no suitable habitat within the treatment areas. Design criteria would prevent treatments in their habitat Design features protect this species from direct effects but not indirect. Not known to occur in Delta, Mesa or Gunnison County.

Scientific Name	Common Name	Known suspected to be present or its habitat in the planning area?	Known suspected to be present or its habitat in the treatment area?	Habitat	Effect	Comments and Rationale
Salix candida	sageleaf willow	Yes	No	Fens, edges of streams, wetlands, 8,800-10,600 feet.	MI	There is potential habitat in the planning areas but no suitable habitat within the project areas. Design criteria would prevent treatments in their habitat Design features protect this species from direct effects but not indirect. Most recorded locations were found in park county in rich fen locations.
Salix myrtillifolia	blueberry willow	Yes	No	Wetlands, streambanks, fens, 9,000-11,000 feet.	MI	There is potential habitat in the planning areas but no suitable habitat within the project area. Design criteria would prevent treatments in their habitat. Design features protect this species from direct effects but not indirect. Most recorded locations were found in park county in rich fen locations.
Sphagnum angustifolium	narrowleaf peatmoss	No	No	Acidic iron fens or wetlands above 9,000 feet in elevation.	NI	There is no suitable habitat within the planning or treatment areas Design criteria would prevent treatments in their habitat. Occurs well southeast of treatment area.
Sphagnum balticum	Baltic sphagnum	No	No	Prefer the wet portions of acidic peatlands (iron fens). More often found in the hollows of fens or bogs than on hummocks.	NI	There is no suitable habitat in the planning area or treatment areas. Design criteria would prevent treatments in their habitat

Scientific Name	Common Name	Known suspected to be present or its habitat in the planning area?	Known suspected to be present or its habitat in the treatment area?	Habitat	Effect	Comments and Rationale
Thalictrum heliophilum	Cathedral Bluff meadow-rue	No	No	Found on open slopes of eroding shale of the Parachute Creek Member of the Green River Formation, between 6,200 and 8,800 feet in elevation. Soils supporting this species are derived from Green River Shale. They are poorly developed and consist of a clay matrix holding together shale chips. Occurs almost entirely in Utah High Plateaus Ecoregions and one occurrence in the Southern Rocky Mountain ecoregion. Several occurrences near the border of these two ecoregions. Soils at project location are not derived from Green River Shale.	NI	There is no suitable habitat within the planning or treatment areas. Planning area is above the elevation range of occurrence of this species
Utricularia minor	lesser bladderpod	Yes	No	Fens, marshes, subalpine ponds, 8,600-11,000 feet.	MI	There is suitable habitat in the planning area but no potential in the treatment areas. Design criteria would prevent treatments in their habitat. Design features protect this species from direct effects but not indirect.

Effects of the No-Action Alternative

Under the no-action alternative, existing processes and management actions would continue to influence the project area. We would expect to see continued decline of lodgepole pine and decrease in this forest type due to on-going high levels of lodgepole dwarf mistletoe infestation. Fuel buildup would continue, both through tree mortality and an absence of aggressive fuel treatments in the project area. We would not anticipate any direct effects to Forest Service sensitive plants, as no additional management activities in their range would occur as a result of this project. Indirect effects to Forest Service sensitive species could occur due increased mortality in wildfires. We would continue to implement currently authorized activities and other reasonably foreseeable related actions.

Effects of the Proposed Action

Park Milkvetch

Park milkvetch occurs at lower altitude than the proposed treatments. Although vehicles and other equipment accessing the treatment area would traverse lower elevation areas within the planning area. This species is most likely to occur in moist swales and riparian meadows, often within riparian areas that are typically wet and have standing water or high-water tables. These habitat types are sensitive to ground disturbing activities and can be negatively impacted from activities occurring above, adjacent to, or within. Legal and regulatory limitations on soil disturbing activity in these areas will reduce the potential for direct impacts. In the Forest Service, wetlands are surrounded by a buffer called the water influence zone (USDA Forest Service 2006). Since these laws and regulations severely restrict any activities in wetlands and limit activities in the water influence zone around them, project activities would avoid wetlands. Project design features have been written that avoids activities in wetlands (WQSP-2A; Appendix C). For this project there will be no equipment operation that would occur off of roads in the riparian edge habitat of park milkvetch. No direct effects to this species would occur as a result of implementing the proposed action as there will not be any ground disturbing activities within their habitat that would cause direct injury or mortality to individuals.

Indirect effects to park milkvetch could include slight changes to area hydrology from changes in forest cover and operation of equipment above the species' habitat range within the watershed. Park milkvetch could also be adversely indirectly impacted by the introduction and spread of invasive species resulting in increased competition. All these indirect effects could result in reduced vigor of the population, but these effects would not threaten the continued viability of park milkvetch in the project area. The project **may impact individual populations of lesser park milkvetch but is not likely to cause a trend toward Federal listing or a loss of viability.**

Smooth Northern Rockcress and Ice Cold Buttercup

Smooth northern rockcress and ice cold buttercup are high elevation species that occur above the elevation of any treatments of the proposed action. **No impacts** to any of these species would occur as a result implementing the proposed action.

Lesser Panicled Sedge, Chamisso's Cottongrass, Slender Cottongrass, Simple Bog Sedge, Dwarf Raspberry, Sageleaf Willow, Blueberry Willow, and Lesser Bladderwort

Lesser panicled sedge, Chamisso's cottongrass, slender cottongrass, simple bog sedge, dwarf raspberry, sageleaf willow, blueberry willow, and lesser bladderwort occur in fen and wetland habitats. Project design features for water quality and soil protection and wetland sensitive plants (WQSP 1-5/ FSSP-9, Appendix A) would avoid project entry into the wetland habitats of these species and protect the habitats from effects. No direct adverse effects to any of these species would occur. Indirect impacts could include sedimentation and alterations to hydrology of the fens or wetlands. Project design features would limit these impacts, but there is the potential fens could experience some level of sedimentation, hydrology alterations, and nutrient loading. These effects may be minor, short-term influences to fen function, but could result in long-term effects that alter to some extent the vigor of these species populations if present. Fens should be surveyed during project implementation to assess the presence of these species and if appropriate adjust the required minimum 100-foot buffer to an adequate size for the situation. Potential changes in the vigor of some populations would not result in a threat to the viability of any of these species in the project area. The project **may impact individual populations of lesser panicled sedge, Chamisso's cottongrass, slender cottongrass, simple bog sedge, dwarf raspberry, sageleaf willow,**

blueberry willow, and lesser bladderwort but is not likely to cause a trend toward Federal listing or a loss of viability.

Peculiar Moonwort

Peculiar moonwort may occur in lightly disturbed sites, such as old road and road cuts, in or near spruce-fir and lodgepole pine forests above 10,500 feet in elevation. This is near the upper elevation of the project area. Implementation surveys would include searching for this species where treatments or road improvements would occur within its habitat. The species has a long dormant period when little vegetation is visible above ground, so some populations could be overlooked during surveys. Potential direct effects to this species would include mortality to populations from crushing during road construction or heating if pile burning overlaps species occurrence due to species occurrences being missed during field surveys.

Pile burning or exposing bare soil could result in indirect impact to peculiar moonwort through damage to soil fungi. All *Botrycium* (moonwort) species benefit from a symbiotic, or mutually beneficial, relationship with mycorrizal fungi (Beatty et al. 2003). This would be the most critical habitat constituent for maintaining suitable habitat for peculiar moonwort. This habitat is present throughout the forest and is difficult to quantify as far as baseline conditions. Road construction and soil scarification for reforestation, subject mycorrizal fungi to drying conditions that can result in destruction of fungi. Similarly, the heat of pile burning could destroy fungi near the soil surface. Project design features would prevent more than 15 percent of the soil in a treatment area from being severely burned, compacted, eroded, and displaced (WQSP-5A, Appendix A). This would likely reduce the severity of impact, though may not fully mitigate all potential negative effects and therefore some reduced vigor in individuals or populations could occur. Given this species' widespread distribution and the small overlap of its habitat with treatment areas at the upper limit of the treatment elevation, the potential for localized loss of individuals at discrete sites would not be a threat to its viability. The project **may impact individual populations of peculiar moonwort but is not likely to cause a trend toward Federal listing or a loss of viability.**

Colorado Tansy-aster

Colorado tansy-aster grows in openings such as barren slopes, montane parks dominated by grass, or low shrublands. In such habitats it tends to thrive in open microsites. Implementation surveys would include searching for this species where treatments and road improvements would occur within its habitat. Road construction or increased road use during project implementation could result in loss of Colorado tansy-aster by crushing above ground plant parts during the summer or roots at any time of the years. Pile burning in areas where the species is present would also cause loss of any individuals present. In each case, the species is likely to recolonize disturbed areas. A project design feature for protection of the species (FSSP-3, Appendix A) calls for avoidance of road use where populations are known to occur. With mitigation, the project **may impact individual populations of Colorado tansy-aster but is not likely to cause a trend toward Federal listing or a loss of viability.**

Cumulative Effects

Park Milkvetch

Increased recreational use of the national forests, especially increased off-road vehicle use, is likely to impact park milkvetch. Other factors include ongoing grazing on and off Federal lands and increased introduction of invasive species. Park milkvetch is known to exist in habitats (lower elevation riparian) where both these impacts occur. Similar to the case for the proposed action, the SBEADMR project

includes implementation phase surveys for sensitive plants and design features to protect sensitive habitat. Only moderate indirect effects are anticipated. While the proposed action and related actions would not likely affect much of the known range and suitable habitat for this species, there may be long-term adverse impacts that could act synergistically with the cumulative effects resulting in some decline for this species.

Lesser Panicled Sedge, Chamisso's Cottongrass, Slender Cottongrass, Simple Bog Sedge, Dwarf Raspberry, Sageleaf Willow, Blueberry Willow, and Lesser Bladderwort

These fen and wetland species may be affected by climate change, especially warming of their fen and wetland habitats and less consistent patterns of precipitation. These species have specific hydrologic habitat requirements and could be indirectly impacted by changes to hydrological processes resulting from roadwork done by the county. This was not found to be a substantial impact in the GMUG fen inventory and assessment (Johnston et al. 2012), but because there are 2,591 acres of potential fens in the vicinity of roads there is the potential for road use, improvement and maintenance contributing synergistically to cumulative impacts to the hydrologic function of fens. Many of these species are thought to be Pleistocene relics disjunct from cooler habitats already at the edge of their range, so climate change may be a substantial effect that is influencing the viability of these species.

Similar to the case for the proposed action, the SBEADMR project includes design features aimed at protecting wetland habitats and species. The combined effects of these projects would not be anticipated to result in the Federal listing or loss of viability for any of these species.

Peculiar Moonwort

The SBEADMR project proposed similar treatments to those of the proposed action, but over a much broader area within and adjacent to the Taylor Park planning area. SBEADMR would also have the potential to adversely affect individual peculiar moonwort plants, but is not expected to result in federally listing or loss of species viability.

Increasing infestation of National Forest System lands by invasive exotic plant species could result in greater competition for resources for peculiar moonwort.

Colorado Tansy-aster

The SBEADMR project proposed similar treatments to those of the proposed action, but over a much broader area within and adjacent to the Taylor Park planning area. SBEADMR would also have the potential to adversely affect individual Colorado Tansy-asters, but is not expected to result in federally listing or loss of species viability.

County road maintenance has been identified as a potential cumulative effect for Colorado tansy aster. County road maintenance could result in additional impacts to individuals such as crushing, or removal by road maintenance equipment. Livestock grazing is another ongoing activity in Colorado tansy aster habitat. The effects of grazing on Colorado tansy aster are probably minimal because it is unpalatable to livestock and prefers habitats that are sparsely vegetated and rocky, which are not preferred for grazing (Beatty et al. 2004). Colorado tansy aster may also be cumulatively impacted by invasive plants and recreational activities (trail use, road use). This would act synergistically with the proposed action to add to the potential for decreased vigor and mortality of individuals, but is not anticipated to extirpate any of the populations as they are dispersed both along the road where impacts could occur, and adjacent to the road where fewer impacts are anticipated.

Invasive Weeds

Affected Environment

The GMUG uses the Colorado state noxious weed list to guide management on invasive plants, and additionally manage for invasive species of local concern. The State of Colorado Department of Agriculture ranks invasive plant species by their priority for treatment (CDA 2013). The 2006 GMUG Forest Plan Revision planning effort (USDA Forest Service 2006) assessed the risk of establishment of invasive plant species per vegetation cover types. This document determined that, in general, vulnerability in wildlands is low in desert and semi-desert elevations, (mostly below forest), then increases to high at medium elevations, declining to very low at high elevations (colder with short growing seasons, mainly in wilderness areas). Riparian zones are known to be more vulnerable to infestation by invasive plants than adjacent upland sites (Stohlgren and Chong 2002). Stohlgren and Chong (2002) found that mixed conifer forests with sparse understory vegetation tend to be less invaded than adjacent canopy gaps, aspen stands, and montane meadows. However, they found no difference in vulnerability between grazed and ungrazed sites. Any site is vulnerable to invasion if light, water, and nitrogen are made available (Stohlgren and Chong 2002).

Existing information on the GMUG for invasive plant species shows that they are primarily concentrated along roadways, in campgrounds, along powerlines, and other areas with high levels of existing disturbance factors. Canada thistle (*Cirsium arvense* CIAR4), Yellow toadflax (*Linaria vulgaris* LIVU2), oxeye daisy (*Leucanthemum vulgare* LEVU), and cheatgrass (*Bromus tectorum* BRTE) are the invasive species of greatest concern in the proposed Taylor Park project area. Due to presence of the listed noxious weed species monitoring and treatment practices will be implemented as occurrence and infestation levels are determined and prioritized.

Effects of the No-Action Alternative

Under the no-action alternative, no additional active vegetation management would occur as a result of this project. We would continue to implement currently authorized activities and other reasonably foreseeable related actions. There would be no increase in ground disturbance or timber hauling in the project area as a result of this project. However, we anticipate other vectors, such as continued increases of recreation use, will result in the potential of increased invasive plant species establishment. On-going weed inventories, treatments and prescriptions would continue to occur to minimize invasive plants establishment and infestations.

Effects of the Proposed Action

Implementing the proposed action would result in additional ground disturbance, heavy equipment operation, temporary decrease in forest canopy closure, and vehicle traffic in the treatment area. All of these activities are associated with spread of invasive species. We would incorporate project design features (IW1-9, Appendix A) to limit the spread of invasive weeds. These include standards for vehicle and equipment washing, minimizing ground and native vegetation disturbance, re-establishing native plant cover on disturbed areas, and pre and post treatment monitoring. Given these mitigation measures, we do not anticipate great increases in invasive plant infestation would result from the implementing the proposed action.

Cumulative Effects

Road Maintenance – there is ongoing road maintenance in and near the analysis area. These projects may result in some increase in localized invasive abundance. This will contribute to adverse impacts as nonnative invasive plants may become established and could invade the project area.

Grazing – livestock grazing management can be beneficial in invasive plant management through the cooperation of grazing permittees and cooperating agencies; however, livestock grazing can also result in the spread of invasive plants. Grazing occurs both on the GMUG and in areas adjacent to the forest. In areas where the proposed action would create soil disturbance where cattle or other grazing animals are used, introductions of invasive plants could occur if the identified noxious weeds are not treated prior and post disturbance activities. Grazers can also create disturbed soils that may result in areas where introductions caused by vectors associated with project activities could occur. Wild animals such as elk, mule deer, and moose can also be vectors for introduction and spread of invasive plants.

Recreational Use – the analysis area currently has high levels of recreation, and recreation is expected to increase – motorized, mechanized, and non-motorized. Areas with high concentrations of recreation usage are vulnerable to high disturbance levels, and many of these areas are in or near lodgepole pine or spruce forests. These are also sites where introductions of invasive species could occur, due to increased vehicular and foot traffic carrying seeds or vegetative propagules. The overall trend in these areas would create a higher risk for the introduction and spread of invasive plants.

Air quality – for the last few decades, there has been a trend toward greater population numbers in and near these forests, especially around spruce-fir and aspen stands. This trend will likely continue and perhaps accelerate, resulting in more fossil fuel use and more wood-burning, which will deteriorate the air quality on and around the forests. This would result in increased nitrogen deposition which has been found to increase the success of invasive plants (Dukes et al. 2011).

Other Vegetation Management—within the planning area, other approved vegetation management projects (SBEADMR and Taylor Park Silviculture CE) have planned treatments with similar anticipated impacts of invasive plants as the proposed action. The proposed action and SBEADMR share the same invasive weeds project design features.

Overall, cumulative effects and the effects of the proposed action should not result in notable increases of invasive species establishment in the project area, provided that design features to address invasive species are implemented.

Heritage Resources

Background

GMUG is rich in historically and culturally significant properties. As of September 2018, we have inventoried approximately 4,264 acres to current standards, or 16 percent of the total planning area. The remaining acres, which fall within treatment areas or those associated with ground disturbance in relation to the proposed action (e.g., temporary road construction), must be surveyed prior to project implementation. A total of 279 historic properties (including properties determined not eligible to the National Register of Historic Places) have been recorded in the planning area as of September 2018. One site is listed on the National Register of Historic Places.

There are 52 designated or listed historic properties in the project area.

Of the 279 historic properties recorded in the planning area, only 13 have not had their eligibility evaluated. Twenty percent of the properties evaluated have been determined eligible for listing on the National Register of Historic Places (or are so listed or designated). Slightly more than three-quarters of the properties have been determined not eligible to the National Register of Historic Places. The remaining evaluated properties did not receive determinations of eligibility, either because the recorders of the property felt that more investigation of the property was needed for a determination of eligibility to be made, or because the Forest Service and the Colorado State Historic Preservation Officer could not agree in consultation on the eligibility of the property. For management purposes, the Forest Service treats undetermined and unevaluated properties as if they are eligible until a determination of eligibility can be made for that property.

Effects of the No-Action Alternative

It is assumed that taking no action would not adversely affect any cultural resources. Existing trends of increased visitation and recreation area would continue, particularly with the paving of the highway over Cottonwood Pass. Increased visitation may lead to increased potential for damage to known or undiscovered cultural resources. Additionally, we would continue to implement currently authorized activities and other reasonably foreseeable related actions.

Effects of the Proposed Action

In implementing the proposed action, we would avoid all eligible or unevaluated sites by a 50-foot buffer.

- If heritage resources are identified during project implementation (unanticipated discovery), all work would cease immediately in that area until the situation is reviewed and an assessment and mitigation plan instituted to ensure protection of the site.
- Historic properties located within the project area of potential effects but not close to identified disturbance areas would be protected from indirect project impacts such as use of sites for staging equipment or vehicles (e.g., timber harvest equipment; water trucks; road construction, reconstruction or maintenance equipment) or any other activities.

Given these provisions for avoidance of known resources and work stoppage in the event of discovery of any currently unknown resources, implementing the proposed action should not adversely affect heritage resources.

Cumulative Effects

As the proposed action would not adversely affect heritage resources, its implementation would not contribute to the cumulative effects of other actions.

Agencies and Persons Consulted

The Forest Service consulted the following individuals, Federal, State, tribal, and local agencies during the development of this environmental assessment:

Federal, State, and Local Agencies:

USDA Forest Service, Salida Ranger District, District Ranger
USDI Fish and Wildlife Service, Ecological Services, Colorado State Office
Colorado Parks and Wildlife
Colorado State Forest Service
Gunnison Country Commissioner, Commission District 1
Gunnison Country Commissioner, Commission District 2
Gunnison Country Commissioner, Commission District 3
Gunnison County Public Works

Tribes:

Southern Ute Indian Tribe
Uintah and Ouray Tribal Business Committee
Ute Indian Tribe (Uintah and Ouray Reservation)
Ute Mountain Ute Tribe

Others:

Baylor University
Buena Vista Chamber of Commerce
Buena Vista Snowmobile Club
Colorado Mule Deer Association
Colorado Timber Industry Association
Entermountain Enterprises, Inc.
Gunnison County Chamber of Commerce
High County Conservation Advocates
Intermountain Forest Association
Montrose Forest Products
Murdie Subdivision Home Owners Association
Rocky Mountain Elk Foundation
Spring Creek Estates HOA
Taylor Park Cattle Pool
Tin Cup Civic Association
West Region Wildfire Council
Wilderness Pursuits, Western Colorado State University

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Appendix A. Implementation Checklist and Design Features

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Planning Steps

1. Consult the Environmental Assessment and Decision Notice

Instructions: The direction in the EA and Decision Notice reflects comprehensive public participation and collaborative efforts conducted over a year-long planning period. The public had opportunities to influence all elements of these documents. Becoming familiar with the implementation parameters of the EA and Decision Notice to develop an understanding of these limits and requirements will help the Interdisciplinary Team identify treatment types (Appendix B) and design features needed for treatment areas. Ensure proposed treatments accomplish project objectives defined in the Project Purpose and Need (objectives listed below).

<u>Taylor Park Vegetation Treatment Project Objectives:</u>

- Thin and harvest stands to improve forest health, reduce fuels in wildland-urban interface areas, using commercial harvest and non-commercial treatments as appropriate to the site-specific situation.
    - In the wildland-urban interface: reduce the potential for crown fire by reducing or breaking up canopy continuity, decrease potential surface fire intensity via reduced surface fuels, and improving tree health and vigor.
    - Protect young, healthy stands of lodgepole pine from infestation by dwarf mistletoe through harvesting infested stands and treatment of adjacent strips and stands.
    - Salvage trees killed by spruce bark beetle, mountain pine beetle, Douglas-fir bark beetle and wildfire for commercial wood products.
- Precommercially thin young stands of lodgepole pine to increase/maintain growth rates.
- Remove hazard trees along the Taylor Canyon and Spring Creek Roads (CR 742 and FR 744).
- Provide lodgepole pine and Engelmann spruce sawtimber and other forest products such as firewood, fence posts, and corral poles from suited timber in the watershed. Focus is on dwarf mistletoe infested stands and spruce resiliency treatments outside of SBEADMR treatment units. Proposed commercial harvest would be in addition to, and in conjunction with that of SBEADMR.

2. Validate within Thresholds

☐ **HUC12 Watershed Scale:** Work with the Supervisors Office Soil and Water Program Lead to validate or update total disturbance for the treatment's watershed (HUC12). Using the Equivalent Roaded Acres approach, ensure that recently affected acres, in combination with those analyzed in the FEIS, do not exceed 25 percent of the watershed. If the 25 percent threshold would be exceeded by the proposed treatment, discontinue treatments in the watershed until recovery has occurred.

☐ **Lynx Analysis Unit Scale:** Work with the Supervisors Office Wildlife, Fish, and TES Program Lead to validate or update the current extent of single-storied stands in the LAU that in are stand initiation structural stage (SISS) due to bark beetle, management, or other natural disturbance.

☐ **Treatment Area Scale, Soil Disturbance:**

- ☐ Based on a review of past activity records, aerial photos, or other records, there is no evidence of past activity in the treatment area.
- ☐ There is evidence of past activity in the treatment area. I have initiated coordination with the Supervisors Office Soil and Water Program Lead to determine the extent of surveys required in the next phase of treatment design.

3. Complete Area Surveys and Inventories

Instructions: It is the responsibility of the Interdisciplinary Team (IDT) resource specialists to a) select applicable surveys from the example list below, b) document additional needed surveys below, and c) confirm identified surveys have been completed. **Those identified with an asterisk are required for all treatments per law, regulation, policy, or consistency with decision-making triggers in the Taylor Park Vegetation Treatment EA.**

Survey data will be used to develop treatment layouts, to identify need for design features, to identify areas that should be avoided (e.g., cultural sites, sensitive wildlife areas, etc.), and to establish treatment-specific objectives and desired outcomes. Information derived from the surveys may also precipitate monitoring questions that should be considered by the IDT.

Air Quality

☐ If applicable, obtain State of Colorado air quality (smoke) permits (AQ-1).

Project lead/Fuels specialist signature that permit will be been obtained: _____

Cultural Resources

Instructions: National Historic Preservation Act (NHPA) compliance will be completed prior to treatment implementation. All cultural resources that are eligible for the National Register of Historic Places or are unevaluated within a treatment area will be avoided unless the Heritage specialist determines a specific treatment does not have the potential to affect certain types of cultural resources.

Any changes to treatment areas or road construction during implementation will require a separate review under the National Historic Preservation Act.

The National Historic Preservation Act (NHPA) requires that if newly discovered cultural resources are identified during treatment implementation, work in that area must stop and the Forest Archaeologist notified immediately. The Native American Graves Protection and Repatriation Act (NAGPRA), requires that if inadvertent discovery of Native American Remains or Objects occurs, activity must cease in the area of discovery, a reasonable effort made to protect the item(s) discovered, and immediate notice made to the Forest Supervisor, as well as the appropriate Native American group(s)and State Historic Preservation Officer (SHPO). Further actions also require compliance under the provisions of NHPA and the Archaeological Resource Protection Act (ARPA).

- ☐ *National Historic Preservation Act (NHPA) compliance will be completed for each treatment unit prior to implementation. This may include literature reviews, field surveys (if deemed necessary by the Heritage specialist) and completion of SHPO and tribal consultation. Surveys, reporting, and consultation may be conducted in accordance with a Programmatic Agreement. SHPO and tribal consultation may result in additional cultural resource avoidance or protection measures.

- ☐ Identify cultural sites to be avoided on the ground
- ☐ Roads and landings
- ☐ Pile Burning
- ☐ Other surveys (specify):

District Archeologist signature that identified surveys have been completed: _____

Fire/Fuel Surveys

- ☐ Browns transects/photo points
- ☐ Determine minimum and maximum fuel loading associated with harvests and treatments; particularly important to consider are residual fuel loadings near WUI and other values (less than 4 feet surface flame length required) and those associated with roadside hazard tree removal (roads may be used as future control lines and fuel loadings from hazard tree removal should be mitigated so as to not significantly increase surface fuel loadings)
- ☐ Other surveys (specify):

Fire/Fuels Specialist signature that identified surveys have been completed: _____

Land Surveys

Instructions: Prior to commencing any ground- or vegetation-disturbing activities, evidence of the Public Land Survey System will be marked for protection. The Forest Land Surveyor shall be consulted to assist with providing data, searching for and evaluating evidence, and locating and protecting monuments of the Public Land Survey System from destruction.

- ☐ Forest Land Surveyor contacted and survey has been completed.
- ☐ If proposed treatment is within 300 feet of wilderness, locate boundaries.
- ☐ Other surveys (specify):

Forest Land Surveyor signature that identified surveys have been completed: _____

Range and Invasive Species Surveys

Instructions: Based on survey of invasive weeds in the treatment area, prioritize weed infestations for treatment in high-risk sites, including treatment operating areas and along access routes. Control weeds as necessary prior to treatment implementation. Modify treatment as needed to reduce expansion of invasive weeds.

Include identified range improvements, range transects and witness trees and posts in the timber contract, service contract, or burn plan as features to be protected from disturbance during treatment activities.

- ☐ Pre-treatment invasive weed surveys.
- ☐ Identify and map range improvements that could be affected by treatment activities.
- ☐ Range transects and witness trees and posts will be identified prior to treatments.
- ☐ Other surveys (specify):

Range Management Specialist signature that identified surveys have been completed: _____

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Recreation

Instructions: The Recreation Specialist will work with the team and the proposed treatments to inventory the recreation attributes that may be affected by treatments. The type of treatment and the location can affect recreation activities and the quality of the recreation experience in the near term and over the long term. Evaluate how the treatment will affect the recreation facilities and settings in the area. Use the design features (Step 4, below) to ensure that the recreation opportunities are managed appropriately for the period of treatment implementation and for the long term. Design implementation to minimize the impact on recreation users to the extent feasible, including having good communication with partners and the public about the impacts of the activities.

Developed Recreation Sites

- ☐ Consult with District Ranger to identify developed recreation sites affected by treatment activities.
- ☐ Consult with District Ranger to determine if sites are managed by Forest Service or under permit with a concessionaire.

Dispersed Recreation Sites

- ☐ Consult with District Ranger to identify dispersed recreation sites that should have a higher degree of clean-up than other general forest areas.

Trails

- ☐ Consult with District Ranger to identify the location of any National Forest System trail that would be impacted by treatment activities.
- ☐ Identify managed snow trails.
- ☐ Identify the types of uses and predominance along all trails.

Recreation Special Uses

- ☐ Consult with District Ranger to identify the location of any authorized recreation special uses that would be impacted by treatment activities. Identify the types of uses that would be affected.

Scenic Byways

- ☐ Consult with District Ranger to identify the location of Forest, State or National Scenic Byways.
- ☐ Other surveys (specify):

Recreation Specialist signature that identified surveys have been completed: _____

Sensitive Plant Surveys

Instructions: Nine sensitive species (see Table A-1) were identified in the EA that could potentially occur within treatment units. They have been grouped into four habitat types. The following are key habitat types to look for along with associated species. These species can also occur within microsites intermixed or on edge of these habitat types.

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Table A-1. Sensitive species

Habitat	Sensitive Species
Montane parks and alpine	*Machaeranthera coloradoensis*
Moist swales and riparian meadows	*Astragalus leptaleus*
Fens and other wetlands	*Carex diandra* *Eriophorum chamissonis* *Eriophorum gracile* *Kobresia simpliciuscula* *Salix candida* *Salix myrtillifolia* *Rubus arcticus ssp acaulis* *Utricularia minor*
Lightly disturbed microsites (old roads and road cuts) within or close to mesic coniferous stands	*Botrychium paradoxum*

- ☐ Suitable habitat is found in treatment area and there is a chance habitats could be disturbed. Conduct field survey to determine if individuals or populations occur.
- ☐ Fens surveyed for sensitive species and, if found, appropriate buffer identified.
- ☐ If a sensitive species is found, the area will be flagged and avoided.
- ☐ Other surveys (specify):

Botanist/Ecologist signature that identified surveys have been completed: _____

Soil and Water Surveys

- ☐ Create map products of water influence zones buffers and sensitive soils (if needed) for use in the timber sale contract package.
- ☐ All fens, wetlands, and water influence zones delineated, flagged, and avoided.
- ☐ Sensitive soil types, i.e., severe erosion hazard rating, slopes greater than 40 percent, landslide prone areas identified.
- ☐ Proposed temporary road locations evaluated for number and locations of stream crossings, length within water influence zones, and the potential for impacts to the hydrology of groundwater dependent ecosystems.
- ☐ Phase 2--Treatment Area Scale, Soil Disturbance:
    - ☐ Field observations indicate **no** visible evidence of past activity in the proposed treatment unit. No further soil disturbance surveys needed.
    - ☐ Field observations indicate visible evidence of past activity in the proposed treatment unit. Coordinate with the Supervisors Office Soil and Water Program Lead to determine next survey steps, in order to ensure that past detrimental soil disturbance, in combination with the proposed treatment disturbance, would not exceed 15 percent of the activity area. If 15 percent would be exceeded by the treatment, modify treatment boundaries and/or exclude this treatment until further soil restoration activities are completed.
- ☐ Other surveys (specify):

Soil and Water Specialist signature that identified surveys have been completed: _____

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Timber Surveys

Instructions: Use the results of the stand exams and insect and disease surveys to determine the existing conditions of the stands and the feasibility of mechanical vegetation treatment. Compare the existing conditions to the condition statements in the Decision Tree for Silvicultural Prescription Application (Appendix B of the EA) to develop a range of treatment options. Present the range of treatment options to the interdisciplinary team to develop a treatment alternative that will have a positive trend toward integrated resource indicators.

- ☐ Stand Exam
- ☐ Insect and Disease Survey
- ☐ Operational Feasibility and Access
- ☐ Silvicultural prescription and marking guides
- ☐ Other surveys/information (specify):

TMA signature that identified surveys have been completed: _____

Transportation Planning Surveys

Instructions: Apply the appropriate design features for transportation systems and haul routes in order to keep effects to existing routes and effects from new routes within the bounds disclosed within the EA that supports the Decision Notice for this project.

- ☐ Existing road to be used in the sale – Road log
- ☐ Final Road Design
- ☐ Other surveys (specify):

Engineering signature that identified surveys have been completed:_____

Visual Resources Surveys

Instructions: Evaluate and select the applicable design features for visual resources such that the treatment area's identified visual quality objectives are achieved consistent with the Forest Plan.

- ☐ Identify valued scenic resources
- ☐ Identify sensitivity level of scenery
- ☐ Other surveys (specify):

Recreation Planner/Visual Resource specialist signature that identified surveys have been completed:

_____

Wildlife and Fish Surveys

Instructions: Complete surveys required by law, regulation or policy. The list below is not exhaustive nor does it apply to every treatment. The District biologist will determine which surveys need to be conducted. While completing ground reconnaissance, look for opportunities to achieve multiple resource management objectives.

- ☐ If needed, coordinate with Colorado Division of Parks and Wildlife to identify areas important to various wildlife species (elk calving areas, security areas, etc.) for avoidance and/or application of special management considerations. Typically, special management considerations would be in the form of design features.
- ☐ Northern goshawk/forest raptor surveys
- ☐ Conduct old growth inventories if high percentage of treatment area is live.

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- ☐ Dense horizontal cover surveys (Canada lynx)
- ☐ Field verification of GIS mapped lynx habitat
- ☐ Snow tracking surveys primarily for timber sale areas
- ☐ Neo-tropical migratory bird monitoring – point count surveys consistent with the Rocky Mountain Bird Observatory (primarily in areas on the Forest where RMBO data is lacking information on species densities and population trends at the Forest-scale, such as Brewer's sparrow and red-naped sapsucker; otherwise use existing data and do not conduct new surveys).
- ☐ Document nest sites for MIS and Sensitive primary and secondary cavity nesters, if needed.
- ☐ Confirm presence of American marten in treatment area using bait stations with soot track plates and remote cameras
- ☐ During treatment design, coordinate with other resources as needed.
- ☐ Other surveys (specify):

District Biologist signature that identified surveys have been completed:_____

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4. Draft Treatment Plan, Including Design Features

Instructions: Prepare refined treatment plans and implementation instructions and unit layout guidance, including road work.

As part of the treatment plan, use the resource tables below to identify those design features that apply, those that do not apply and the rationale for such (i.e., the resource is not present in the treatment unit), and those that apply as modified. If there are compelling reasons to modify a design feature, note below and provide rationale as to why the modification is equivalent or better protection to the resource.

If a design feature is relevant to the conditions and/or resources present in the treatment area, the design feature should be applied to avoid or minimize impacts of management actions. Application of the appropriate design features ensures consistency with analysis completed in the FEA and demonstrates compliance with legal, policy and Forest Plan requirements. Applicable design features identified during this phase of planning will be carried forward into the final design plan (timber sale contract, service contract or burn plan).

Sign-off by the staff specialists and approval by the line officer indicates that the treatment as designed, with appropriate use of design features, fulfills the Plan and other legal requirements, including compliance with the Taylor Park Vegetation Treatment EA.

Table A-2. Air quality
Objective: comply with Clean Air Act requirements

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
AQ-1	Prescribed burning operations will comply with the State of Colorado air quality regulations.	Clean Air Act		
(TSHR-7)	Use suitable road surface stabilization practices and dust abatement supplements on roads with high or heavy traffic use (See FSH 7709.56 and FSH 7709.59).	FS National BMPs		

Project lead/Fire and Fuels specialist signature_____

Table A-3. Cultural resources

Objective: Compliance with National Historic Preservation Act

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
CR-1	Cultural resource surveys will occur prior to treatment implementation. All sites within a treatment area will be avoided until State Historic Preservation Office consultation may be completed. Archaeologist will consult with timber personnel with regards to site locations	USDA Forest Service, 2015. - Programmatic Agreement for Bark Beetle, Hazardous Fuel and Tree Reduction Programs with Amendments		
CR-2	Discoveries: If any new cultural resource sites are discovered during implementation, treatment activities would stop and the Forest Service archeologist would be contacted immediately. The archaeologist will evaluate the significance of the cultural resource. If potentially significant, within 48 hours of the discovery, the SHPO will be notified of the discovery and consultation will begin to determine an appropriate mitigation measure. The discovery will be protected from further disturbance until any required mitigation is completed. Operations may resume at the discovery site upon receipt of written instructions and authorization by agency officials.	USDA Forest Service, 2015. - Programmatic Agreement for Bark Beetle, Hazardous Fuel and Tree Reduction Programs with Amendments		
CR-3	For all cultural resource sites located during the field inventory or previously known, no mechanical treatment or ground disturbing activities will occur within the site boundary, including an additional 50-foot buffer around the site. If mechanical treatments are necessary, the site and the 50-foot buffer around the site will be treated by hand to remove hazard trees and accumulated fuel build-up.	Stipulation 5.B.b. ii and Stipulation 6.a and6 .b, Standard Treatments for Historic Properties, in the 2015 Programmatic Agreement for Bark Beetle, Hazardous Fuel and Tree Reduction Programs		
CR-4i	In areas slated for prescribed fire treatment, flammable cultural resource sites or sites with components or features susceptible to heat damage with the APE will be marked on the ground by an archeologist, along with a buffer area of no less than 50 feet, sufficient to prevent fire or heat from affecting components of the site that may contribute to its eligibility to the National Register of Historic Places.	USDA Forest Service, 2015		
CR-5	If road construction cannot physically be relocated to avoid a site, and there is the potential for unidentified buried cultural remains, then SHPO consultation will take place and construction activities in the site boundaries would be monitored by an archaeologist.	USDA Forest Service, 2015		
CR-6i	Culturally scarred trees will be protected during mechanical treatments.	USDA Forest Service, 2015		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
CR-7	Post-Treatment Monitoring: For treatments where field inventories are not feasible due to visibility concerns prior to treatment implementation, monitoring in the form of a sample inventory for cultural resources will be required post implementation. This monitoring will take place within one year of treatment implementation, with results provided to SHPO.	USDA Forest Service, 2015		
CR-8	Post-Treatment Monitoring: Cultural resource sites that were required to be avoided during treatment implementation will be monitored for effectiveness of the protection measures following treatment completion.	USDA Forest Service, 2015		
CR-9	Native American human remains: Any operator carrying out treatments must notify the Forest Service, by telephone, with written confirmation, immediately upon the discovery of human remains or funerary items, discovered on Federal land. The Forest Service must then immediately notify appropriate tribes of the find. All treatment activities must stop in the vicinity of the discovery that could adversely affect it, until tribal consultation can be completed and a Plan of Action can be approved and implemented	NAGRPA regulation 43 CFR 10.4(g)		

District Archeologist signature _____

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Table A-4. Forest Service sensitive plants

Objectives:

1. **For Upland (non-wetland) Sensitive Species: Minimize impacts to individuals or populations that would lead to a loss in viability.**
2. **For all Sensitive Species: Minimize impacts to individuals or populations that would contribute to a loss in viability.**
3. **For Fen Sensitive Species: (a) Reduce potential for treatment-related resource damage to fens, (b) Maintain fen hydrologic function (soil compaction, water diversion, dewatering) that would reduce suitability or sustainability of rare fen habitat, (c) Prevent sedimentation events that would reduce or impair wetland functions.**
4. **For *Astragalus leptaleus*: Maintain functions of riparian wet or moist meadows.**

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
FSSP-2	**All sensitive species** **A –** During prescribed fire operations, ignitions and other fuel treatment activities would be located away from sensitive plant species occurrences and wetlands. **B** – Dust abatement (use of $MgCl_2$ or $CaCl_2$) will avoid sensitive species occurrences and wetlands by 500 feet. **C** – Avoid sensitive species occurrences and wetlands with chemical weed treatments. **D** – Any Region 2 sensitive plant species new to list or located after contract or permit issuance will be appropriately managed by active coordination between permittee, contractor or purchaser, Contracting Officer, and Forest Service line officer, treatment administrator, and botanist. **E –** Surveys will occur prior to implementation; Botanist will communicate with timber staff the location of any sensitive species found.	Elliott and others 2011, treatment-specific design		
FSSP-3	***Machaeranthera coloradoensis*** Minimize use of roads passing through known sensitive species sites.	Elliott and others 2011, treatment-specific design		
FSSP-4	***B. paradoxum*** If there is tree canopy covering habitat, maintain pre-treatment tree canopy over habitat.	Elliott and others 2011, treatment-specific design		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
FSSP-6	**Fen sensitive species*** **A** – Keep roads and trails out of wetlands and their water influence zones (WIZ). (1) **B** – Restore existing disturbed areas that are eroding and contributing sediment to the wetland. (WQSP-2) – No mechanical equipment will be used within 100 feet of the edge of a fen.	(1) USDA Forest Service 2006. (2) USDA Forest Service 2006, 2012.		
FSSP-7	**Fen sensitive species*** **A** – Treatment activities will avoid wetlands (see WQSP-6A) **B** – Mechanical treatment and vehicle use will occur outside of wetlands or their water influence zones. **C –** Prevent mineral sediment deposition from occurring in wetlands. (3)	(3) USDA Forest Service 2012, Austin 2008.		
FSSP-8	**Fen sensitive species*** **A** – Develop an erosion and sediment control plan to avoid or minimize downstream impacts using measures appropriate to the site and the proposed activity. (3) **B** – Conduct prescribed fires to minimize the residence time on the soil while meeting the burn objectives. This is usually done when the soil and duff are moist. **C** – Limit roads and other disturbed sites to the minimum feasible number, width, and total length. Minimize sediment discharge into streams, lakes, and wetlands during construction and stabilize and maintain disturbed sites to control erosion. (1) **D** – Maintain sufficient upslope ground cover to prevent sediment movement downward into wetland.	1) USDA Forest Service 2006. (3) USDA Forest Service 2012, Austin 2008.		
FSSP-9	***Astragalus leptaleus*** **A** – Avoid treatment activities and equipment use in wet or moist meadows. **B** – Design stream crossings at armored points, or armor them to prevent loss of functions in wet or moist meadows.	Elliott and others 2011, treatment-specific design		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
FSSP-10	**Upland (non-wetland) sensitive species** **A** – Sensitive plant populations will be flagged and avoided for all ground-disturbing activities with a bugger of 20 to 100 feet (as determined during treatment surveys. **B** – Proposed road construction, reconstruction, landings, and staging areas in potential habitat for sensitive species will be designed and marked on the ground only after the areas have been surveyed by a qualified botanist in the proper season.	Professional judgement		

Botanist/ecologist Signature _____

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Table A-5. Invasive weeds

Objective: Prevent new introductions of invasive exotic plants (Invasive Weeds) or spread of existing infestations.

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
IW-1	Consider excluding areas from prescribed burning where there are infestations of fire-proliferating species (example, cheatgrass).			
IW-2	**Practices** - Prevent the accidental spread of invasive species carried by contaminated vehicles, equipment, personnel, or materials. (2) **A** -- Establish and implement standards and requirements for vehicle and equipment cleaning to prevent the accidental spread of aquatic and terrestrial invasive species on the treatment area. (1) Use standard timber sale contract provision BT 6.35 to ensure appropriate equipment cleaning. Equipment cleaning should be conducted after working in areas with known infestations, and prior to bringing equipment onto the National Forest. **B** -- Locate and use weed- free treatment staging areas. Avoid or minimize all types of travel through weed- infested areas. (3) **C** -- All imported materials (erosion control materials, soil, gravel, etc.) should be from a “weed-free” source or area. (3) **D** -- Monitoring will occur where imported materials have been placed to ensure no new infestations have been established.	(1) Noxious weeds, that appear on the State of Colorado’s noxious weed list (Colorado 2013) (2) FSM 2900. (3) USDA Forest Service 2001.		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
IW-3	**Practices** - Retain native vegetation to the extent possible to prevent weed germination and establishment, in and around activity area and keep soil disturbance to a minimum. (3) **A** -- Contracts will require timber purchasers and contractors will re-seed disturbed areas (as designated by the Forest Service) with an appropriate certified weed-free native seed mix to avoid introduction of nonnative invasive plants and promote re-vegetation of native species. **B** -- Throughout the implementation period of the proposed action, the Forest Service should maintain flexibility to defer cut units or stands within priority areas from treatment due to the discovery of significant new invasive plant populations with potential to disrupt the functioning of native plant communities. **C** -- Where fuel reduction, timber harvest and other resource objectives necessitate ground disturbance and soil exposure, or substantial ground cover and canopy removal, include appropriate re-vegetation or invasive plant management strategies in treatment plan. (4) Where necessary, rehabilitate/restore or treat disturbed areas after management activities and conduct follow up monitoring on these areas susceptible to invasive plant spread. (4) **D** -- In areas of high risk for invasive weeds spread, rehabilitate/restore or treat disturbed areas after fuel management activities and conduct follow up monitoring to minimize invasive plant spread. (4) **E** -- Cover and reduce exposure of bare ground. Use on-site chipping or treated fuels from mastication to cover bare soil to prevent seed establishment where appropriate. (4) See SV-4 concerning areas where mineral soil exposure would be needed to assist with natural regeneration. **F** -- Slash and burn piles will be located away from known invasive weed populations and will be assessed for restoration and revegetation needs.	(3) USDA Forest Service 2001. (4) Cal-IPC Land Management BMPs. 2012		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
IW-4	**Practices** - Control and treat existing infestations to prevent treatment-associated spread and proliferation. **A** -- Coordinate treatment activities with any nearby herbicide application to maximize cost effectiveness of nonnative invasive plant treatments. (3) **B** -- Treatment of invasive weeds will follow Forest Service policy regarding certification of applicators and reporting of data to Forest Service data bases. **C**-- Treatments of invasive weeds will follow the District Noxious Weed Treatment Decision Notice. **D**-- Populations of noxious weeds should be aggressively treated with the appropriate management tools. This may include treatment with herbicides, grazing, cultural, and biological methods, consistent with the GMUG district decision notices.	USDA Forest Service 2001.		
IW-6	**Practices** - Monitor project area for new infestations and to assess efficacy of treatments. **A** -- Inspect and document all limited term ground-disturbing operations in infested areas for at least three growing seasons following completion of the project. For on-going projects, continue to monitor until reasonable certainty is obtained that no new infestations have occurred. Provide for follow-up treatments based on inspection results. **B** -- Consider modifying design feature implementation for future project implementation based on considerations such as efficacy, cost, and other unforeseen impacts. **C** -- Consider including other best practices for treatment-specific considerations.	Invasive Plant Data: The Rocky Mountain Region's Approach to Mapping and Recording Inventory and Treatment Data. October 2015.		

Range Management Specialist Signature _____

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Table A-6. Lands

Objectives:

1. **Avoid impacts to existing infrastructure from treatment activities;**
2. **Ensure treatments near electric infrastructure are conducted safely**

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
L-1	Mechanical treatments used to remove dead and dying vegetation shall utilize equipment or operating techniques to ensure that debris cannot be thrown into electrical facilities causing damage or safety hazards.	Professional judgment		
L-2	Coordinate prescribed fire treatment activities with utility ROW holders to ensure that facilities are not damaged by a fire that burns too hot or generates smoke dense enough to disrupt the transmission of electricity.	Professional judgment		
L-3	When conducting hand treatments near energized facilities, non-electrical workers will observe the minimum approach distance.	Occupational Safety and Health Administration regulations provided in 29 CFR §1910.333.		
L-4	Public Land Survey System corner preservation should be performed before any active or land disturbing management activity. This would include all known survey monuments, section corners, and other corner accessories.	Reference FSM 7150 and Timber Sales Contract Division BT BT6.23		

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Table A-7. Range

Objectives:

1. **Eliminate conflicts between implementation activities and range activities, or mitigate for them;**
2. **Revegetate sites disturbed during implementation.**

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
RG-1	Coordinate with District Rangeland Management Specialists prior to developing sale and/or service contracts and/or burn plans to identify and mitigate any potential direct conflicts during implementation. Range personnel will be responsible for incorporating mitigation measures into grazing permittees' Annual Operating Instructions (for example, a pasture needs to be grazed earlier/later to avoid direct temporal overlap with timber sale activities).	GMUG Forest Plan		
RG-2	Coordinate with District Rangeland Management Specialists prior to treatment to determine whether or not grazing deferment or pasture rest is needed, when deferment or rest is needed (prior to or following treatment), and for how long.	USDA FS. Rocky Mountain Region. 1996.		
(IW-5)	Re-seeding: See IW-3.			

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Table A-8. Recreation

Objective: Coordinate potential conflicts between timing of treatment implementation and recreation use

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
REC-1i	Avoid pile burning in campgrounds (if piles are burned, ensure that impacts to residual trees are negligible).	Professional judgment, standard operating procedure		
REC-2	Developed recreation sites: **A** -- Managed by concessionaire: plans need to consider impact to summer operating season and should minimize impacts to operations as much as possible. **B** -- For Forest Service operated sites: coordinate with District to address any District concerns regarding impact to the operating season.	Professional judgment, standard operating procedure		
REC-3	Coordinate with District recreation staff regarding any treatment-related closures for developed recreation sites, dispersed recreation sites, trails and roads.	Professional judgment, standard operating procedure		
REC-4	Special Uses: **A** -- Work with recreation residences, lodges and organization camps to design treatments adjacent to these tracts to also treat these tracts to the extent feasible. **B** -- Coordinate with District recreation staff to address treatment-related impacts to special use permit holders in the treatment area.	Professional judgment, standard operating procedure		
REC - 7	For all treatments, for treatments within ¼ mile of Wilderness boundaries, ensure that Wilderness boundaries are clearly marked by cadastral grade survey or set treatment boundaries at least 300 feet from boundaries located with resource grade GPS using standard parameters for assurance of accuracy. Treatments must not enter wilderness.	Professional judgment, standard operating procedure		
REC-8	For treatments that occur in winter or impact winter recreation access or use routes, coordinate with District recreation staff to address treatment-related impacts to winter uses, many of which are managed in partnership with clubs or other organizations.	Professional judgment, standard operating procedure		
REC-9	When timber harvest activities preclude use of a nearby trail: a) notify the public; b) consider identifying timeframes for safe travel on the trail; and c) if harvest is expected to preclude use for more than one season and a detour is feasible, provide a detour.	Professional judgment, standard operating procedure		
REC-10	Temporarily close areas to public use, through use of a Forest Order, as determined necessary to minimize safety concerns between the public and project implementation.	Professional judgement, standard operating procedure		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
REC-11	Restrict hauling during holidays/holiday weekends when and where necessary to minimize safety concerns between the public and project implementation.	Professional judgement, standard operating procedure		

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Table A-9. Scenic quality and visual resources

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
SVR-2	In all treatment areas, follow General Direction and associated standards and guidelines in the Visual Resource Management Section of the 1991 Land and Resource Management plan. This direction is found on pages III-12 through III-15. Consult with the forest visual resource specialist when implementing projects to ensure that these standards are being met. The visual resource specialist will adapt this direction to the situations where the forest has been heavily impacted with dead or dying trees. The visual system was not designed for these situations, however the principles are to be applied.	LRMP		
SVR-3	In developed recreation sites, including trailheads and administrative sites (typically VQOs of Modification or Maximum Modification), cut stumps as low to the ground as feasible. Remove or chip slash at developed campgrounds or designated recreation areas, extending outwards 200 feet of any constructed feature; at designated dispersed sites; and other dispersed sites deemed important at the time of implementation. Alternatively, at designated dispersed sites or other dispersed sites deemed important and at developed recreation sites (except developed campgrounds or designated recreation areas) and at administrative sites, move heavy slash to designated slash piles and burn as soon as conditions allow. Note: designated recreation areas include but are not limited to: Taylor Canyon.	LRMP		
SVR-4	In developed recreation and administrative sites (typically VQOs of Modification or Maximum Modification), minimize damage from mechanical treatments to young healthy trees and understory trees and shrubs.	LRMP		
SVR-7	For all treatments, revegetate and till disturbed and compacted soils on landings, burned slash pile sites, skid trails and temporary roads with native seed mixture after the completion of treatments. Block access to decommissioned or re-claimed temporary roads with naturalistic barriers.	LRMP		

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Table A-10. Silviculture

Objectives:

1. **For lodgepole pine dwarf mistletoe infested stands: Clear cut stands to remove infestation; Clear cut rings around young stands to reduce spread of infestation**
2. **For spruce beetle-affected stands: Provide for salvage of dead or dying stands; Maintain green stands where they exist; Regenerate stands where needed.**

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
SV-1i	All regeneration cutting will meet stocking standards as defined in the Forest Plan within 5 years of harvest.	GMUG Forest Plan		
SV-2	All vegetation treatments will be prescribed by a U.S. Forest Service, Region 2, Certified Silviculturist in accordance with applicable guidance from other resource specialists.	FSH 2409.17 Silvicultural Practices handbook		
SV-3	To the greatest degree practicable given site fuels conditions, jackpot and pile burning would be used as acceptable methods to assist with natural regeneration strategies and to create mineral soil seedbeds for natural regeneration. Harvested areas would be evaluated for stocking.	R-2 FSH 2409.17 Silvicultural Practices Handbook		
SV-4	During site preparation or piling activities, mineral soil exposure will be less than 40 percent of the treated area. Soil cover should be retained when practicable. To assist natural regeneration, conduct vegetation and fuels management activities to average 20 to 40 percent mineral soil exposure in post-harvest, as prescribed in the stand management prescription. On south slopes, mineral soil exposure would be less so that site moisture can better be retained. If the area has been identified as being high risk for invasive plants, or is known to have existing infestations, reduce soil exposure and consider artificial regeneration practices (planting). Also see IW-3.	Alexander 1987		
SV-5	In order to reduce the risk of spruce beetles being drawn to uninfected trees, in stands with a component of live spruce which are not beetle-infected, felled spruce shall be removed from the sale area by no later than October 31 of the year following felling. Unutilized and un-merchantable spruce material (in excess of the 10-20 tons/acre required by the Forest Plan) that is cut during operations and greater than 6 inches diameter at the small end could be removed from the stand and taken to the landing. This will be considered yarding of un-merchantable material (YUM). When removal of non-merchantable material (YUM) is operationally infeasible, material would be debarked in stands, chipped or otherwise treated within the stand to reduce the likelihood of the material being utilized as brood material. Treatment of non-merchantable material will be prescribed by a certified silviculturists, with the overall goal to reduce brood material.	Professional judgment of GMUG silviculturists and Forest Health Protection Staff.		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
SV-6	During any types of harvest in spruce-fir, areas of advanced regeneration will be avoided to the greatest degree practicable while allowing feasible operations.	Professional judgment and standard operating procedure used by GMUG silviculturists.		
(RG-2)	Coordinate with District Rangeland Management Specialists prior to treatment to determine whether or not grazing deferment or pasture rest is needed, when deferment or rest is needed (prior to or following treatment), and for how long.	Professional judgment of GMUG silviculturists and rangeland management specialist.		

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Table A-11. Fuels and slash piles
Objectives:

1. **Use current science and silvicultural, fuels and fire management practices to achieve an optimum balance between positive and negative effects of slash treatment on soils, hydrology, wildlife and potential fire risk.**
2. **Reduce negative impacts of fires.**

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
SP-2	A minimum and maximum fuel loading will be specified in association with harvests and fuels treatments. Generate associated Brush and Disposal (BD) plan. This minimum and maximum will include any needs to reduce fuels near infrastructure and leave material onsite for seedling establishment, wildlife benefit and soils health.	Standard operating procedure used by GMUG silviculturists and fuel managers.		
SP-4	To facilitate complete burning, piles shall be compact in size and shape, and free of soil. Piles will not be less than 12 feet in height. Piles shall not be constructed as windrows, rather the size of each pile's footprint shall be minimized. The size of each pile's footprint shall not exceed 50 feet in any dimension. Piles shall be of a size and location which will not impair road use or result in damage to residual timber. Piles shall be located at least 50 feet from residual timber.	Professional judgment and standard operating procedure used by GMUG silviculturists and fuels managers.		
SP-5	In areas treated for recovery where beetle kill is prominent, piles will be burned as soon as burn conditions for pile burning occur (usually after first adequate snowfall event). Where possible, piles should be located in proximity to roads that prescribed burn personnel can reach the site either by motorized vehicle (truck, UTV, ATV, or snowmobile) or by foot without having to hike or ski more than ¼-1/2 mile to reach the piles.	Professional judgment and standard operating procedure used by GMUG silviculturists and fuels managers.		
SP-6	Activity-generated fuels would be reduced in compliance with the treatment Brush and Disposal plan. Fuels, silviculture and timber resources management personnel would develop prescriptions considering economical harvest methods, activity fuels and residual site conditions.	FSH 2409.19		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
SP-8	Monitor a sample of pile burn scars for bare soil and— on scars located on slopes and in swales—for the presence of rills, gullying, or soil movement. If over 100 square feet of burn scar consists of bare soil; minor rills or gullying is present within or adjacent to burn scar; or minor deposition of soil occurs downslope of scar, treatment is indicated. Treat bare soil and erosion according to District protocols, which may include one or two of the following: addition of mulching, scarification, inoculation with adjacent soils, seeding, etc. If monitoring reveals more than 200 square feet of burn scar consisting of bare soil; multiple rills or gullying; gullying 2 to 3 inches deep within burn scar; or significant deposition of soil downslope of scar, elevate treatment application.	Professional judgment; Taylor Park Vegetation Treatment-specific monitoring component		

Fire Specialist signature _____

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Table A-12. Transportation System and Haul Routes

Objective: Manage travel management effectively to provide resource protection and a safe, environmentally sound, and efficient transportation system.

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
TSHR-1	Existing roads will be used for equipment access to the extent road location and condition permit reasonable access. Implementation of mechanical treatments and harvests will attempt to minimize road construction whenever possible.	USDA Forest Service, 2006. Conservation Practices Handbook and treatment-specific design		
TSHR-2	Temporary roads may be used where a designed road is not needed, as determined by the Forest Service. The location and clearing widths of all Temporary Roads or facilities shall be agreed to in writing (between the Forest Service and the contractor) before construction is started. Following use for harvest and treatment implementation, both temporary AND designed roads will be decommissioned, which involves re-contouring where significant side slope exists, elimination of ditches and other structures, out-sloping during construction, removal of ruts and berms, effectively blocking the road to normal vehicular traffic where feasible, and construction of drainage features such as cross ditches and water bars. Invasive species monitoring will occur after road decommissioning and will be followed by weed treatments where needed. Effectiveness of road closure will also be monitored.	Treatment-specific design Timber Sale Contract Standard Provisions (Contract FS-2400-6, USDA Forest Service 2006)		
TSHR-3	Require commercial haulers to perform maintenance commensurate with their use; depositing sufficient funds with the Forest Service may be used in lieu of performance. Surface rock replacement deposits will be collected to maintain currently surfaced roads that are used for timber hauling. Deposits will be collected commensurate with the use. Quarry materials will be collected from a site that has been found to be free of invasive plants.	FSM 7732.03		
TSHR-4	Timber hauling operations will be restricted during wet or thawed conditions, when needed to protect the road surface. When logging occurs over snow or frozen ground, standard Forest Service practices will be followed.	USDA Forest Service, 2012. FS National BMPs; Treatment- specific design		
TSHR-5	Safety signing will be used to alert the public that logging operations are in progress and would meet the requirements of the Manual of Uniform Traffic Control Devices	Timber Sale Contract Standard Provisions (Contract FS-2400-6, USDA Forest Service 2006); FSM 7160		
TSHR-6	Use of private roads, encroachment of public roads and rights-of-way, and other access needs outside Forest Service jurisdiction shall have the proper approval or authorization in place prior to use.	16 U.S.C. 572; treatment-specific design		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
TSHR-7	Use suitable road surface stabilization practices and dust abatement supplements on roads where road surface conditions, traffic use and proximity to recreation or public occupancy justify the need. (See FSH 7709.56 and FSH 7709.59).	USDA Forest Service, 2012.		
TSHR-8	Move snow in a manner that will avoid or minimize disturbance of or damage to road surfaces and drainage structures. Use existing standard contract language (C5.316# or similar) for snow removal during winter logging operations to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources.	USDA Forest Service, 2012		
TSHR-9	Use the following measures to conserve water when managing roads for Taylor Park Vegetation Treatment: **A** -- Locate new roads with consideration of key topographic factors important to road maintenance, including steepness of slope, position on slope, aspect and drainage pattern. **B** -- When possible, schedule road maintenance activities to coincide with higher moisture content for ease of grading and better compaction. **C** -- Minimize new road widths to provide for safe use while limiting impermeable surfaces. **D** -- Keep ditches open, but do not remove vegetation that does not impede drainage. Vegetation holds the soil in place and reduces sediment loading which is the greater problem. **E** -- When installing drainage features, return intercepted runoff to its natural path at the first opportunity. **F** -- To avoid clogging, keep the grade of drainage features steeper than the roadway. In general, avoid stream crossings. Where necessary, align the roadway to fit the stream. Avoid road capture of the channel, which can result in the stream diverting down the road – causing severe erosion. Do not constrict and accelerate flows, which can erode the channel.	Zeedyk, W. Water Harvesting from Low-Standard Rural Roads. 2006.		

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Table A-13. Water quality and soil productivity

Objectives:

1. **Manage treatments to maintain ground cover to prevent harmful increases in runoff.**
2. **In the Water Influence Zone (WIZ) next to perennial and intermittent streams, lakes, and wetlands, allow only those actions that maintain or improve long-term stream health and riparian ecosystem condition**
3. **Design and construct all stream crossings and other in-stream structures to provide for passage of flow and sediment, withstand expected flood flows, and to allow free movement of resident aquatic life.**
4. **Maintain long-term ground cover, soil structure, water budgets, and flow patterns of wetlands to sustain their ecological functions.**
5. **Limit roads and other disturbed sites to the minimum feasible number, width, and total length.**
6. **Construct roads and other disturbed sites to minimize sediment discharge into streams, lakes, and wetlands.**
7. **Stabilize and maintain roads and other disturbed sites during and after construction to control erosion.**
8. **Reclaim roads, landings and other disturbed sites when use ends, as needed, to prevent resource damage.**
9. **Manage land treatments to limit the sum of severely burned soil and detrimentally compacted, eroded, and displaced soil to no more than 15 percent of any activity area.**

The following design features to protect watershed resources are based on, and structured according to the Region 2 Watershed Conservation Practices Handbook. They address conditions or circumstances that have occurred on recent GMUG NF timber sales. Additional BMPs in the R2 Handbook or National Handbook may apply within future treatment areas as determined during treatment-specific assessments. The various measures may be achieved through avoidance, on-the-ground marking, appropriate contract provisions, identification on the sale or service area map, and/or during sale or contract administration.
Treatment-specific soils, hydrologic, and watershed condition assessments will be performed prior to any on-site work (see Appendix C). Treatment-specific design features will be selected based on treatment tasks and the results of treatment-specific assessments.

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WQSP-1	**A** -- Maintain the organic ground cover of each activity area so that pedestals, rills, and surface runoff from the activity area are not increased. The amount of organic ground cover needed will vary by different ecological types and should be commensurate with the potential of the site. **B**-- Restore the organic ground cover of degraded activity areas within the next plan period, using certified local native plants as practicable; avoid persistent or invasive weeds. Also see IW-3.	USDA Forest Service 2006		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WQSP-2i	**A** -- The minimum horizontal width of the Water Influence Zone for various water related features is as follows: **Fens and their associated wetland** – Outside of edge of WIZ at least 100 feet from edge of fen; No harvest or no mechanical travel zone 100 feet from edge of fen **Perennial Streams** – Outside edge of WIZ 100 feet from streambank; No harvest or no mechanical travel zone 50 feet from stream bank **Intermittent Steams, Reservoirs, and Ponds** – Outside edge of WIZ 50 feet from bank or high water mark; No harvest or no mechanical travel zone 25 feet from bank or high water mark **Wetlands ¼ acre or larger** – WIZ 100 feet from edge of wetland; No harvest or no mechanical travel zone **5**0 feet from edge of wetlands **Springs, Seeps, Wetlands, or depression recharge areas smaller than ¼ acre** – Outside edge of WIZ 50 feet from the source or edge of associated wetland, whichever is greater; No harvest or no mechanical travel zone 25 feet from the source or edge of associated wetlands, whichever is greater **Ephemeral Streams and Swales** – Outside edge of WIZ 25 feet from the channel or topographic low; No restriction of harvest or mechanical travel **Ditch** -- Outside edge of WIZ at edge of Right-of-Way; No restriction of harvest or mechanical travel **B** -- Keep heavy equipment out of streams, swales, and lakes, except to cross at designated points, build crossings, or do restoration work, or if protected by at least 1 foot of packed snow or 4 inches of frozen soil. Keep heavy equipment out of streams during fish spawning, incubation, and emergence periods. C -- Ensure at least one-end log suspension in the WIZ. Fell trees in a way that protects vegetation in the WIZ from damage. Keep log landings and skid trails out of the WIZ, including swales. D -- Locate new concentrated-use sites outside the WIZ if practicable and outside riparian areas and wetlands. Armor or reclaim existing sites in the WIZ to prevent detrimental soil and bank erosion. E -- Do not excavate earth material from, or store excavated earth material in, any stream, swale, lake, wetland, or WIZ. F -- Maintain at least 80 percent of potential ground cover within the WIZ. G -- Burn piles may be located within the outer half of WIZs but must not cover more than 15 percent of the ground. H -- Avoid direct ignition of prescribed fire within WIZs. Prescribed fire may be allowed to back in to these areas.	USDA Forest Service 2006, Management Prescription 9A in 1991 Forest Plan, and treatment-specific design		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WQSP-3A	**A** -- As required, obtain Corps of Engineers (COE) and State permits when installing stream crossings and ensure they meet permit requirements. In most cases, installation of stream crossing are exempt from COE or State permits as long as BMPs at 33 CFR 323.4 are followed (FSH 2509.25 Section 01.1 – Key Laws). **B** -- Size culverts and bridges to pass debris. Engineers work with hydrologists and aquatic biologists on site design. **C** -- Install stream crossings that will be in place for more than one season in a manner that to sustains bankfull dimensions of width, depth, and slope and keep streambeds and banks resilient. Favor bridges, bottomless arches or buried pipe-arches for those streams with identifiable flood plains and elevated road prisms, instead of pipe. Favor armored fords for those streams where vehicle traffic is either seasonal or temporary, or the ford design maintains the channel pattern, profile and dimension.	USDA Forest Service 2006		
WQSP-3B	Where access across the WIZ must be provided by temporary roads, they will be completely decommissioned by obliteration within 5-years of sale closure. Obliteration at crossings will include the removal of culverts and fill material, the re-contouring of stream banks to the original landform shape, and seeding and mulching of the disturbed surfaces. The remaining prism within the WIZ shall be de-compacted, seeded, and mulched.	Management Prescription 09A, 1991 Forest Plan, and treatment-specific design-		
WQSP-4	**A** -- Keep ground vehicles out of wetlands. Do not disrupt water supply or drainage patterns into wetlands. **B** -- Keep roads and trails out of wetlands. Avoid actions that may dewater or reduce water budgets in wetlands. **C** -- Avoid any loss of rare wetlands such as fens and springs.	USDA Forest Service 2006, Executive Order 11990, and treatment-specific design		
WQSP-5A	Manage land treatments to limit the sum of severely burned soil and detrimentally compacted, eroded, and displaced soil to no more than 15 percent of any activity area.	USDA Forest Service 2006		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WQSP-5B	**A** -- With the exception of general road grading, avoid soil-disturbing actions during periods of heavy rain or wet soils. Apply travel restrictions to protect soil and water. **B** -- Install cross-drains to disperse runoff into filter strips and minimize connected disturbed areas. Make cuts, fills, and road surfaces strongly resistant to erosion between each stream crossing and at least the nearest cross drain. Revegetate using certified local native plants as practicable; avoid persistent or invasive weeds. **C** -- Use existing roads unless other options will produce less long-term sediment. Reconstruct for long-term soil and drainage stability. **D** -- Avoid ground skidding on sustained slopes steeper than 40 percent and on moderate to severely burned sustained slopes greater than 30 percent. Conduct logging to disperse runoff as practicable. **E** -- Locate and construct log landings in such a way to minimize the amount of excavation needed and to reduce the potential for soil erosion. Design landings to have proper drainage. After use, treat landings to disperse runoff and prevent surface erosion and encourage revegetation.	USDA Forest Service 2006 and treatment-specific design		
WQSP-6	**A** -- Design all roads, trails, and other soil disturbances to the minimum standard for their use and to "roll" with the terrain as feasible. **B** -- Use filter strips, and sediment traps if needed, to keep all sand-sized sediment on the land and disconnect disturbed soil from streams, lakes, and wetlands. Disperse runoff into filter strips.	USDA Forest Service 2006 and treatment-specific design		
WQSP-7A	**A** -- Do not encroach fills or introduce soil into streams, swales, lakes, or wetlands. **B** -- Space cross drains according to road grade and soil type as indicated in WQSP – 7B. Do not divert water from one stream to another. **C** -- Empty cross drains onto stable slopes that disperse runoff into filter strips. On soils that may gully, armor outlets to disperse runoff. Tighten cross-drain spacing so gullies are not created. **D** -- Where berms must be used, construct and maintain them to protect the road surface, drainage features, and slope integrity while also providing user safety.	USDA Forest Service 2006 and treatment-specific design		
WQSP-7Bi	**A** -- Skid trail locations will be agreed to by the Forest Service in advance of construction; spacing will be approximately 100 feet apart, allowing for topographic variation and skid trail convergence. Space water bars as appropriate on skid trails according to slope and soil type, as indicated on Table A-14 below. **B** -- Space cross drains and rolling dips as appropriate on temporary roads according to road grade and soil types as described in FSH 2509.25, as indicated on Table A-15, below			

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WQSP-8A	**A** -- Site-prepare, drain, de-compact soils, revegetate, and close landings, main skid trails, and temporary and intermittent use roads and other disturbed sites within 5 years of the end of sale closure. Provide stable drainage that disperses runoff into filter strips and maintains stable fills. Do this work concurrently. Stockpile topsoil where practicable to be used in site restoration. Revegetate using certified local native plants as practicable; avoid persistent or invasive exotic plants. **B** -- Remove all temporary stream crossings (including all fill material in the active channel), restore the channel geometry, and revegetate the channel banks using certified local native plants as practicable. **C** -- Restore cuts and fills to the original slope contours where practicable and as opportunities arise to reestablish subsurface pathways. Use certified local native plants as practicable; avoid persistent or invasive weeds. Obtain storm water (402) discharge permits as required.	USDA Forest Service 2006 and treatment-specific design		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WQSP-8B	In decommissioning roads, **A** -- Implement suitable measures to close and physically block the road entrance so that unauthorized motorized vehicles cannot access the road. **B** -- Establish effective ground cover (i.e. erosion control measures and revegetation) on disturbed sites to avoid or minimize accelerated erosion and soil loss. **C** -- Evaluate risks to soil, water quality, and riparian resources and use the most practicable, cost-effective treatment to achieve long-term desired conditions and water quality management goals and objectives. **D** -- Use applicable practices of BMP Fac-2 (Facility Construction and Storm water Control) for Storm water management and erosion control when obliterating designed roads. **E** -- Implement suitable measures to re-establish stable slope contours and surface and subsurface hydrologic pathways where necessary to the extent practicable to avoid or minimize adverse effects to soil, water quality, and riparian resources. **F** -- Remove drainage structures. **G** -- Re-contour and stabilize cut slopes and fill material when needed. **H** -- Reshape the channel and streambanks at crossing sites to pass expected flows without scouring or ponding, minimize potential for undercutting or slumping of streambanks, and maintain continuation of channel dimensions and longitudinal profile through the crossing site. **I** -- Restore or replace streambed materials to a particle size distribution suitable for the site. **J** -- Restore floodplain function if impaired by treatment operations. **K** -- Implement suitable measures to promote infiltration of runoff and intercepted flow and desired vegetation growth on the road prism and other compacted areas. **L** -- Use suitable measures in compliance with local direction to prevent and control invasive weeds (also see IW-1 to IW-6)	USDA Forest Service 2012		
WQSP-9A	**A** -- Restrict roads, landings, skid trails, concentrated-use sites, and similar soil disturbances to designated sites. **B** -- Operate heavy equipment for land treatments only when soil moisture is below the plastic limit or protected by at least 1 foot of packed snow or 4 inches of frozen soil. **C** -- Conduct prescribed fires to minimize the residence time on the soil while meeting the burn objectives. This is usually done when the soil and duff are moist.	USDA Forest Service 2006, FSH 2509.18, Soil Management Handbook, 1992, and treatment-specific design		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WQSP-10	To ensure HUC12 disturbance is less than 25 percent, maintain disturbances from mechanical harvest treatments and roads to less than 25 percent of the HUC12 area. Other natural events (wildfire) could also affect watershed integrity. Weighted acres of mechanical harvest, road construction or other anthropogenic or natural disturbances within the watershed will be tracked in order to ensure cumulative impacts of project, other related actions and wildfire remain below this 25 percent cap. If 20 percent of the HUC12 is affected, discontinue or reduce acres of treatment in watershed so 25 percent threshold not exceeded. If 25 percent of the watershed is affected, discontinue treatments in suitable watershed until recovery has occurred.	LRMP Watershed Conservation Practices Handbook.		

Soil and Water Specialist signature _____

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Table A-14. Water bar spacing (feet) by slope and ASTM D 24871 Soil Classification

Slope (%)	ML, SM Extremely Erodible Silts and sands with little or no binder (i.e., decomposed granite)	MH, SC, CL Highly Erodible Silts and sands with moderate binder	SW, SP, GM, GC Moderately Erodible Gravels with fines and sands with little or no fines	GW, GP Slightly Erodible Gravels with little or no fines
1-3	200	300	400	500
4-6	125	200	300	400
7-9	100	150	200	250
10-12	70	100	150	200
13-25	50	50	75	100
25+	30-50	30-50	60-775	80-100

[1]American Society for Testing Materials, standard classification of soil for engineering purposes.

Table A-15. Maximum cross-drain spacing (feet) by slope and ASTM D-24871 Soil Classification

Slope (%)	ML, SM Extremely Erodible Silts and sands with little or no binder (i.e., decomposed granite)	MH, SC, CL Highly Erodible Silts and sands with moderate binder	SW, SP, GM, GC Moderately Erodible Gravels with fines and sands with little or no fines	GW, GP Slightly Erodible Gravels with little or no fines
1-3	600	1,000	1,000	1,000
4-6	300	540	680	1,000
7-9	200	360	450	670
10-12	150	270	340	510
13-25	120	220	270	410

[1]American Society for Testing Materials, standard classification of soil for engineering purposes.

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Table A-16. Wildlife, fish, and rare plants

Objectives:

1. **Design treatments to meet applicable objectives and standards with the Southern Rockies Lynx Amendment (SRLA). Consider guidelines outlined in the SRLA in treatment planning. When guidelines cannot be met, provide rationale to Fish and Wildlife Service (FWS) in year-end reporting.**
2. **Design treatments to meet applicable Forest Plan standards and guidelines related to wildlife.**
3. **Complete annual reporting to FWS as required by the SRLA.**
4. **Seek opportunities to integrate wildlife habitat management objectives as part of treatment activities.**

Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WFRP-1	All applicable management Objectives, Standards and Guidelines contained in the Southern Rockies Lynx Amendment will be applied during treatment planning and implementation.	USDA Forest Service, Rocky Mountain Region, 2008 (SRLA)		
WRFP-2i	At a minimum, in spruce-fir forest types maintain 90 to 225 snags per 100 acres, 10 inches DBH or greater (where biologically feasible). In lodgepole pine stands, maintain 90 to 180 snags (8 inches DBH or greater) per 100 acres. Snags would be maintained away from structures, roads and trails so that they do not create safety hazards to the public. Where possible, utilize natural sinuosity or drainages for linking groups. Protect standing wildlife trees from damage during site preparation and post-sale activities.	GMUG Forest Plan Standards and Guidelines		
WFRP-3	Where feasible, maintain a minimum of 10 to 20 tons per acre of coarse woody debris within harvest units. Where possible in regeneration units, create piles of logs, stumps, or other woody debris to minimize the effects of larger openings.	GMUG Forest Plan Standards and Guidelines		
WFRP-4	Maintain large diameter downed logs in various stages of decomposition within harvest units (50 linear feet per acre of 10 inches diameter or larger at the large end of lodgepole pine and aspen logs and/or 12 inches diameter or larger for Engelmann spruce, subalpine fir and Douglas-fir logs).	GMUG Forest Plan Standards and Guidelines		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WFRP-5	Strive to maintain forested cover on 60 percent or more of the perimeter of all natural and created openings, and along at least 60 percent of each National Forest System road (level 5 and below) that has high levels of human use during the time deer and elk would be expected to inhabit an area. Roads with restricted use could provide for less cover. Except where natural openings or parks exist along roads and when applying hazard tree removal activities along roads to meet public safety goals, gaps along roads should not exceed ¼ mile. Cover should be well-distributed across the landscape. Minimum sizes for hiding and thermal cover patches are 2 to 5 acres for mule deer, and 30 to 60 acres for elk. Hiding and thermal cover may be the same in many cases The intent is to maintain or improve habitat diversity and make or keep the area in a condition where deer and elk can effectively use the area by managing the vegetation and human activity. This design feature provides an opportunity to implement the proposed commercial and noncommercial activities in a way that accomplishes these wildlife habitat objectives while also meeting the purpose and need of the project. District wildlife, timber and fire programs will coordinate closely during the planning and design phase of projects to accomplish these objectives.	Direction for maintaining habitat connectivity at the landscape scale, and to retain hiding and thermal cover for big game; GMUG Forest Plan (Page III-28, General Direction 01, Standard and Guideline a and b)		
WFRP-6	Provide hiding cover within 1,000 feet of any known elk calving areas. The District wildlife biologist will be responsible for coordinating with Colorado Parks and Wildlife to identify calving areas and informing timber and fire staff on locations. When calving areas are identified, a 1,000 foot buffer will be applied and existing vegetation conditions within the buffer will be assessed by the District biologist to determine cover needs, identify areas to avoid with treatments, or coordinate with timber and fire staff to determine how treatments could be designed to maintain or enhance cover.	GMUG Forest Plan (Page III-24, General Direction 01, Standard and Guideline a)		
WFRP-7	Northern goshawk - No activities will be allowed within ½ mile of active nests from March 1 to August 31, with the exception that on roads open to other traffic, log hauling will be allowed. The timing restriction buffer could be reduced to ¼ mile if topographic features and/or adequate screening cover are present that would protect the nest site from disturbance. No harvest activities will be allowed within a 30-acre buffer of nest sites. Outside of a 30-acre area around goshawk nest sites, timing restrictions are not needed for treatment layout, marking, and any other activities that are non-disturbing (i.e., activities not involving the use of heavy equipment or chainsaws). Timing restrictions will only apply to active nests, as confirmed by the GMUG National Forests' wildlife biologist. The District wildlife biologist will keep the timber and fire staff informed on nest status and locations.	Colorado Parks and Wildlife Raptor Buffer and Timing Restriction Recommendations; GMUG Forest Plan Standards and Guidelines		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WFRP-8	Northern goshawk – provide or leave 20 percent of pole or mature tree stands adjacent to nesting sites with at least 150 square feet of basal area. Provide or leave at least one class 1 log adjacent to nest sites. The District wildlife biologist will be responsible for coordinating with timber and fire staff on nest locations and assessing vegetation conditions adjacent to nest sites.	GMUG Forest Plan (Page III-24, General Direction 01, Standard and Guideline e)		
WFRP-9	On-going surveys for raptors would be conducted to determine locations of individuals or populations of these species and allow for the implementation of protection measures using the appropriate buffer or timing restriction.	Treatment- specific design; Migratory Bird Treaty Act		
WFRP-10	Retain live trees in salvage units, except for trees that need to be removed for operational/safety or silvicultural purposes. Operational/safety or silvicultural purposes include the need to remove live trees if necessary to access dead trees for salvage or to address safety concerns.	Treatment-specific design		
WFRP-11	Skid trails and landings will be located to minimize impacts to advanced regeneration. Skid trails should be placed at least 100 feet apart, except where they converge at landings.	Treatment-specific design		
WFRP-12	Areas in Lynx Analysis Units supporting live advanced regeneration with over 35 percent Dense Horizontal Cover in blocks greater than 0.3 acre will be avoided to the extent possible during layout [and during harvest operations], while allowing feasible operations.	SRLA – VEG S6 Standard		
WFRP-13 and WQSP-5A.	Landings and main skid trails should be evaluated to determine if detrimental soil compaction has occurred. Based on review by a specialist, when detrimental compaction is found, subsoil ripping may be applied to reduce soil impacts. When a site prep contract is necessary, this provides the opportunity to rip skid trails and landings in the area and potentially in nearby adjacent areas. This would provide for a more suitable seedbed for future regeneration, thus preventing permanent impacts of skid trails that when left in a compacted state, often do not regenerate as well as adjacent un-compacted areas. Importantly, all operations will conform to the direction in Chapter 10 of the Water Conservation Practices Handbook including managing treatments to limit the sum of severely burned soil and detrimentally compacted, eroded, and displaced soil to no more than 15 percent of any activity area.	Treatment-specific design to address impacts and recovery of snowshoe hare and lynx habitat (SRLA); Water Conservation Practices Handbook, FSH 2509.25, Chapter 10		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WFRP - 14	During treatment planning appropriate Threatened, Endangered, and Sensitive (TES) species inventories will be completed as determined by the District Wildlife Biologist. Once a treatment is in the implementation phase, if TES species are confirmed the District wildlife biologist will be consulted and the appropriate standards for the Forest Plan will be applied (timing restrictions, buffer of nest sites, identify no cut area around nest sites, etc.). For example, if a new goshawk nest is found during operations, operations will stop; the District biologist will be informed and will evaluate the situation to determine if adverse impacts are occurring. This may include establishing an avoidance area around the occupied habitat or nest site consistent with Forest Plan direction and best available science to avoid impacts that could lead to nest abandonment and/or mortality.	Treatment-specific design; Endangered Species Act; Forest Service Sensitive Species Policy; Migratory Bird Treaty Act.		
WFRP-15	Winter logging is encouraged to limit direct disturbance to the fewest number of wildlife species as possible. When possible, avoid treatment activities in areas where big game (elk, deer, pronghorn and moose) are known to occur. When big-game winter range is bisected by proposed haul routes and there are concentrations of animals along these routes minimize stress to wintering animals to the extent practicable by: --Re-routing along another acceptable route. --From December 1 to April 15, restrict haul times to between 9 am and 4 pm, unless otherwise agreed to in writing by the Forest Service. --The district biologist will coordinate with Colorado Parks and Wildlife to asses big game use and identify areas where animals concentrate during winter, and assess if there is a need to implement conservation measures. This would be a coordinated effort with the GMUG, Colorado Parks and Wildlife, timber purchaser, and contracting officer. When the need arises to protect concentrations of wintering big game, the District wildlife biologist will be responsible for providing the timber staff with maps of these areas.	GMUG Forest Plan General Direction 04, 05c.and 05f. (page III-76 – III-77)		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WFRP-17	Habitat connectivity will be maintained at the landscape scale (Lynx Analysis Unit and Linkage zones for lynx) through various methods depending on treatment type, location and overall condition of each Lynx Analysis Unit. Methods may include a combination of variable retention regeneration harvest methods through resiliency treatment types; tree retention areas of various sizes and shapes to retain snag groups and protect live understory trees across the landscape, with emphasis on multi-storied forest stands and areas typically used by wildlife as travel corridors (ridges, saddles, stream corridors); protection of water influence zones and stringers of timber; and maintaining areas of high quality snowshoe hare habitat as determined from dense horizontal cover field surveys using an established scientific protocol (cover board protocol). In terms of habitat connectivity considerations and to meet the Southern Rockies Lynx Amendment direction, there will be a lot of focus on protecting areas with high quality dense horizontal cover in multi-storied stands and managing vegetation at the landscape scale toward Potential Natural Vegetation (PNV). On a timber sale by timber sale basis, coordination will occur between the District wildlife biologist and the timber staff to determine the appropriate method for accomplishing habitat connectivity goals, including determining the appropriate size, shape, and location of tree retention areas.”	Treatment-specific design intended to support consistency with SRLA direction for lynx habitat connectivity. Interagency Lynx Biology Team, 2013.		
WFRP - 18	To maintain the amount and distribution of lynx foraging habitat over time capable of supporting lynx at the LAU scale, manage so that no more than 30 percent of the lynx habitat in an LAU is in an early stand initiation structural stage or has been silviculturally treated to remove horizontal cover (i.e., does not provide winter snowshoe hare habitat). Emphasize sustaining snowshoe hare habitat in an LAU. If more than 30 percent of the lynx habitat in an LAU is in early stand initiation structural stage or has been silviculturally treated to remove horizontal cover (e.g., clear-cuts, seed tree harvest, pre-commercial thinning, or understory removal), no further increase as a result of vegetation management treatments should occur on Federal lands. As management occur in the affected LAU over the life of the treatment, acres affected will be tracked by the District wildlife biologist and Forest wildlife program lead to ensure consistency with this conservation measure.	SRLA; Interagency Lynx Biology Team. 2013		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WFRP-19	American (Pine) Marten – Research has shown that martens avoid openings created from vegetation management activities that completely remove all trees (structural stand initiation stage) if the openings are larger than 300 feet in width. In areas identified as multi-storied spruce-fir, openings created should be less than 300 feet in width unless suitable marten habitat is maintained within cutting units through snag, advanced regeneration, and course woody debris retention as described in the above design features. Cutting units of this size will only occur when salvage prescription are applied and will be subject to WFRP-12. **Exception**: areas where public safety is a concern (road corridors, around structures, etc.). Commercial treatments will target dead trees larger than eight inches in diameter so some residual cover will remain within cutting units. Irregular-shaped harvest units are desirable.	GMUG Forest Plan (Page III-24, General Direction 01, Standard and Guideline b)		
WFRP-20	Within secondary habitat for lynx (300 foot buffer from primary habitat) retain spruce and fir in aspen-spruce mix stands. Primary habitat is defined as having a dominance of spruce-fir cover type. Most of the secondary habitat includes either pure aspen or aspen-spruce mixed stands.	USDA Forest Service, 2008 - Southern Rockies Lynx Amendment		
WFRP-23	In LAU with extensive mortality of mid-late and late seral spruce (Habitat Structural Stages 4A, 4B and 4C), retain these live stands to the greatest extent practicable during treatment design.	SRLA		
WFRP - 24	To minimize spread of Amphibian Chytrid Fungus, at least one member of the Aquatics Team will participate in the planning and implementation of project-level operations. See also IW-2 for equipment washing requirements.	Johnson and Spear, 2003; Johnson et al. 2003		
WFRP - 25	In areas where Boreal Toad is known to exist, the timing of ground-based activities may be limited by the season. Boreal Toads forage up to 1.6 miles from breeding sites (pond) between July and late October. Ground-based operations of commercial or non-commercial equipment may be limited in these areas to when there is at least 4 inches of frozen soil or snow to the extent practicable.	Bartelt et al. 2004		

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Identifier	Design Feature	Source / Citation	Applicable to Treatment (Yes, No, As Modified)	If no, provide justification (i.e., resource not present). If modified, identify modification and rationale for how the resource is equally/better protected
WFRP - 26	Where non-commercial fuel reduction treatments could overlap with occurrence of Boreal Toad, there will be no mechanical operations (i.e. mastication, etc.). In these areas pile burning will be used to reduce fuels while concurrently minimizing ground disturbance, the possibility of indirect toad mortality and reduction or loss of hibernaculum habitat. Under current known toad distribution, WFRP-25 would only apply to the Buzzard Creek non-commercial PTA.	Bartelt et al. 2004		

District Biologist signature _____

Forest Fish Biologist signature _____

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5. Public Notice and Comment[3]

Instructions: Publish notice of opportunity to comment on updated treatment list, treatment plans, refined maps, and schedule. The review and comment period will run for 30 days. Comments will be considered by the implementation teams and responsible official and used to adjust treatment plans as warranted.

- ☐ Summary of comments received:

- ☐ Summary of how comments were incorporated into treatment plan:

6. Conduct Public Field Trip of Proposed Treatment Area[4]

Instructions: Complete public field trip of select sample of treatment areas. We anticipate that we may conduct one trip per field season, depending on public interest. Field review will focus on pre-treatment areas; however post-treatment and monitoring activities will likely be viewed on the same trip.

- ☐ Summary of comments received:

- ☐ Summary of how comments were incorporated into treatment plan:

7. Identification of Treatment - Specific Monitoring

Instructions: This section describes treatment-specific monitoring that may be needed. Those already listed are considered mandatory. Any additional monitoring is at the discretion of the Line Officer.

☐ Cultural

Specified monitoring:

A. ☐ For treatments where field inventories are not feasible due to visibility concerns prior to treatment implementation, monitoring in the form of a sample inventory for cultural resources will be required post implementation. This monitoring will take place within one year of treatment implementation, with results provided to SHPO (Per 2015 Prescribed Fire Programmatic Agreement w/SHPO).

B. ☐ Cultural resource sites that were required to be avoided during treatment implementation will be monitored for effectiveness of the protection measures following treatment completion (Per 2015 Prescribed Fire Programmatic Agreement w/SHPO).

☐ Fire and Fuels

Specified monitoring:

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[3] This would likely be incorporated in with the annual SBEADMR comment period.
[4] When possible, this would be a joint field trip with the SBEADMR field trip.

A. ☐ Post-Treatment Fuel Loading Surveys in WUI and/or around infrastructure values
B. ☐ Monitor a sample of pile burn scars for bare soil and, on scars located on slopes and in swales, for the presence of rills, gullying, or soil movement. **If** over 100 square feet of burn scar consists of bare soil; minor rilling or gullying present within or adjacent to burn scar; minor deposition of soil downslope of scar, **then** treat bare soil and erosion according to District protocols, which may include one or two of the following: addition of mulching, scarification, inoculation with adjacent soils, seeding, etc. **If** monitoring reveals more than 200 square feet of burn scar consisting of bare soil, multiple rills or gullying, gullying 2 to 3 inches deep within burn scar, or significant deposition of soil downslope of scar, **then** elevate treatment application.

☐ **Range and Invasive Species** Specified monitoring:

A. ☐ Inspect and document all limited term ground-disturbing operations in infested areas for at least three (3) growing seasons following completion of the treatment.
B. ☐ For ongoing treatments, continue to monitor until reasonable certainty is obtained that no new infestations have occurred. Provide for follow-up treatments based on inspection results.

☐ **Soil and Water**

Specified monitoring:

A.
B.

☐ **Transportation**

Specified monitoring:

A. ☐ All newly constructed roads in treatment area will be decommissioned within 5-years of sale closure (WQSP-8). Complete monitoring to ensure this has been completed and report in appropriate database of record.

☐ **Wildlife, Fish and Rare Plants**

Specified monitoring:

☐ **Silviculture**

Specified monitoring:

A. ☐ In regeneration harvests, complete stocking surveys in order to certify treatment unit fully stocked. This includes species composition and age class as required by National Forest Management Act (NFMA).
B.

☐ **Other (specify)**_____

Specified monitoring:

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8. Finalize Treatment Plan – Timber Sale Contract, Service Contract

Instructions: The GMUG implementation team will finalize treatment plan, ensure all aspects of this checklist have been completed, and all aspects are approved by the line officer. Ensure contracts, agreements, burn plans, or other implementation instruments are reflective of this framework.

9. District Ranger Approval

I have reviewed the checklist and confirmed that the treatment has been designed and planned accordingly. In particular, I have reviewed the selected design features (See table, Step 4) and I confirm they apply to this treatment.

Signature _____

District Ranger Date

10. Contract Review (if applicable)

The TMA and Contracting Officer will complete a review of the contract package to ensure the applicable design features (See table, Step 4) are identified within various contract C provisions.

Signature _____

Contracting Officer Date

Literature Cited

Rehfeldt, G.E. J.Worrall, S.B. Machetti, and N.L. Crookston. 2015. Adapting forest management to climate change using bio-climate models. Forestry 2015: 0, 1-12, doi:10.1093/forestry/cpv019.

USDA Forest Service. 2015. Hazardous fuels and tree reduction Program and Management of Cultural Resource Programs within hazard tree environments.

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Appendix B. Decision Tree for Silvicultural Prescription Application

1. Stand is near private land in the wildland-urban interface.

A. Lodgepole pine stand has a Dwarf Mistletoe Rating of 3 or greater.

- **Dwarf Mistletoe Clearcut**

B. Lodgepole pine stand has a Dwarf Mistletoe Rating of 2 or less.

- **Fuel Treatment (Thinning, Group Cutting, Piling)**

C. Stand has bark beetle activity and 40 percent or greater tree mortality is present (all tree species).

- **Salvage Clearcut**

2. Stand is dominated by Engelmann spruce and subalpine fir; lodgepole pine is either not present or a minor component.

A. Overstory is mature and overmature with areas of reduced vigor, health, or elevated mortality.

- **Group Selection**

B. Overstory is healthy and in good condition.

- **Group Selection or Defer Treatment**

C. Overstory is immature, with a high stand density, trees are of a size suitable for posts, poles, and small diameter sawlogs.

- **Commercial Thinning**

D. Stand is immature, dense, with crown bases elevated above average snow depth, Dense Horizontal Cover is less than 35 percent.

- **Precommercial Thinning**

3. Stand is dominated by lodgepole pine with other tree species either not present or a minor component.

A. Stand has a Dwarf Mistletoe Rating of 3 or greater.

- **Dwarf Mistletoe Clearcut**

B. Stand is mature to overmature, Dwarf Mistletoe Rating is 2 or less, with little advanced regeneration is found in the understory.

- **Shelterwood Seed Cut**

C. Stand is mature to overmature, Dwarf Mistletoe Rating is 2 or less, with a minimum of 600 healthy seedlings or saplings per acre present in the understory.

- **Overstory Removal**

D. Stand is immature to mature, dwarf mistletoe is not present, stand is healthy, stand density is not excessive.

- **Defer Treatment**

E. Overstory is immature, with a high stand density, trees are of a size suitable for posts, poles, and small-diameter sawlogs, and Dwarf Mistletoe Rating is 2 or less.

- **Commercial Thinning**

F. Stand is immature, dense, with crowns self-pruning and crown bases elevated with Dwarf Mistletoe Rating of 2 or less. Site is “Dry” lodgepole pine or Dense Horizontal Cover is less than 35 percent.

- **Precommercial Thinning**

4. Stand is Engelmann spruce, lodgepole pine, or Douglas-fir, with bark beetle activity and tree mortality present.

- **Salvage Clearcut**

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Appendix C. Species List

Table C-1. Federally listed and Forest Service sensitive species

Common Name	Scientific Name	Occupied or Suitable Habitat Present	Rationale *if* Not Carried Forward for Analysis
Federally Listed Species			
Canada lynx	*Lynx canadensis*	Yes	Analyzed in the Biological Assessment, located on the project website and in the project record.
North American wolverine	*Gulo gulo luscus*	Yes	Analyzed in the Biological Assessment, located on the project website and in the project record.
Gunnison sage-grouse	*Centrocercus minimus*	No	No suitable sage-brush habitat is present in the treatment areas.
Mexican spotted owl	*Strix occidentalis lucida*	No	No suitable canyon or dense mix-conifer habitat is present in the treatment areas
Yellow-billed cuckoo	*Coccyzus americanus*	No	No suitable old-growth riparian (cottonwood/willow) woodlands with dense understories is present in the treatment areas.
Uncompahgre Fritillary Butterfly	*Boloria acrocnema*	No	No suitable alpine habitat is present in treatment areas.
Greenback cutthroat trout	*Oncorhynchus clarkii stomias*	Yes	Potentially suitable habitat present, but no conservation populations present in or downstream of project area.
Colorado pikeminnow	*Ptychocheilus lucius*	No	Proposed action would not result in water depletions, thus would not affect this species habitat in the upper Colorado River.
Humpbacked chub	*Gila cypha*	No	Proposed action would not result in water depletions, thus would not affect this species habitat in the upper Colorado River.
Razorback sucker	*Xyrauchen texanus*	No	Proposed action would not result in water depletions, thus would not affect this species habitat in the upper Colorado River.
Forest Service Sensitive Species			
Northern goshawk	*Accipiter gentilis*	Yes	
Boreal owl	*Aegolius funereus*	Yes	
American bittern	*Botaurus lentiginosus*	No	No suitable grassland habitat is present in treatment areas.
Sagebrush sparrow	*Artemisiospiza nevadensis*	No	No suitable sage-brush habitat is present in the treatment areas.
Ferruginous hawk	*Buteo regalis*	No	No suitable grassland habitat is present in treatment areas.

Common Name	Scientific Name	Occupied or Suitable Habitat Present	Rationale *if* Not Carried Forward for Analysis
Northern harrier	*Circus cyaneus*	No	No suitable marshes/grassland/shrubland habitat is present in treatment areas.
Olive-sided flycatcher	*Contopus cooperi*	Yes	
Black swift	*Cypseloides niger*	No	No suitable roosting habitat is present in treatment areas, perennial streams will be buffered see Project Design Features, Appendix A.
American peregrine falcon	*Falco peregrinus anatum*	No	No suitable cliff habitat is present in treatment areas.
Bald eagle	*Haliaeetus leucocephalus*	No	No suitable nesting/roosting habitat or trees near large lakes or rivers are present in treatment areas.
White-tailed ptarmigan	*Lagopus leucura*	No	No suitable alpine habitat is present in treatment areas.
Loggerhead shrike	*Lanius ludovicianus*	No	No suitable open woodland habitat is present in treatment areas.
Lewis's woodpecker	*Melanerpes lewis*	No	No suitable roosting habitat is present in treatment areas, perennial streams will be buffered see Project Design Features, Appendix A.
Flammulated owl	*Otus flammeolus*	Yes	
Purple martin	*Progne subis*	No	No suitable habitat, including large aspen stands are present in the treatment areas.
Brewer's sparrow	*Spizella breweri*	No	No suitable sage-brush habitat is present in the treatment areas.
Columbian sharp tailed grouse	*Tympanuchus phasianellus columbianus*	No	No suitable shrub-grassland habitat is present in the treatment areas.
Boreal Toad	*Anaxyrus boreas*	Yes	
Northern leopard frog	*Lithobates pipiens*	Yes	
Townsend's big-eared bat	*Corynorhinus townsendii*	No	No suitable mines, caves, and large rock cavity habitat is present in the treatment areas.
Spotted bat	*Euderma maculatum*	Yes	
Hoary bat	*Lasiurus cinereus*	Yes	
River otter	*Lontra canadensis*		No suitable river habitat is present in the treatment areas
American marten	*Martes americana*	Yes	
Fringed myotis	*Myotis thysanodes*	Yes	
Rocky Mountain bighorn sheep	*Ovis canadensis*	No	No suitable high mountain habitat is present in the treatment areas.

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Common Name	Scientific Name	Occupied or Suitable Habitat Present	Rationale *if* Not Carried Forward for Analysis
Desert bighorn sheep	*Ovis canadensis nelsoni*	No	No suitable desert canyon habitat is present in the treatment areas.
Pygmy shrew	*Sorex hoyi*	Yes	
Kit fox	*Vulpes macrotis*		No suitable desert shrub-grassland habitat is present in the treatment areas.
Gunnison's prairie dog	*Cynomys gunnisoni*	No	No suitable shrub-grassland habitat is present in the treatment areas.
White-tailed prairie dog	*Cynomys leucurus*	No	No suitable grassland habitat is present in the treatment areas.
North American wolverine	*Gulo*	Yes	Analyzed in the Biological Assessment, located on the project website and in the project record.
Western bumblebee	*Bombus occidentalis*	No	No suitable grassland or mountain meadow habitat is present in the treatment areas.
Monarch butterfly	*Danaus plexippus*	No	No suitable milkweed habitat is present in the treatment areas.

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Appendix D. Migratory Birds

Physiographic Area 62: Southern Rocky Mountains

Aspen

Broad-tailed Hummingbird
Red-naped Sapsucker
Purple Martin
Violet-green Swallow

High Elevation Riparian

Cordilleran Flycatcher
American Dipper
MacGillivray's Warbler
Wilson's Warbler
Lowland Riparian
Lewis's Woodpecker
Lazuli Bunting

Mixed Conifer

Blue Grouse
Williamson's Sapsucker
Mountain Shrubland
Virginia's Warbler
Green-tailed Towhee

Ponderosa Pine

Band-tailed Pigeon
Flammulated Owl
Mexican Spotted Owl
Lewis's Woodpecker
Grace's Warbler

Spruce-Fir

Boreal Owl
Olive-sided Flycatcher
Hammond's Flycatcher

BCR 16 (Southern Rockies/Colorado Plateau) BCC 2008 list

Gunnison Sage Grouse
American Bittern
Bald Eagle
Ferruginous Hawk
Golden Eagle
Peregrine Falcon
Prairie Falcon
Snowy Plover
Mountain Plover
Long-billed Curlew
Yellow-billed Cuckoo
Flammulated Owl
Burrowing Owl
Lewis's Woodpecker
Willow Flycatcher
Gray Vireo
Pinyon Jay
Juniper Titmouse
Veery
Bendire's Thrasher
Grace's Warbler
Brewer's Sparrow
Grasshopper Sparrow
Chestnut-collared Longspur
Black Rosy-Finch
Brown-capped Rosy-Finch
Cassin's Finch

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ERRATA

This document reflects revisions made to the scoping documents for *Taylor Park Vegetation Management Environmental Assessment* or *Taylor Park EA* to correct typographical errors. New text is indicated by grey highlighting (e.g., new text), while deleted test is struck through (e.g., ~~deleted test~~).

Legal Notice of Opportunity to Comment

Additional Information

For additional questions, please contact John Slown, Project Environmental Coordinator at 406-329-3749 ~~406-239-3749~~; email jslown@fs.fed.us.

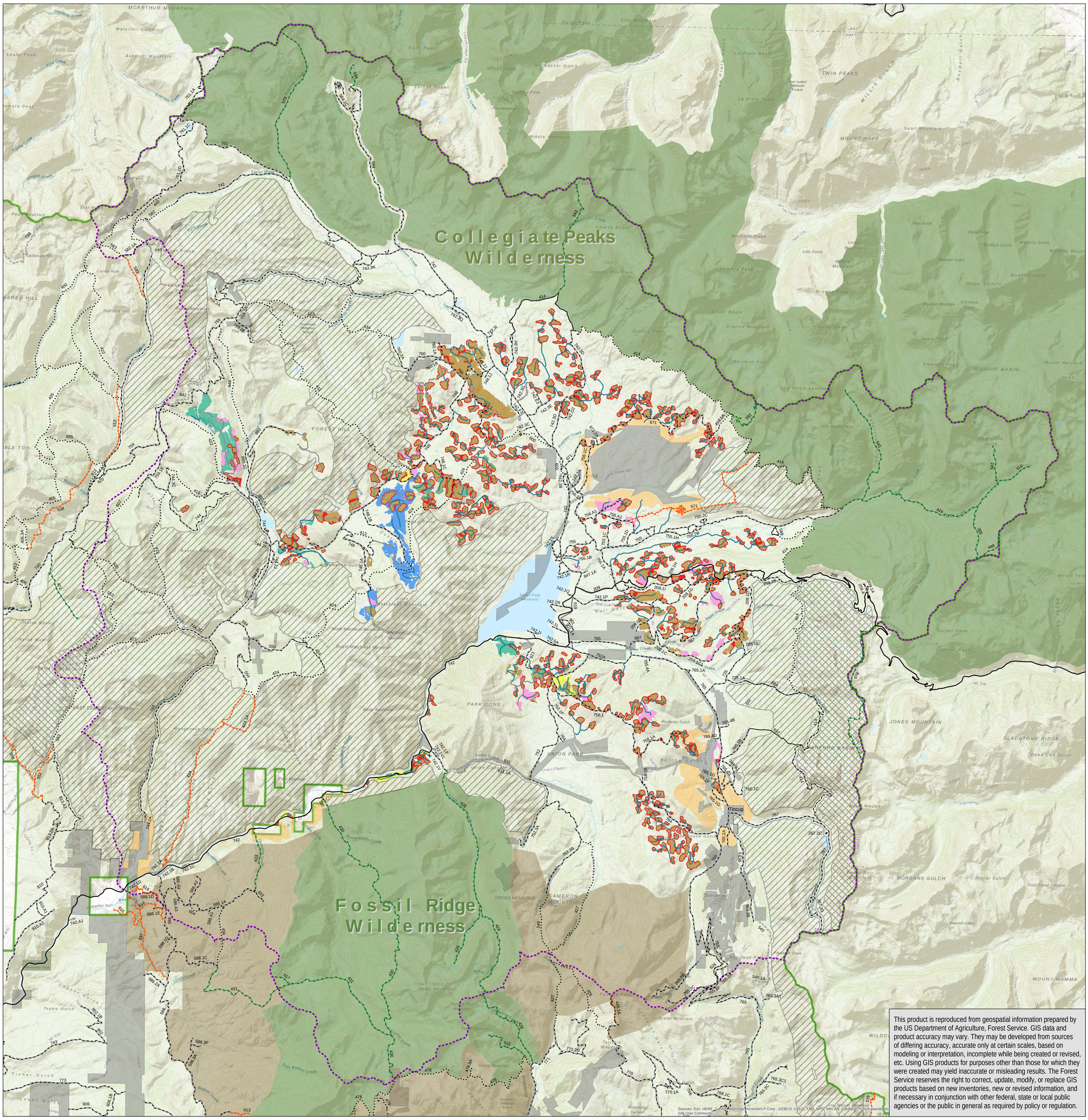
New Release Scoping

For additional questions, please contact John Slown, Project Environmental Coordinator at 406-329-3749 ~~406-239-3749~~; email jslown@fs.fed.us.

Scoping Letter (page 6)

For additional questions, please contact John Slown, Project Environmental Coordinator at 406-329-3749 ~~406-239-3749~~; email jslown@fs.fed.us.

Taylor Park Proposed Action



Proposed Treatments

- Dwarf Mistletoe Edge Strip or Clearcut
- Englemann Spruce Group Selection
- Fuel Treatment
- Overstory Removal
- Prescription TBD, Mixed Species
- Shelterwood Seed Cut, or Group Selection in Spruce, or Clearcut if Mistletoe is Present
- Young Stand Pre-Commercial Treatment, Sanitation, or No Immediate Treatment

Roads

- Roads Open To Highway Legal Vehicles Only
- Roads Open To All Vehicles
- Highways
- Administrative Roads
- Proposed Temporary Roads

Terra Trails

- Trails Open to Foot Travel
- Trails Open to Pack Animals
- Trails Open to Mountain Bikes

Motorized Trails

- Special Vehicle Designation
- Trails Open to All Vehicles
- Trails Open to Vehicles 50" or Less
- Trails Open To Motorcycles, Only

Land

- General Roadless
- Upper Tier Roadless
- Planning Area
- Wilderness
- Fossil Ridge RMA
- Private/Non-Forest Service Land
- National Forest Boundary

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Taylor Park Vegetation Management EA
Scoping/Comment Map

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Proposed Treatments and Legend

- Young Stand Pre-Commercial Treatment, Sanitation, or No Immediate Treatment: 6,363 Acres
- Dwarf Mistletoe Edge Strip or Clearcut: 3,609 Acres
- Fuel Treatment: 2,811 Acres
- Engelmann Spruce Group Selection: 741 Acres
- Overstory Removal: 734 Acres
- ShelterwoodSeed Cut (or Group Selection in Spruce or Clearcut if Mistletoe is Present): 714 Acres
- Prescritpion TBD, Mixed Species: 192 Acres
- Roads Open To Highway Legal Vehicles Only
- Roads Open To All Vehicles
- NON-FS Lands

N

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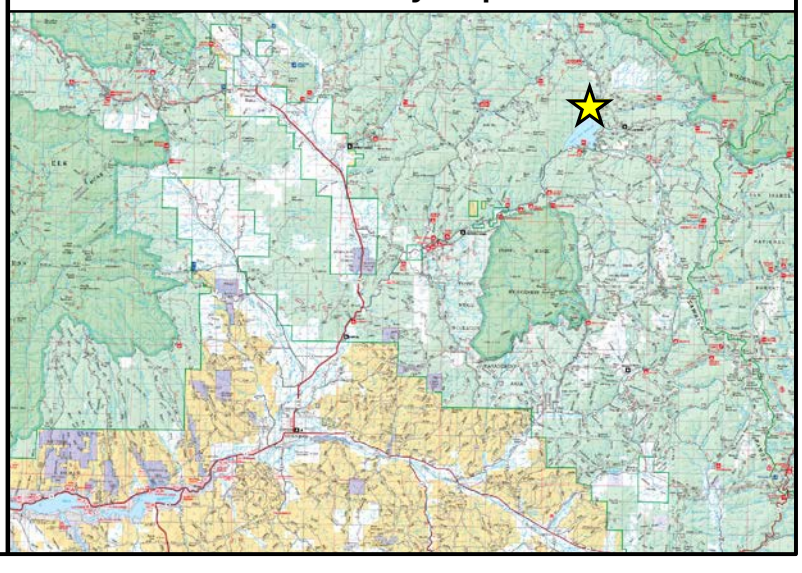
Vicinity Map